

Bridging, brokering, bonding: the evolution of broker chains within and between health research and care communities

Justin Waring, Rob Vickers, & Jenelle Clarke

Centre for Health Innovation, Leadership & Learning
University of Nottingham

Knowledge sharing, learning & innovation

- Knowledge sharing across organizational and occupational boundaries are widely seen as necessary for realizing innovation and improvements in public services
- Occupations and organizations represent distinct **epistemic communities** – expertise and knowledge – that when shared can help tackle ‘wicked’ policy problems
- These epistemic communities are characterized by both explicit knowledge, and more tacit experience, insight and practical wisdom - which can be difficult to **externalize and share**

Sharing knowledge in health research

- In the health research context, the 'gap' between research and practice communities has been a sustained focus for intervention
- These 'translation' gaps inhibit the spread of break-throughs into trials (T1) and evidence-based interventions into routine practice (T2)
- A variety of strategies have been tried and tested to 'close the gap' including **knowledge brokers**

Barriers to sharing knowledge

(adapted from: Riege 2005)

Individual / group barriers	Organisational barriers
General lack of time to share knowledge.	Missing or unclear knowledge management strategy and sharing initiatives.
Apprehension of fear that sharing may reduce or jeopardise job security.	Lack of leadership and managerial direction in terms of clearly communicating knowledge sharing practices.
Low awareness and realisation of the value and benefit of possessed knowledge to others.	Shortage of formal and informal spaces to share, reflect and generate (new) knowledge.
Dominance in sharing explicit over tacit knowledge such as know-how and experience.	Lack of a transparent rewards and recognition systems.
Use of strong hierarchy , position-based status, and formal power (“pull rank”).	Existing culture provides insufficient support for sharing practices.
Differences in experience levels.	Shortage of appropriate infrastructure supporting sharing practices.
Lack of contact time and interaction between knowledge sources and recipients.	Deficiency of resources promoting sharing opportunities.
Poor verbal/written communication and interpersonal skills	Communication and knowledge flows one directional (e.g. Top-down).
Lack of social network .	Physical environment restricts effective sharing practices.
Differences in education levels.	Hierarchical organisation structure inhibits or slows down sharing practices.
Lack of trust in the accuracy and credibility of knowledge due to the source.	Size of organisation units too large and unmanageable to enable contact and facilitate sharing.
Lack of trust in people because they may misuse knowledge or take unjust credit for it.	Internal competitiveness within organisational units, functional areas, and subsidiaries.

Knowledge brokers (*roles and contributions*)

- Knowledge Brokers (KBs) build relationships across ‘structural holes’ amongst disconnected communities to support the creation, sharing and use of knowledge (Burt 1992)
- Hargadon (2002, 2003) suggests KBs:
 - identify and access knowledge located in different communities;
 - build connections between knowledge pools;
 - support capacity building;
 - facilitate social engagement and learning.

Knowledge brokers (*positions and relations*)

- Gould and Fernandez (1989) differentiate KBs in terms of their position (within and between) communities:
 1. '*coordinators*' who broker between two or more actors from their own community;
 2. '*itinerant brokers*' who mediate contact between actors within a community they themselves do not belong;
 3. '*gatekeepers*' who broker incoming exchanges from outgroups;
 4. '*representatives*' who broker out-going exchanges from their community;
 5. '*liaisons*' who broker exchanges between two or more communities to which they do not belong.

