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

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Knowledge sharing, learning & innovation

- Knowledge sharing across organizational and occupational boundaries is seen as necessary for realizing innovation and improvements in public services

- Occupations and organizations represent distinct **epistemic communitie**s – expertise needs to be shared to tackle 'wicked' policy problems

- 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)

- Various strategies have been developed to 'close the gap' including **knowledge brokers** (Kislov)

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.
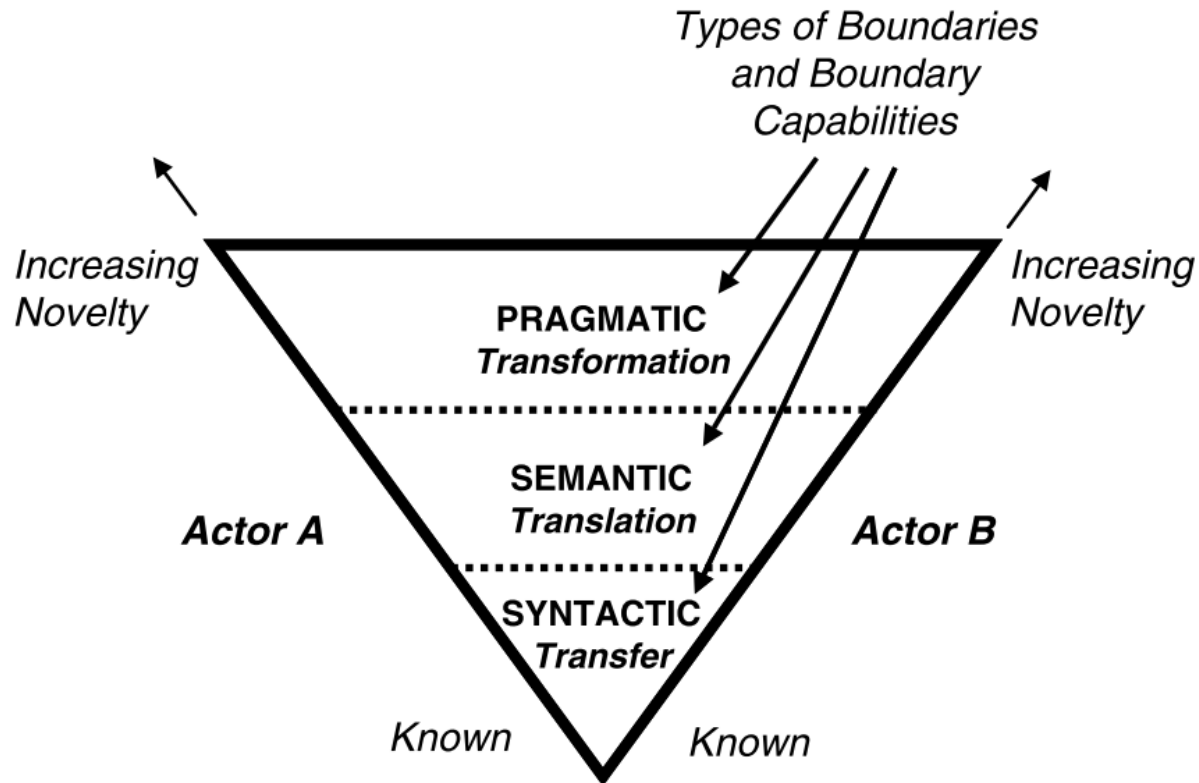
Knowledge brokering (*relational practices*)

- 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 (esp. collective practices) 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 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

Common phases in the project life cycle

Conceptualization		
Planning		
Implementation	Initiating	Project plan is developed and put into motion: • Resources produced • Access to care setting gained • Participants made aware of intervention
	Promoting	Internal and external team carrying out tasks to promote project: • Promoting to stakeholders • Recruiting and retaining participants • Modifying the intervention / project plan
	Sustaining	Foundations for expanding intervention base or additional research: • 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		

Findings

- What were the knowledge boundaries across the project life cycles?

- What brokering activities were used to share knowledge across these boundaries?

- What implications did activities have for project progress?

