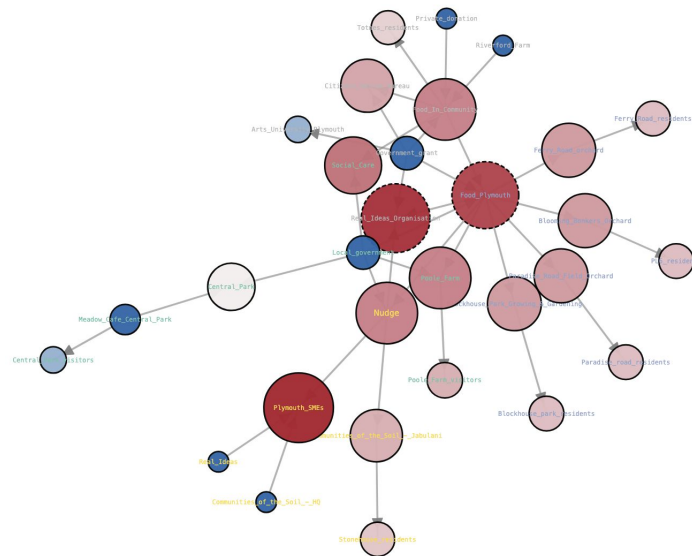






We're a social enterprise that uses design and systems thinking approaches to make data more human-centred and impactful for wider society.



Martin Howitt
Technical Lead



Lucy Knight
Data Lead

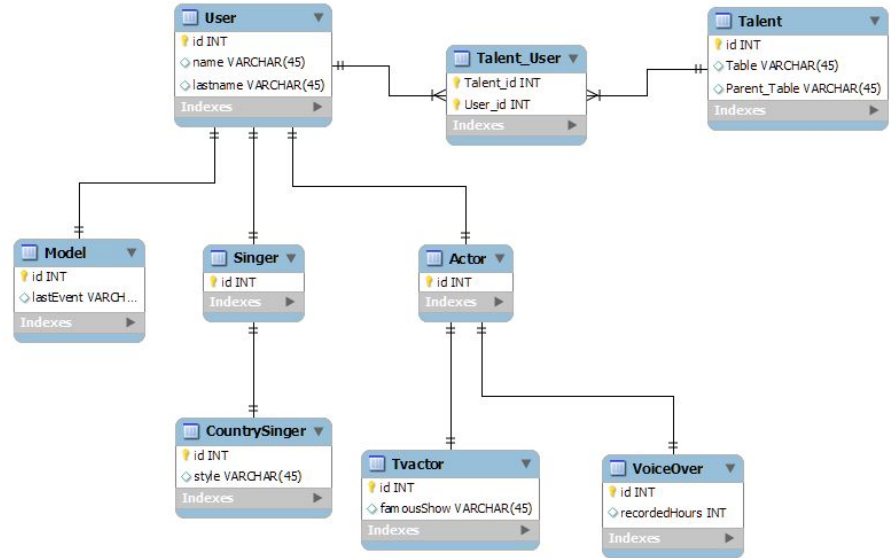


Simon Gough
Design Lead



We  databases

A relational database is a series of tables (relations) that represent entities and their characteristics.