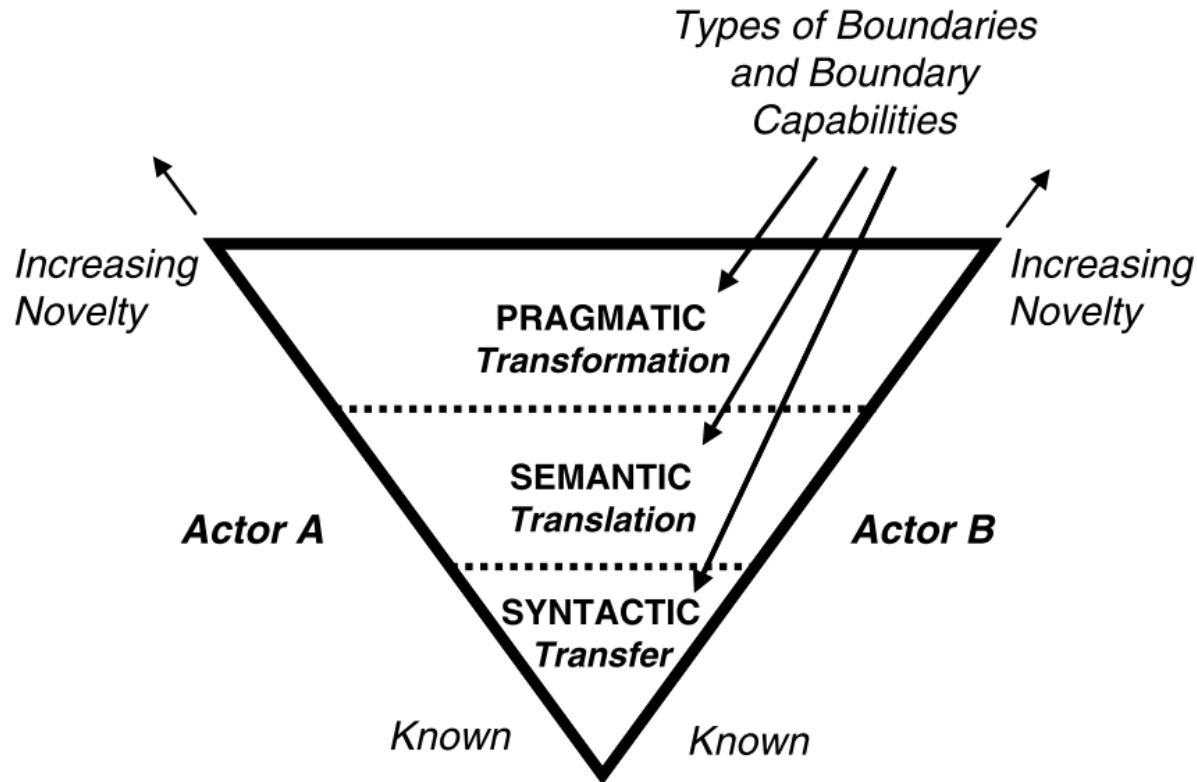
Knowledge brokering (*relational practices*)

- Rather than focus on the broker position or role, increased attention to the practices of broker-ing (Hargadon 2002)
 - Not only in brokering of knowledge but managing boundaries and conflict (Currie and White 2012)
- Interplay of 'individual' and 'collective' practices across and within different professional boundaries (Kislov et al. 2016)
- 'Broker chains' - where brokering practices are distributed across multiple inter-connected actors working together fulfil different tasks (Waring et al. 2013)

Brokering across epistemic boundaries

- Boundaries separate and differentiate groups, activities and spaces (Lamont and Molnar)
- Following Carlile (2004), epistemic boundaries are elaborated along three lines, each requiring a different mediation strategies :
 1. Syntactic boundaries – words, terms, definitions (Transfer)
 2. Semantic boundaries – meanings, assumptions (Translate)
 3. Pragmatic boundaries – interests, agenda, values (Transform)

Carlile's framework



- Transformation through 'creative abrasion' and negotiation
- Translation through sharing tacit meaning and mutual learning
- Transfer through information processing and lexicon development

Knowledge brokering across boundaries

Knowledge Boundary	Knowledge Sharing	Knowledge Brokering
Syntactic boundary	Transferring	Information processing towards common language
Semantic boundary	Translating	Interpretation & translation towards shared meanings
Pragmatic/Political boundary	Transforming	Alignment around common agenda

Question

How does knowledge brokering (especially collective broker) facilitate the sharing of knowledge across syntactic, semantic and pragmatic boundaries to support learning and innovation

- Who are the brokers and where are they positioned
- What practices do they engage in, and what knowledge do they broker
- What epistemic boundaries do they confront and how do they mediate them
- How do they fulfil these activities individually and collectively

The Study

- Comparative case studies of three implementation projects, each involving designated (and non-designated) knowledge brokers
- Each project was concerned with the implementation a given intervention, which was the focus on their research
- Each was studied over time (18-36 months) to investigate the changing *positions, practices* and *contributions* of knowledge brokers
- Observations of group and research activities, interviews with research teams and stakeholders, and documentary analysis

Participants

Participants role	No.
Lead researcher	4
Methodologist	2
Project researcher	9
PPI representative	3
Health professional	10
Service manager	6
Project administrator	5
Total	39

Common questions

- How participants became involved in the research
- How participants experienced being involved
- What motivated participants to continue involvement over time
- What participants felt worked well / what was challenging