Brokering across a syntactic boundary: Initiating Project One

> If there is a call for collaboration, putting it in a language that everyone will understand, realising that there are clinicians, academics, Patient Public Representatives, commissioners, people who might not have intimate knowledge about some of the issues being tackled in the proposed research but who still are interested in taking part.
> **Participant 14**

Goal	Knowl... R...				
To make contact with community members in the most appropriate format to encourage take up of the intervention	...intervention... be accessible	...Research	Community		...the ...g used for the intervention. KB3 (External / Scientific) ensured the formatting was standardised

Brokering across a syntactic boundary: Promoting

Outcome

I think one of the skills is as translator; so, I think a lot of it is about understanding the effect of the language of research and how that may or may not be heard or things may be heard in a different way by clinical staff and patients so I think there's a sort of real element of being a translator across the divide

Participant 2

...project encourage engagement

groups

Knowledge producer

Research

Synt...

...user

Service user

knowledge into project team, **and then** use knowledge channels to contact stakeholders

...stakeholders via Twitter

...ere was a positive response. KB4 suggested the project investigate using Twitter and Facebook to engage with stakeholders

Brokering across a semantic boundary:
Promot...

To inc...
patie...
recruitment...
trial, especially
from certain
population
groups

...knowledge
producer

Research

Sema...

user

Service user

...g into
the research
team

...engaged with
intervention to
find out the
reasons for this

...ject to re-
formulate
engagement
strategy

> I think the importance of it is actually understanding what the study is about….I've got that mental health background, I'm quite comfortable talking about the subject, and approaching people in that way about the studies that we're supporting, including urgent care. Yeah, I suppose it's just because I've got experience in mental health that it's not an issue for me.
> **Participant 7**

I think you need to speak to people at the right level and in the appropriate language. You need to take their views into account. You will not always succeed and you need to keep trying and if it doesn't work through one way you may need to go through other routes. And if you're not getting anywhere, sometimes you have to think through are there so many barriers that this isn't going to work. But I think most of the time if you get through the right channels you'll get an idea that this is worth doing.

Participant 8

Brokering across a pragmatic boundary: Initiating Pr...

Goal						...ne
To gain acce... to clinical records held within a care setting	...se... could ... acce... patie... ...tanding motivating factors	Research	*Prag...*	Medical	... team	...gement teams to negotiate access to records	...ck from ...e clinical setting. This resulted in a delay to the development of the intervention

…you have to be bespoke about terminology, depending on who you're talking to. If it's a CCG Chair, you might be talking about reduced workload and cost-effectiveness, reduced admissions. Someone interested in [chronic disease] I'd be more talking about the risk factor management of the patients with [chronic disease] etc. So you have to tailor your spiel to who you're talking to.
Participant 8.

Brokering across a syntactic boundary: Sustaining P...

So it's just about, it's brokering different knowledges now. It's not just about research evidence. It's about policy and it's about bridging those two things together. And it's what I'd hoped study teams would do. Because actually I think that's what the whole remit is.
Participant 17

Go...					utcome
To c... and e... the proje... gaining additional funding	...supp... term investment in intervention	...producer Research	*Pragmati...* producer Funder	to align with the agendas of commissioner and funders	...external ...was able to save the research team time and effort by advising them which funding streams to pursue
				...la... the funding landscape to identify and negotiate options	

Interesting features

- The dynamic and multi-directional relationship between knowledge producer and user
  - not just research producer and service user, but service users produce knowledge for use during the research process

- Position and background of broker
  - Originating from one epistemic community
  - Sitting in another team or epistemic community
  - Working across multiple communities

Interesting features

- Different types of knowledge across the syntactic, semantic and pragmatic boundaries
  - Definitional or terminological information and meaning - glossary
  - Directory information - who
  - Media information – format and method
  - Experiential – life-style
  - Cost & Benefit - utility