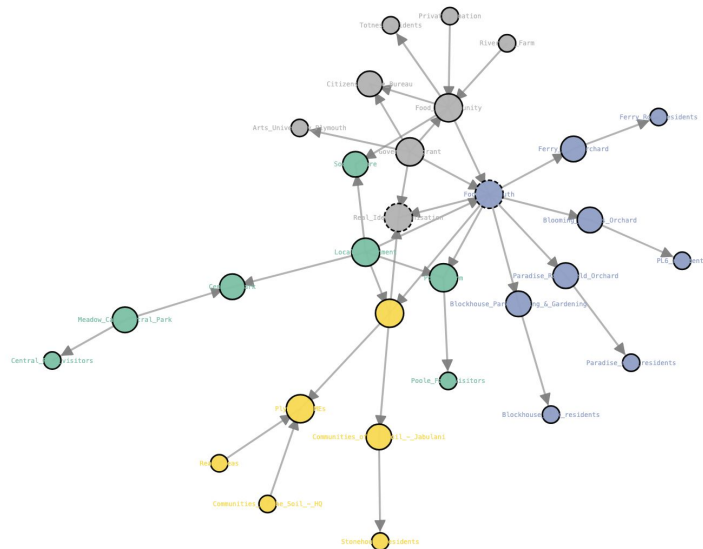


Examples



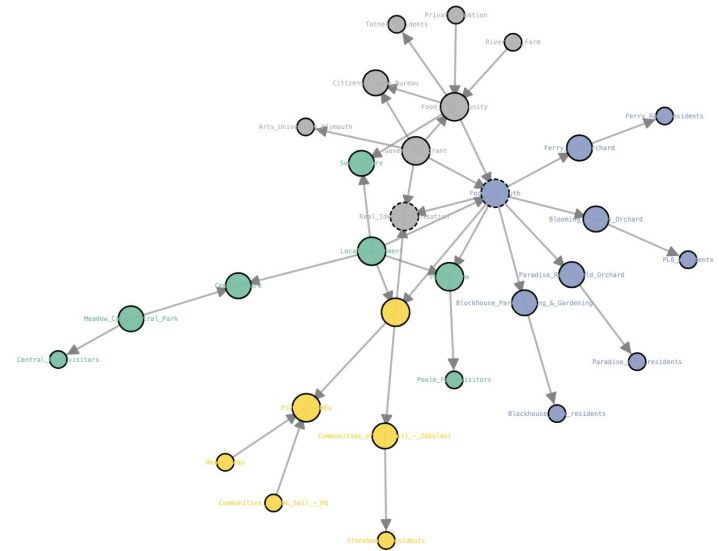
A graph database contains information about entities and their relationships (nodes and edges).

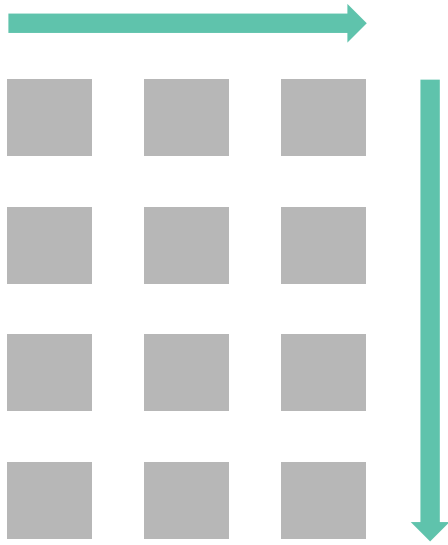
Examples



Graph databases allow for emergent properties to be captured that can then support decision making.

Nodes and relationships can be unique allowing for much richer nuance and detail.





Critical Systems Heuristics is a way to support the decision-making around what lies inside a system and what does not.

CSH can help us explore projects with a more purposeful and collaborative approach.

How might graph databases support CSH?

1

The visualisation element of graph databases can support the critical discussions of CSH.

2

Graph databases can support the exploration of inter-relationships and boundaries of systems by providing a modelling tool.

3

The exploratory nature of graph databases supports the trial and error approach of heuristics and allows for a sharpening of the key questions we might ask.