Case study project details

Title	Clinical Area	Type	Intervention	Key Stakeholders	KBs Number and Position	Outcome
Project 1	Disease Prevention	Implementation study	Implementation of a type 2 diabetes prevention pathway in a multi-ethnic population	Healthcare professionals, local practitioners, researchers, educationalists, commissioners	Five: 2 internal study team members 3 external study network members	Intervention implemented
Project 2	Chronic Illness	Pragmatic trial	A self-management programme of activity coping and education in primary care	Public involvement, healthcare professionals, local practitioners, researchers, educationalists, commissioners	Nine: 6 internal study team members 3 external study network members	Intervention implemented
Project 3	Mental Health	Randomised controlled trial	Remote delivery of problem solving cognitive behavioural therapy for depression in adolescents and young adults who repeatedly self-harm	Healthcare professionals, researchers	Two: 2 internal study team members	Intervention not implemented

Key phases in the project life cycle

Conceptualization		
Planning		
Implementation	Initiating	Project plan is developed and put into motion: <ul style="list-style-type: none">• Resources produced• Access to care setting gained• Participants made aware of intervention
	Promoting	Internal and external team carrying out tasks to promote project: <ul style="list-style-type: none">• Promoting to stakeholders• Recruiting and retaining participants• Modifying the intervention / project plan
	Sustaining	Foundations for expanding intervention base or additional research: <ul style="list-style-type: none">• Gaining additional funding• Expanding to additional care settings• Informing project sponsors and other key stakeholders
Termination		

Project timelines

Initiating				Promoting				Sustaining					
Project 1	Access to Setting				Promotion to stakeholders				Planning additional research funding				
		Engaging: care providers / participants					Recruitment of practitioners				Contacting commissioners		
		Formatting to Setting					Adapting						
				Stakeholder feedback					Recruitment of participants				
Project 2	Access to Setting				Promotion to stakeholders				Training practitioners				
		Engaging: care providers / participants					Recruitment of practitioners				Contacting commissioners		
		Formatting to Setting					Recruitment of participants						
				Participant training									
Project 3	Access to Setting				Promotion to stakeholders				Termination of project by funder and advisory board				
		Engaging: care providers / participants					Recruitment of practitioners						
		Formatting to Setting					Recruitment of participants						
			Impact measures				Feedback						
			Stakeholder feedback										

KBing in project initiation

		Instance: <i>access to setting / engaging</i>	Brokers / position	Knowledge domains	Knowledge exchange	Knowledge boundary
Initiation	Project 1	KB2 to send an email to educators in areas of high population of target participants requesting further insight. Agreed that all this information and different cultural adaptations need to be formatted in a standardised way – KB3 to speak with administrators to discuss how this can be collated.	KB2: Manager KB3: Researcher	Public involvement, education, healthcare professionals, local practitioners	Outside project team in: from implementation setting to core study team	Pragmatic and semantic
	Project 2	KB1 has spoken to practices who have agreed to undertake mailing out to patients. KB1 to speak to specific surgeries as they are currently speaking to them about another trial.	KB1: Manager	Health care professionals, local practitioners, researchers	Inside project team out: from core team to implementation setting	Syntactic
	Project 3	PTM2 and PTM8 visited a Research Group to present the study to mental health professionals and researchers. PTM8 circulated notes to the team about this meeting.	PTM2: Scientist PTM8: Researcher	Health care professionals, researchers	Inside project team out: from core team to practitioners and researchers	Semantic and syntactic

KBing in project promotion

		Instance: <i>recruiting / promoting</i>	Brokers / position	Knowledge domains	Knowledge exchange	Knowledge boundary
Promotion	Project 1	KB1 suggested for GPs to start emphasising to their patients to attend sessions as this may lead to better responses. KB2 further added – risk conversations between GPs and patients will increase patients to the project.	KB1: Clinician KB2: Manager	Healthcare professionals, local practitioner, researchers	Inside project team out: From clinical and managerial to clinical practice and care community	Semantic and pragmatic
	Project 2	KB1 has sent emails to the interested practices and is awaiting replies to see whether the practices are still interested. If they are KB1 will deliver documentation. KB4 has mentioned in their team meeting and has distributed documents already.	KB1: Managerial KB4: Clinical	Healthcare professionals, local practitioner, researchers	Inside project team out: From project team to implementation setting	Pragmatic and syntactic
	Project 3	PTM2 made contact with people who were referred into the study but did not take part, asking if they would be willing to participate in an interview now.	PTM2: Scientific	Public involvement, researchers	Inside project team out / outside project team in: From project team to implementation setting, reporting to project team	Syntactic and pragmatic