- Multiple brokering strategies
  - Parallel / (un) coordinated
  - Sequential 'chains'
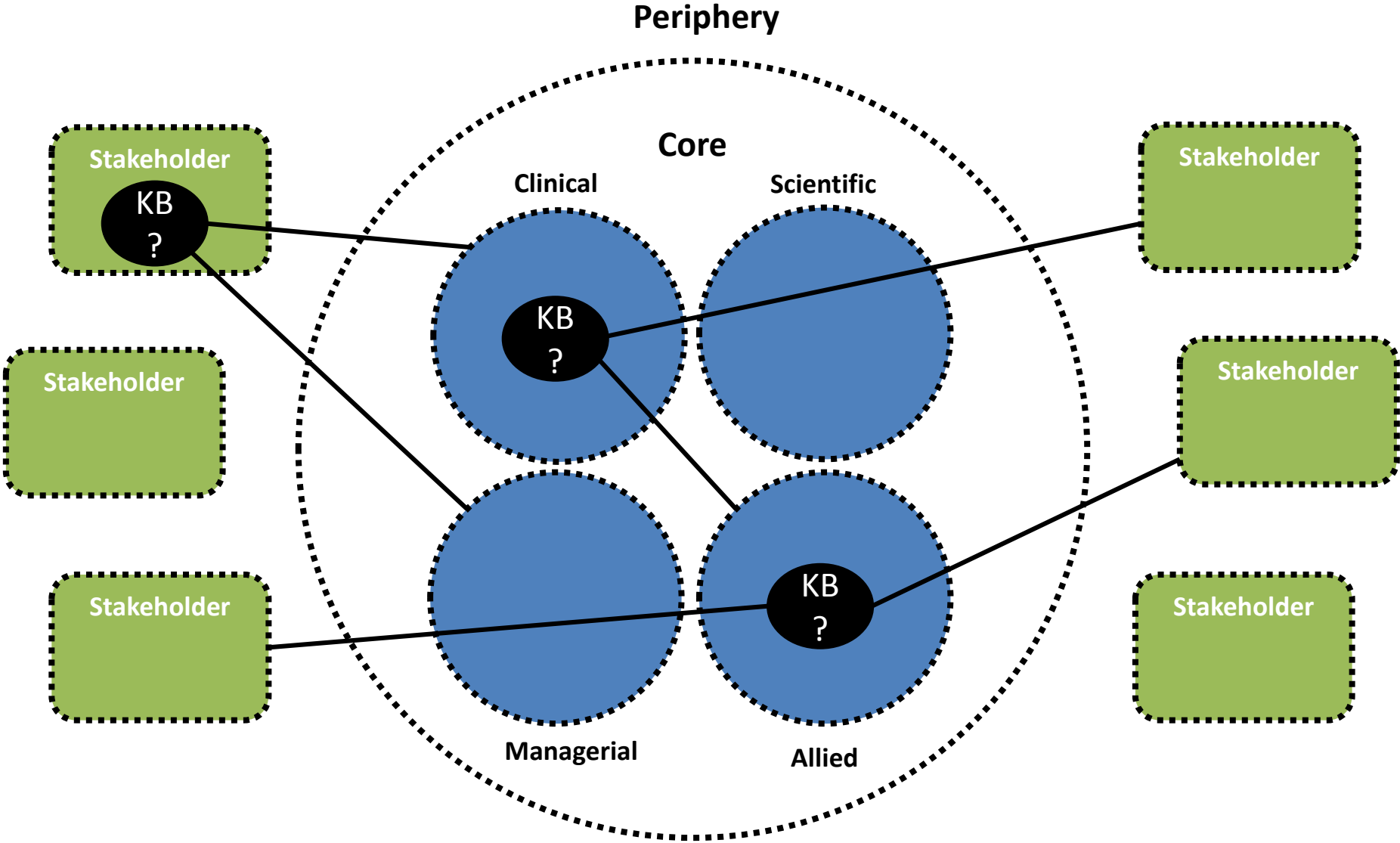
Comparison of Brokers, domains and knowledge exchange