4

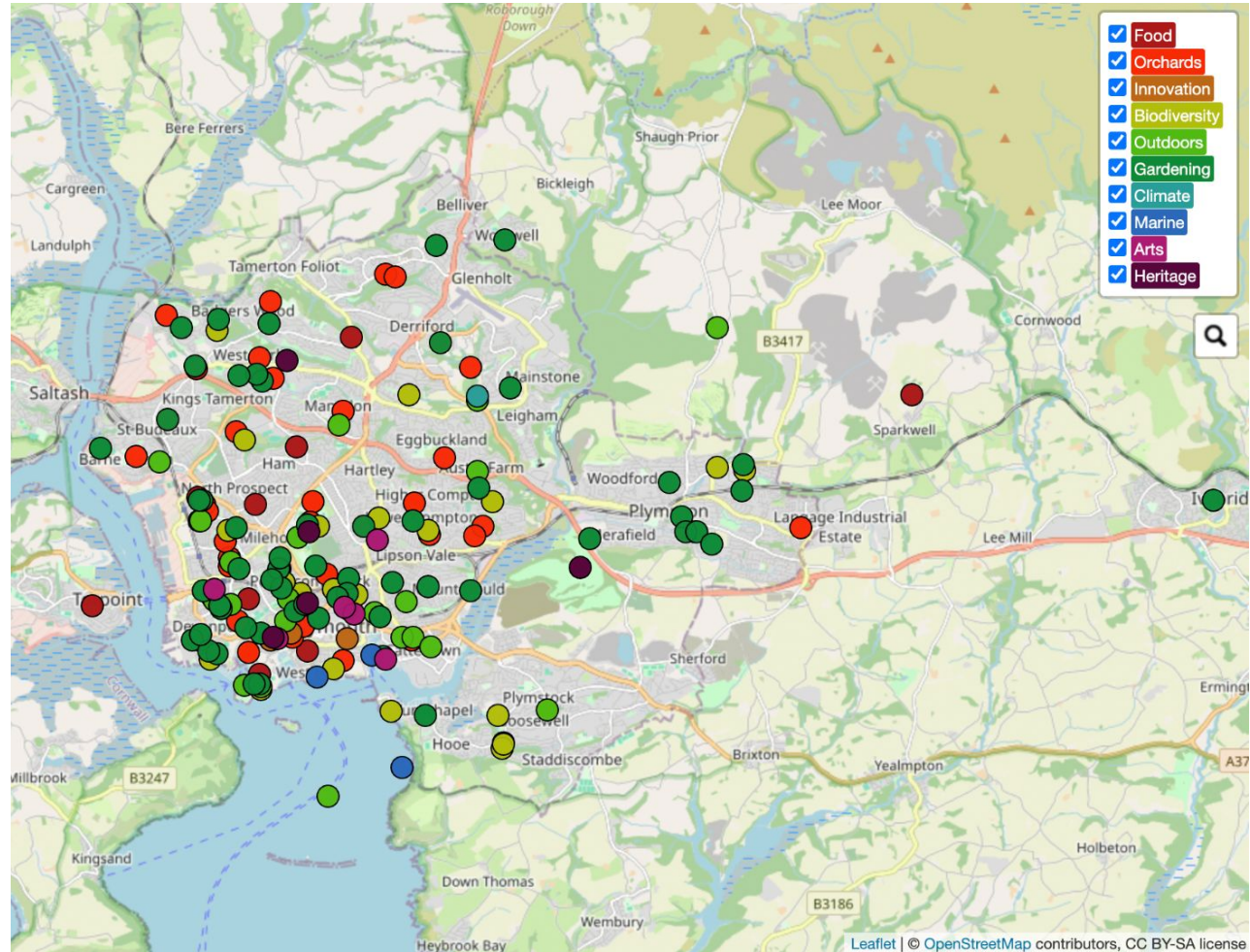
Most importantly perhaps, graph databases can provide a tool that support collective decision-making by providing a focus.

Growing With Nature

The image shows an outdoor event taking place in front of a large, two-story building with green corrugated metal siding. A group of about ten people, including children and adults, are gathered around a wooden table. A green banner with the text 'GROWING WITH NATURE' is visible behind them. To the right, a blue Nissan SUV is parked, with the license plate 'AF09 NLY'. In the background, a banner on a trailer features the word 'APPLES' and the word 'CELEBRATE'. The scene is set on a paved area with a grassy hillside and residential buildings visible in the distance under a clear blue sky.

Growing With Nature is based in Plymouth and evolved out of the Green Minds project.

There are now over 200 members who are, in some way, connected with growing food, permaculture or regenerative practice.



We've been helping to build a network through meeting people and connecting them.



But what is the project for?