KBing supporting project sustainability

		Instance: <i>seeking additional funding</i>	Brokers / position	Knowledge domains	Knowledge exchange	Knowledge boundary
Sustaining	Project 1	KB4 looking into the possibility of building project findings into next year's QIPP (quality, innovation, productivity and prevention), but KB4 thinks this will not attract any funding.	KB4: Medical practice manager	Research, clinical	Inside project team out: from project team to funding body	Pragmatic
	Project 2	KB4 has spoken with a contact within a local Clinical Commissioning Group mentioning Project 2.	KB4: Clinical	Research, clinical	Inside project team out: from project team to funding body	Pragmatic
	Project 3	No sustaining activity due to early termination of project 3.				

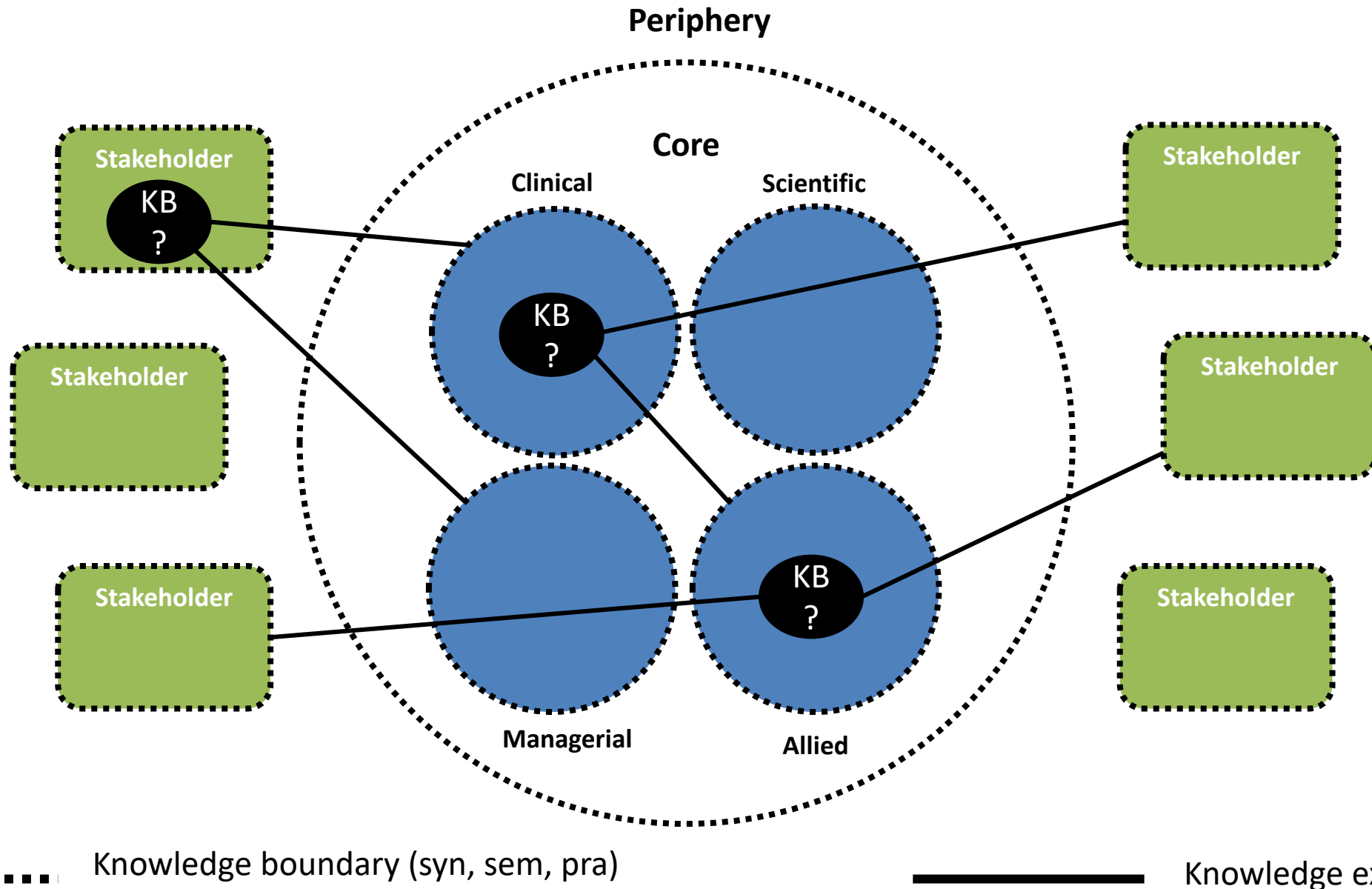
Brokers, domains and knowledge exchange

Themes	Issues	Requirements / Competencies
1. Brokers	KB Epistemic community linkage:	<ul style="list-style-type: none"> • Clinical • Scientific • Allied professional: PPI, education, policy maker, etc • Research
	Situated relations:	<ul style="list-style-type: none"> • Access to setting • Trust within setting • Credibility within setting
	Working alone / collectively:	<ul style="list-style-type: none"> • Linear – 1 specialist KB performing a specific task • Parallel – 2+ KBs working on the same task
2. Domain	Settings:	<ul style="list-style-type: none"> • Care setting • Community setting • Commissioning / policy setting • Research setting
	Partners:	<ul style="list-style-type: none"> • Healthcare professionals: doctors, nurses, etc • Public involvement • Commissioners / policy makers • Researchers • Educationalists
3. Exchange	Nature of boundary:	<ul style="list-style-type: none"> • Internal (within study network) • External (wider stakeholder community)
	Stakeholder epistemic community association:	<ul style="list-style-type: none"> • Clinical • Scientific • Allied professional: PPI, education, policy maker, etc • Research