Themes	Issues	Requirements / Competencies
1. Brokers	KB Epistemic community linkage:	• Clinical • Scientific • Allied professional: PPI, education, policy maker, etc • Research
	Situated relations:	• Access to setting • Trust within setting • Credibility within setting
	Working alone / collectively:	• Linear – 1 specialist KB performing a specific task • Parallel – 2+ KBs working on the same task
2. Domain	Settings:	• Care setting • Community setting • Commissioning / policy setting • Research setting
	Partners:	• Healthcare professionals: doctors, nurses, etc • Public involvement • Commissioners / policy makers • Researchers • Educationalists
3. Exchange	Nature of boundary:	• Internal (within study network) • External (wider stakeholder community)
	Stakeholder epistemic community association:	• Clinical • Scientific • Allied professional: PPI, education, policy maker, etc • Research

Boundary spanning

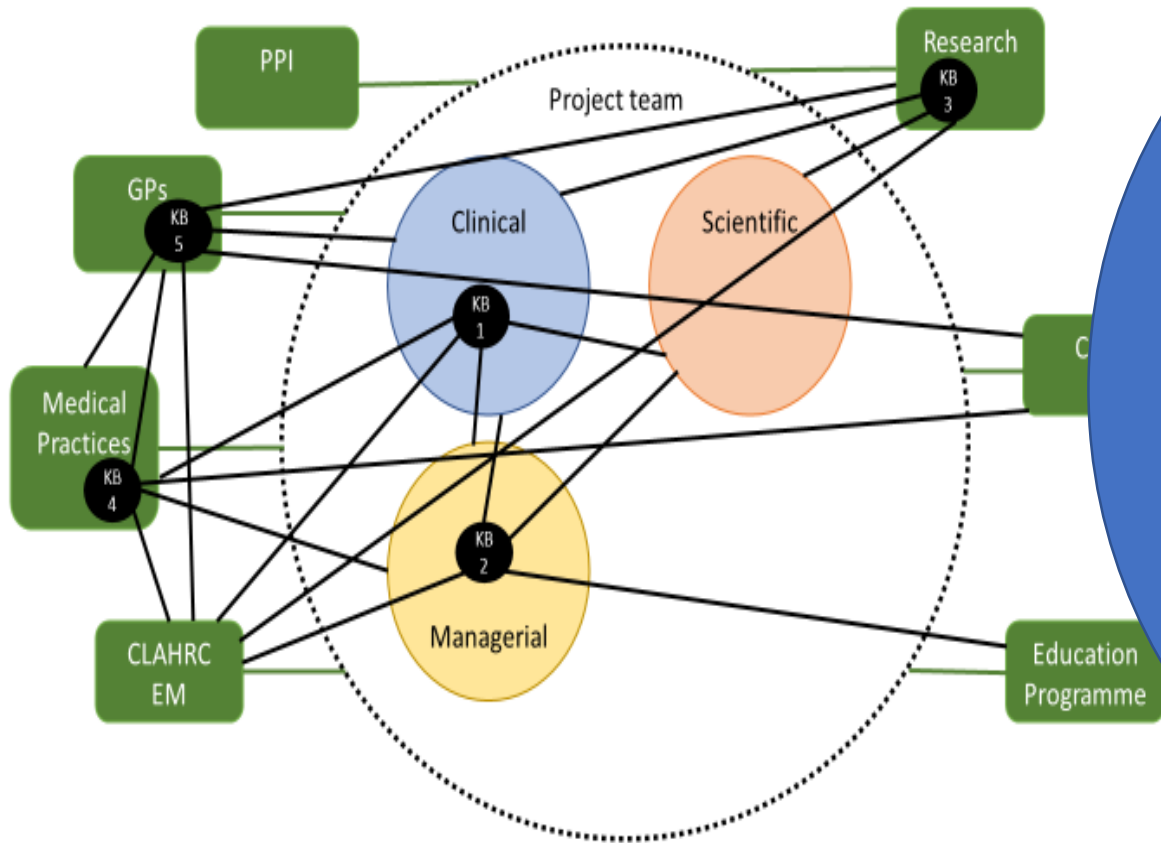| Themes	Issues	Instances	Knowledge Brokering
4. Boundary	Syntactic:	**Transferring** Project 2: **KB4** facilitate project dissemination / implementation by liaising with their team of care professionals.	***Information processing towards common language*** Using position and network to exchange knowledge. Employing a common lexicon to frame the intervention in a way that that was fitting for practitioners within the implementation setting.
	Semantic:	**Translating** 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.	***Interpretation towards shared meanings*** Complementary sequentially working in broker chain. Creating an effective means of fostering common meanings and information exchange with stakeholders.
	Pragmatic:	**Transforming** 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.	***Alignment* and common agenda** Parallel working 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.