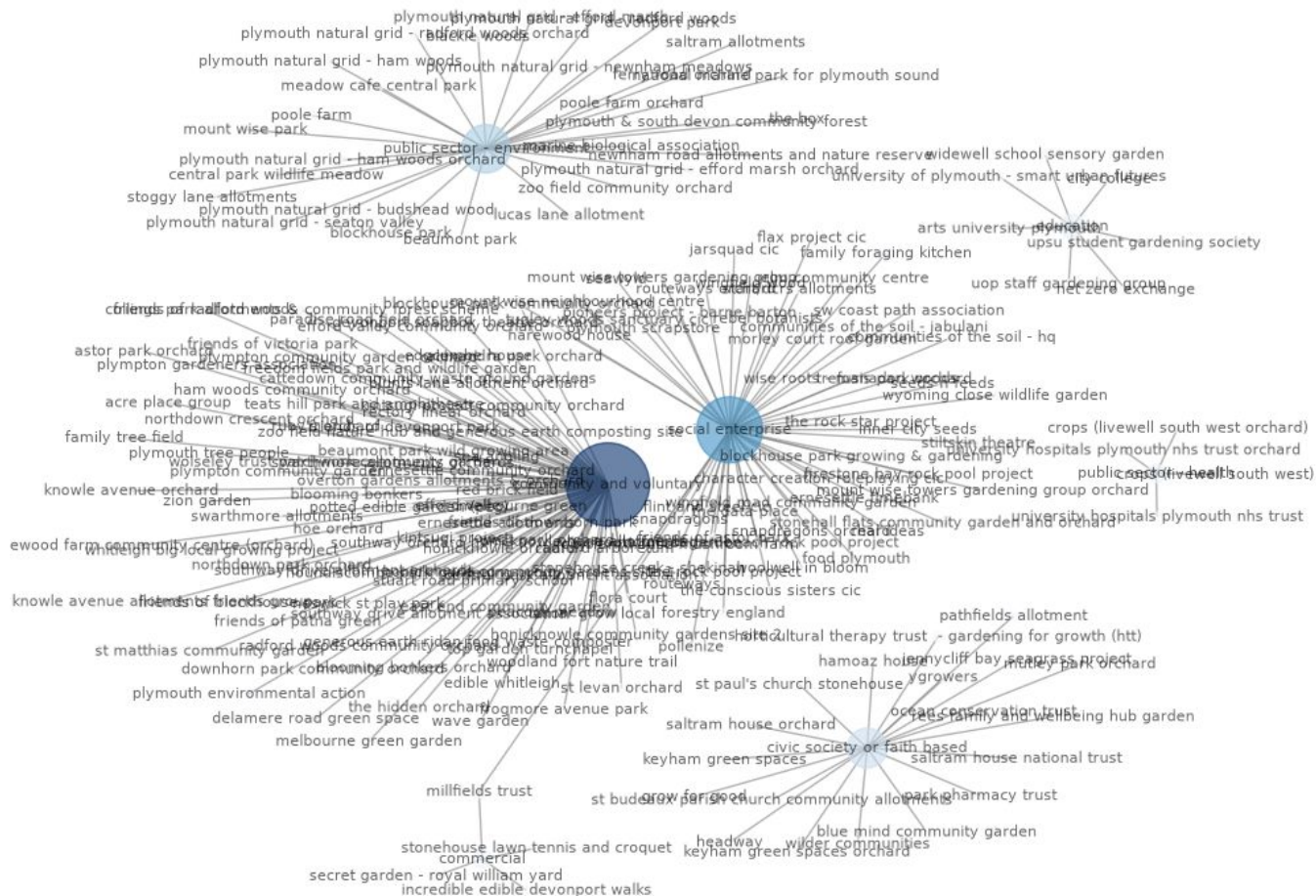
How can the questions at the heart of CSH guide our use of data?

Ulrich identified four key roles:

1. The client role – impacted by the system's purposes
2. The decision-making role – which controls the system
3. The expert role – which informs the system
4. The affected role – which ultimately legitimises the system

These roles could potentially map to the network members but what would that really tell us?