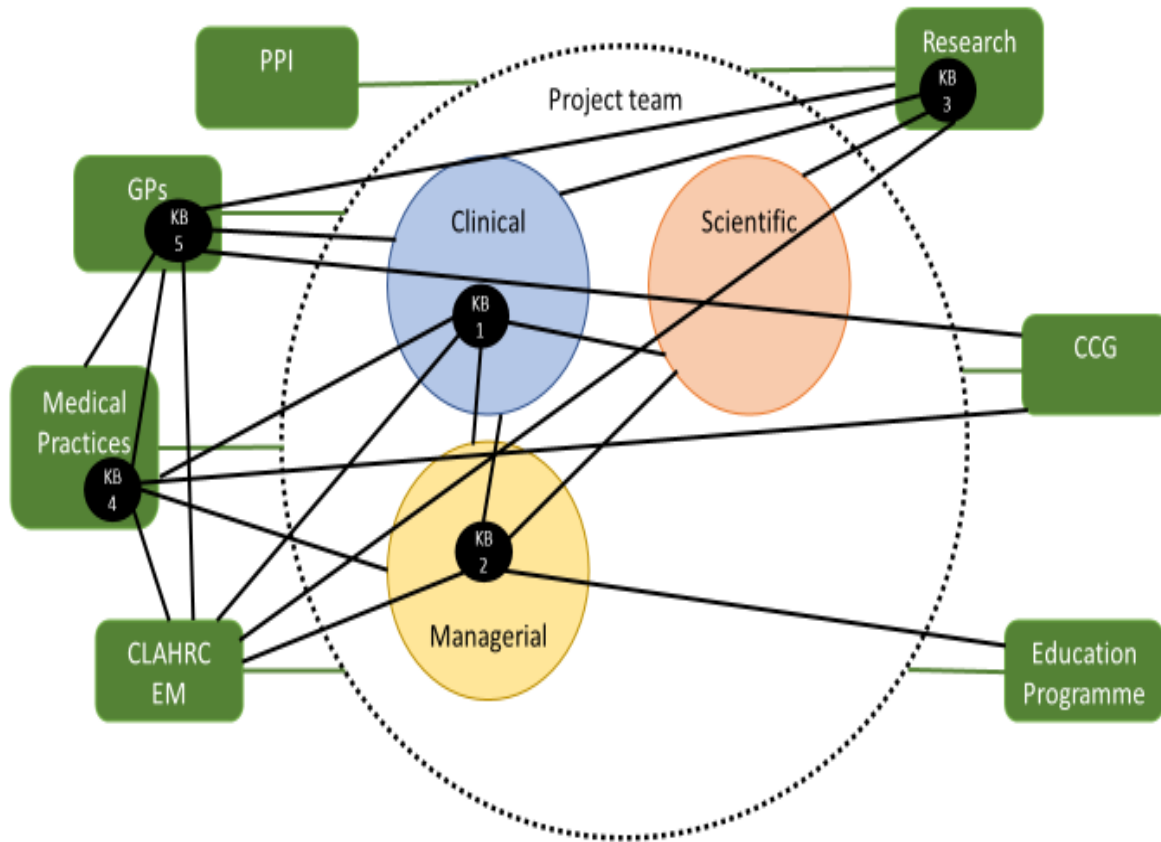
Boundary spanning

Themes	Issues	Instances	Knowledge Brokering
4. Boundary	Syntactic:	<p>Transferring</p> <p>Project 2: KB4 facilitate project dissemination / implementation by liaising with their team of care professionals.</p>	<p>Information processing towards common language</p> <p><u>Using position and network</u> to exchange knowledge. Employing a common lexicon to frame the intervention in a way that that was fitting for practitioners within the implementation setting.</p>
	Semantic:	<p>Translating</p> <p>Project 1: KB2 contacted specialists to determine the appropriate cultural adaptations for the intervention. KB3 ensured these were collated and formatted in a standardised way.</p>	<p>Interpretation towards shared meanings</p> <p><u>Complementary sequentially</u> working in broker chain. Creating an effective means of fostering common meanings and information exchange with stakeholders.</p>
	Pragmatic:	<p>Transforming</p> <p>Project 1: KB1 advocated GPs emphasising the intervention to their patients as this may lead to better uptake. KB2 supported this proposal, stressing that conversations between GPs and patients will increase the number of patients participating in the study.</p>	<p>Alignment and common agenda</p> <p><u>Parallel working</u> to promoting problem solving and increase success of the intervention. Sharing of common interests and agenda between the core project team and external study network members to recruit additional patient participants.</p>