Sharing across Knowledge Barriers

Periphery

Core

Clinical   Scientific

KB
?

Stakeholder
KB
?

Stakeholder

Stakeholder

Stakeholder

Stakeholder

KB
?

Stakeholder

Managerial   Allied

Stakeholder

KB
?

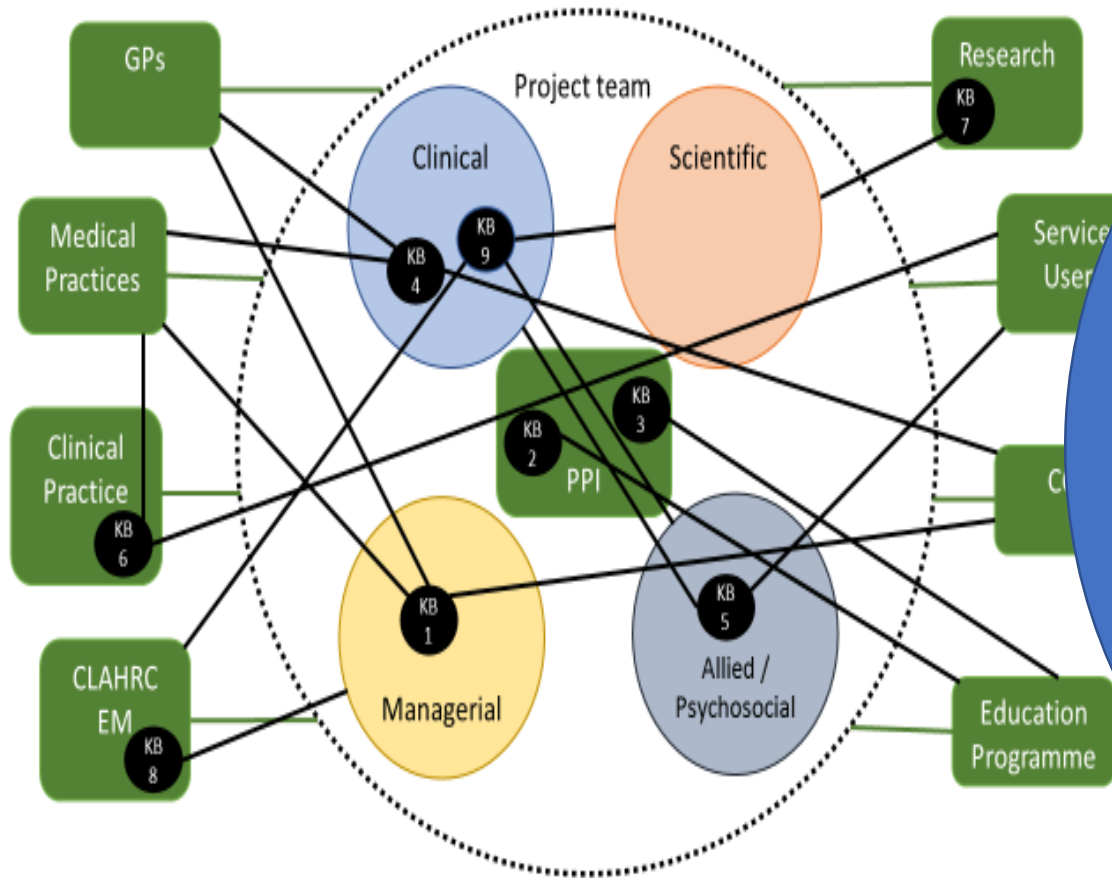· · · · · · Knowledge boundary (syn, sem, pra)

———— Knowledge exchange

Project 1: knowledge brokering web

I have been involved with the steering group, I have been involved with making sure that the steering group has go the right advice from the perspective of the GP and the CCG. And to make sure that the have access to practices and to the data.