Remember this?



Capturing
relationships
is more
powerful

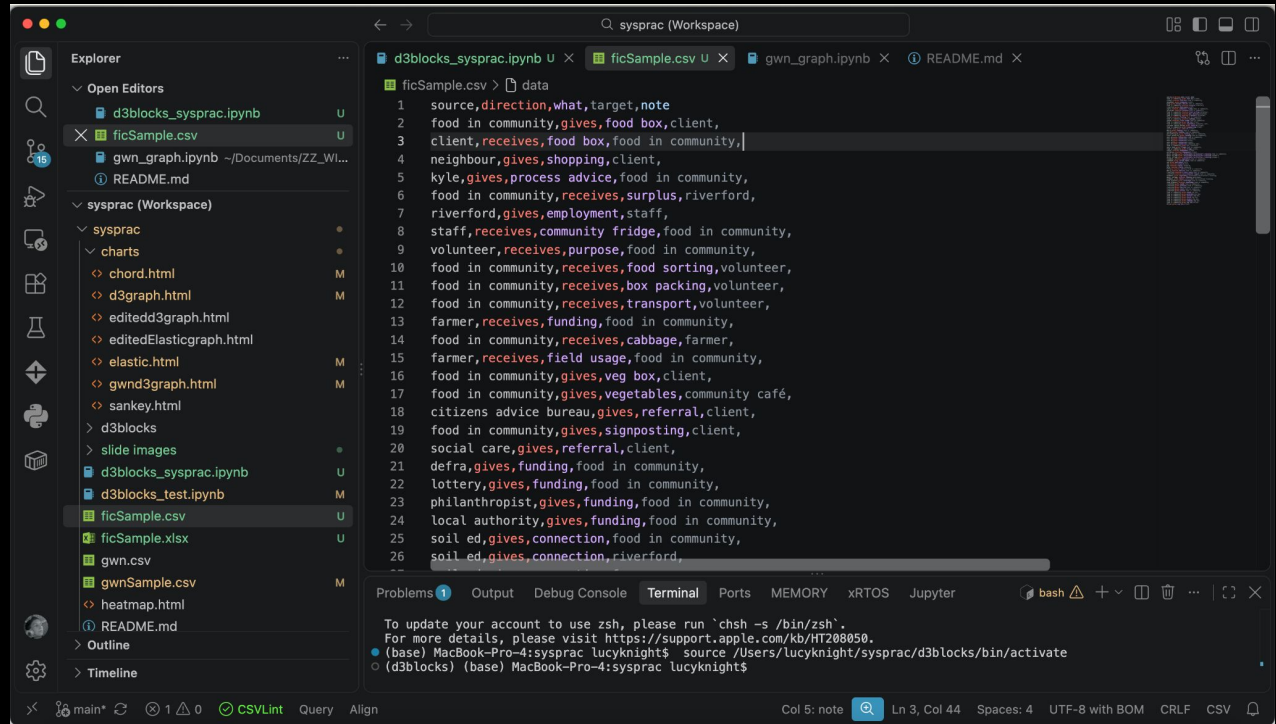
The client role > **the beneficiary relationship**

The decision-making role > **the control relationship**

The expert role > **the knowledge relationship**

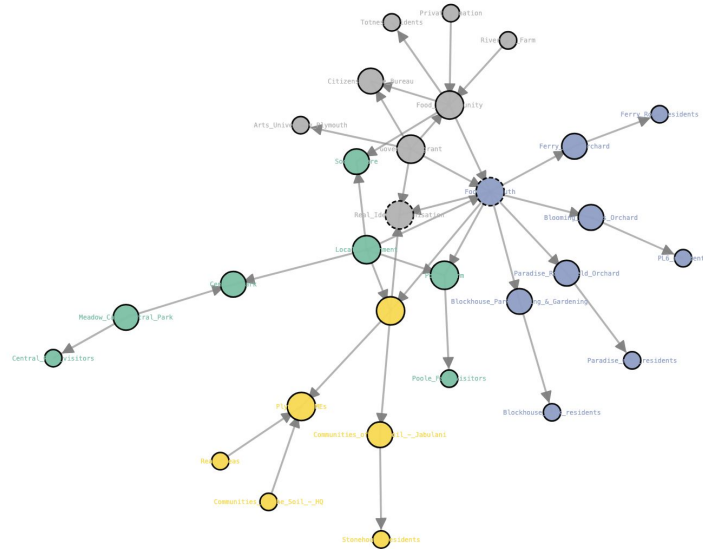
The affected role > **the impact relationship**