Sharing across Knowledge Barriers

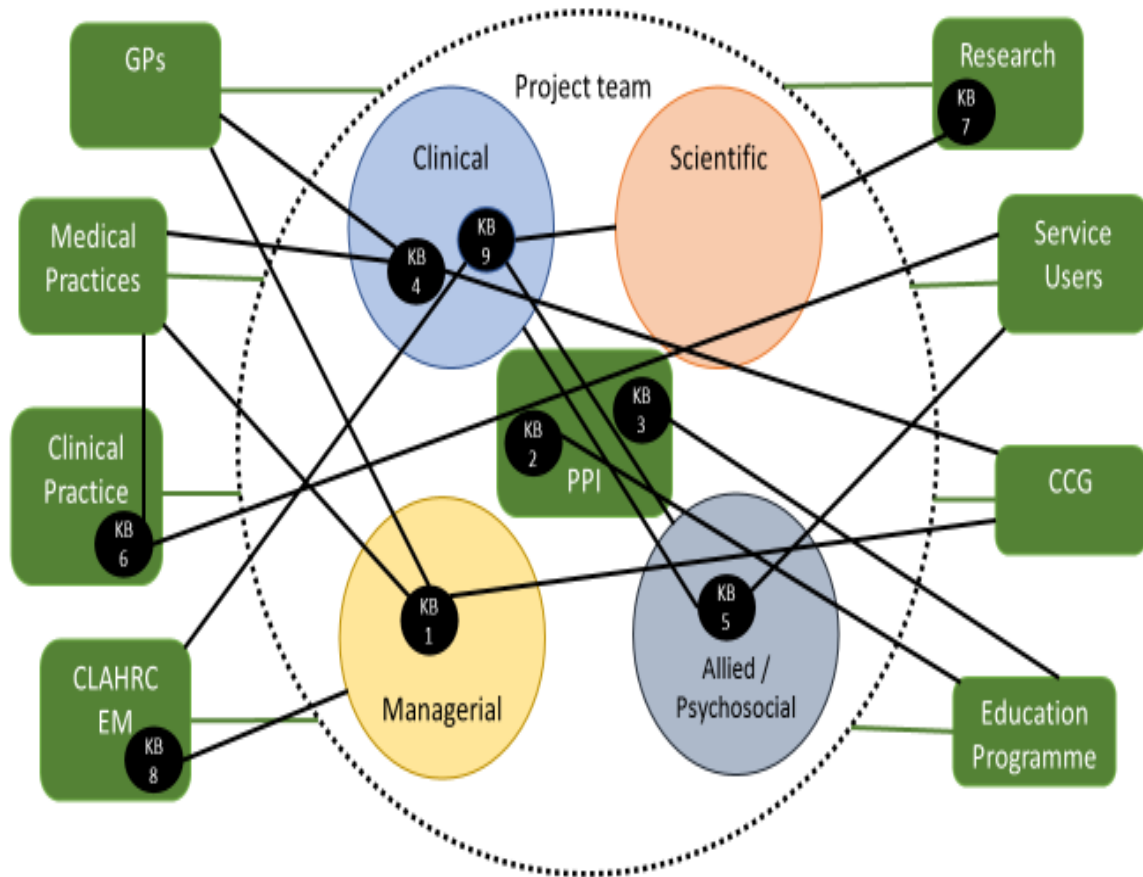


Project 1: knowledge brokering web



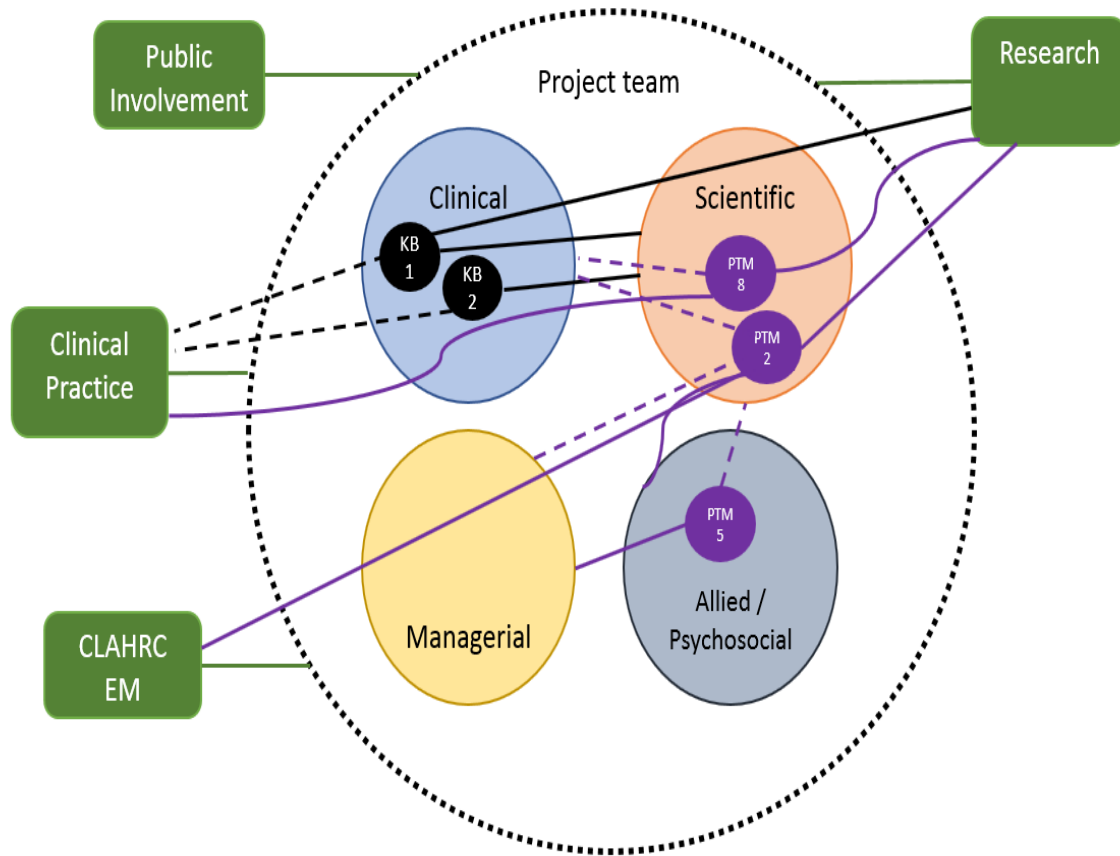
1. KBs drawn from project team and partner settings
 2. KBs could align with a variety of epistemic communities.
 3. KBs had networks that gave them access to implementation settings.
- Project 1 had no issues and was implemented.

Project 2: knowledge brokering web



1. KBs were drawn from PPI and stakeholder groups.
 2. KBs were recruited as necessary through the project lifecycle.
 3. KBs had trust and authority within the implementation setting.
- Project 2 had problems, KBs helped overcome these and the project was implemented.

Project 3: knowledge brokering web



1. KBs were only drawn from the project team.
 2. KBs networks could not enable access to the implementation setting.
 3. Project team members had to perform the majority of the KB role.
- Significant delays resulted from a lack of direct knowledge exchange.
 - The project was terminated early and not implemented.