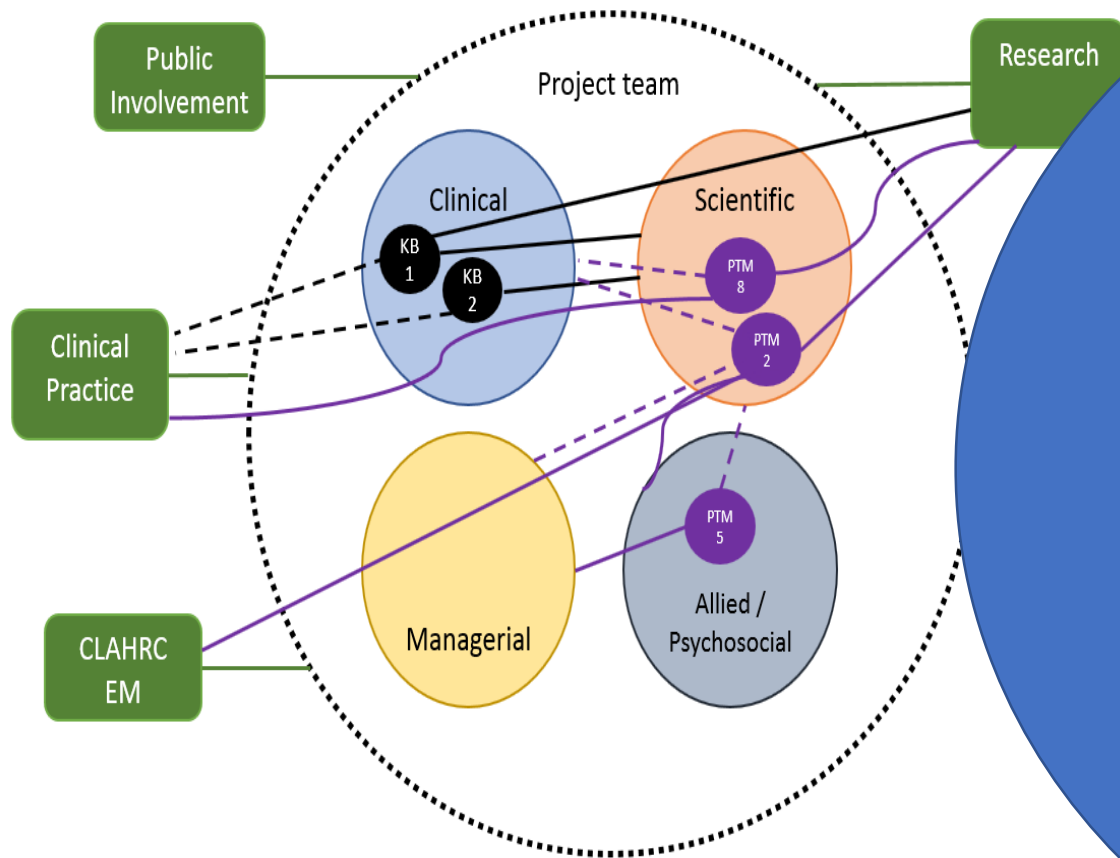(Project 1, KB5)

Project 2: knowledge brokering web

To me knowledge brokers are somebody that's almost sharing, facilitating knowledge I think. To me I always think of brokering a deal, something like that, making it happen.
(Project 2, KB9)