Remember that a graph database can capture unique qualities about each node and relationship.

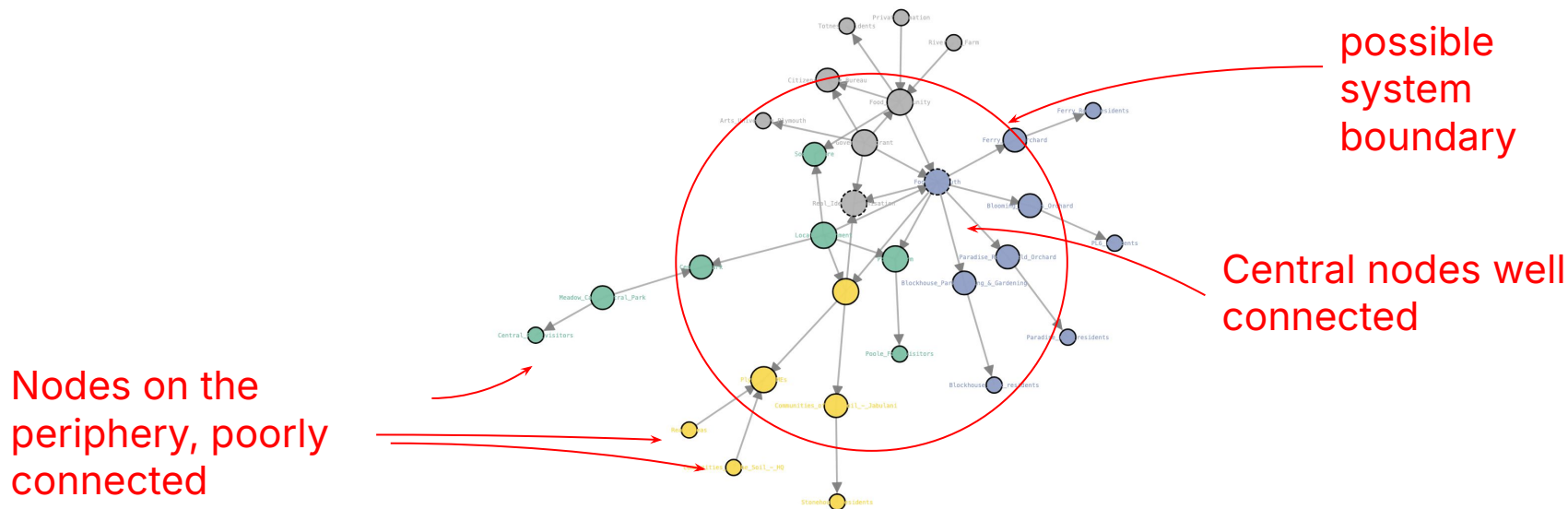


What can we show?