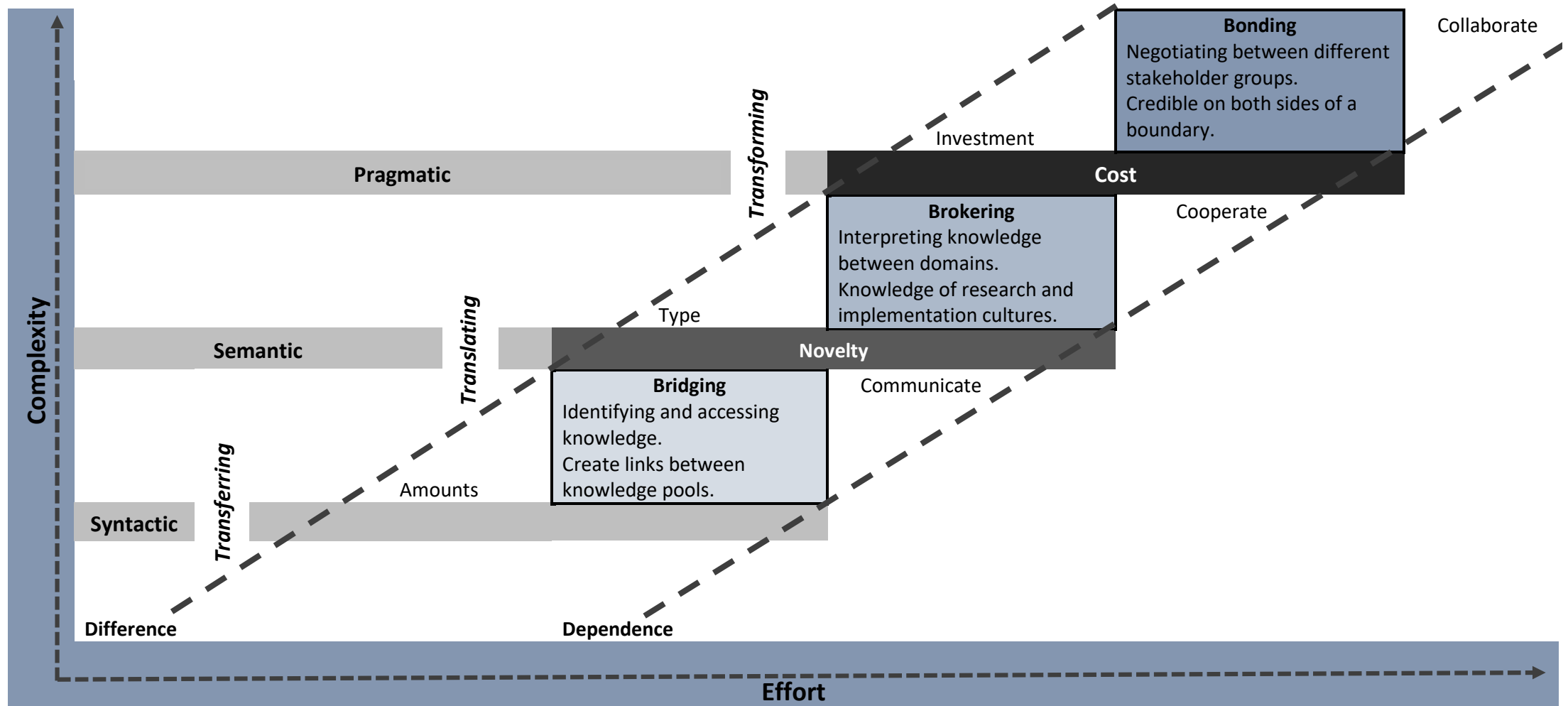
Key conclusions

- Knowledge sharing more effective when undertaken by **multiple KBs** from different epistemic backgrounds (**positions**) working **sequentially (chain) or in parallel**
- Brokers are characterized by distinct
 - Epistemic access, legitimacy and insight, but rarely access to all
 - Capabilities to mediate knowledge boundaries (transfer, translate, transform), but not all
 - Relational connections to each other in the form of brokerage networks
 - Patterns of coordination that are complementary either in the form of sequential chains or parallel processes
- Knowledge brokers need to be selected on the basis of **context-specific positions** and **complementary capabilities** (individual and collective) because it is a **team-game**

The maturation of knowledge sharing

- Knowledge brokering/sharing tends to evolve through a variety of practical activities that move from **information process** to **learning** to **common agenda**
- Information process resembles the formulation of '**bridges**' that standardize and regularize exchange across fixed entry/exit points
- Learning involves more dynamic and fluid '**brokering**' where groups of people work together (in the boat) in more context-specific problem-solving
- Negotiation and mediation offer the possibility for '**bonding**' or the sharing of common interests and agenda

Bridging, brokering and bonding model



Thank you!