Project 3: knowledge brokering web

Public Involvement

Research

Project team

Clinical

Scientific

KB 1

KB 2

PTM 8

PTM 2

Clinical Practice

Managerial

PTM 5

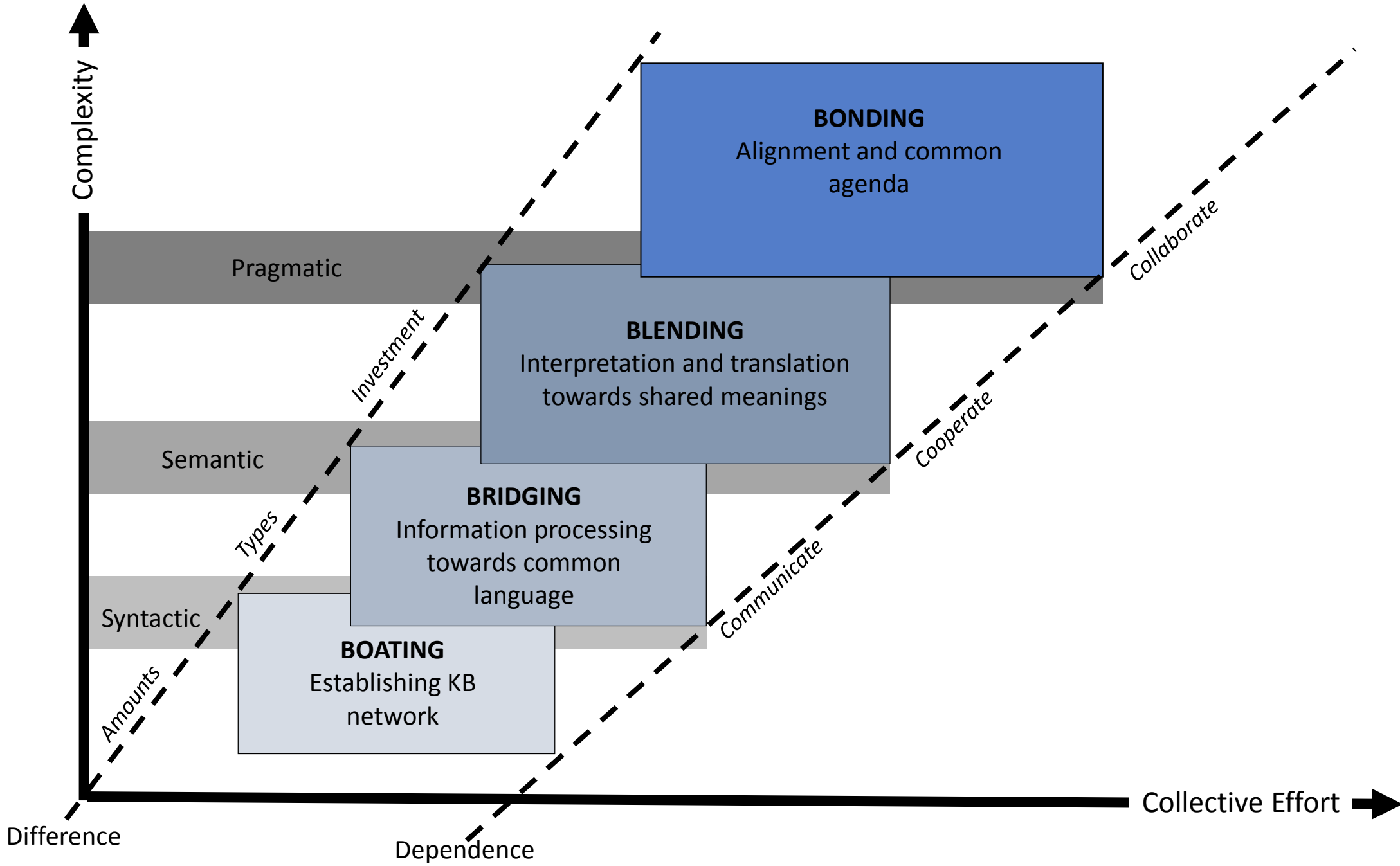Allied / Psychosocial

CLAHRC EM

We've had trouble with recruitment, the study hasn't gone as we wanted, we now haven't met for months, so I'm really quite out of the loop. So I don't actually think I've got anything to … I don't know what new evidence we're going to have, so that makes me question what it is that I can do as a knowledge broker, really.

(Project 3, KB2)

Maturation of knowledge brokering

- Often starts with one-to-one or inter-personal connections across community divides – **boating** or shuttling between two worlds

- As connections become stable and seen as important, brokers help to form more routine and regularised systems– fixed connections or **bridges** that systematise exchange between key contact points

- As connections and shared understanding mature, brokers facilitate more translational role in **blending** the meanings and enabling the uptake of know-how

- Finally, brokers can build upon the above to foster shared values, agenda or purposes leading to closer **bonding** or alignment between groups

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 t**eam-game**

Thank you!