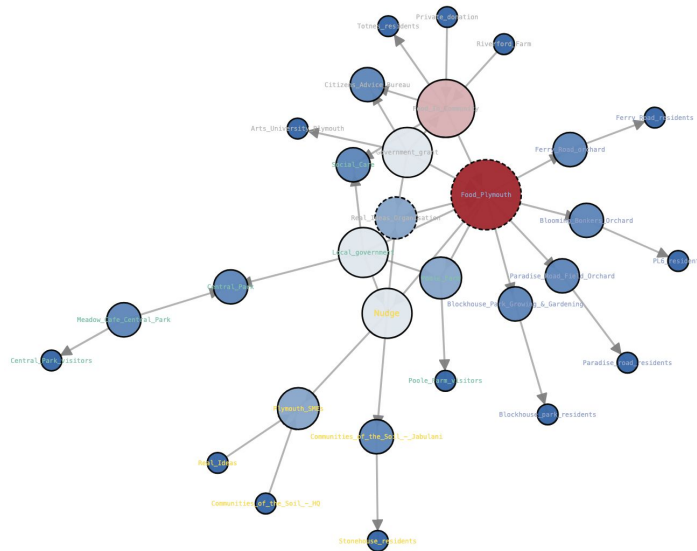
Graph databases and visualisation methods can support different ways of understanding



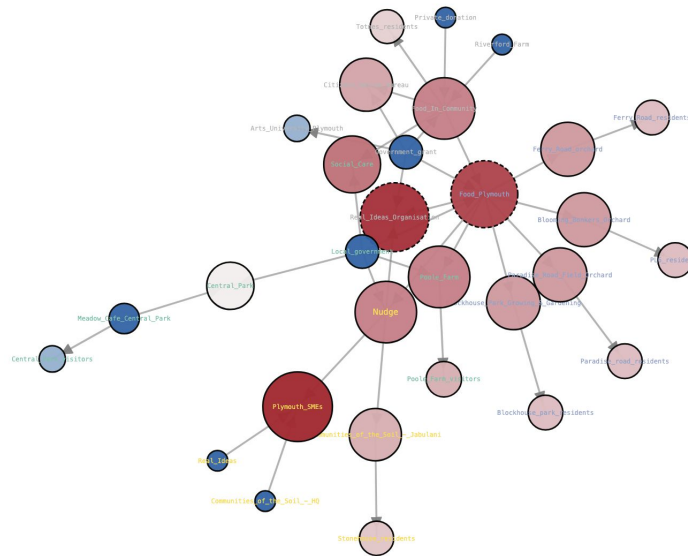
Different forms of connectedness



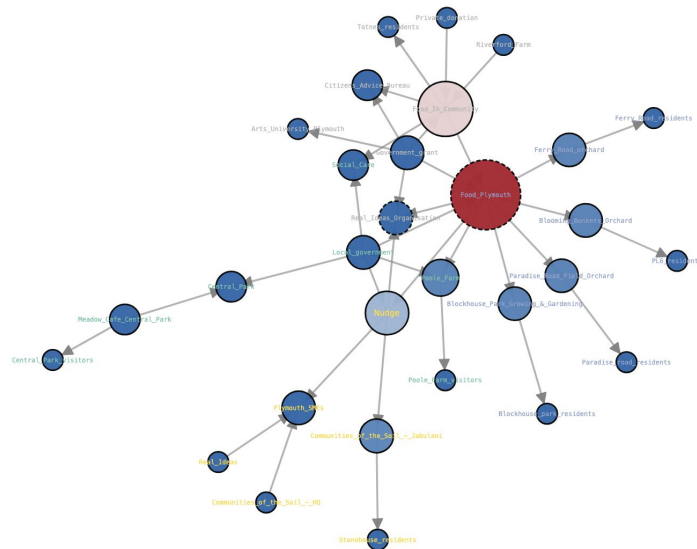
Degree centrality
measures how many
other things a node is
connected to.



Closeness centrality shows how embedded a node is in a network and how complex are the relationships.



Betweenness centrality shows how many times a node is important in getting something from one place to another.



Some key points for us

1

Graph databases can categorise relationships. For example we might tag them as expertise or control relationships, in line with CSH.

2

This combination of views provides a rich way of exploring current relationships and identifying gaps or imbalances.

3

As well as the observational mode we can use a graph database to model the normative mode of CSH.

4

Ultimately this is about supporting discussion and critique, not replacing it.

Systemic questions for Growing With Nature

- Is the network resilient or does it depend on one or two individuals, and how can that be addressed?
- Is the network actually helping or do the groups work against each other?
- Do the core policy generators (city council, POP, Food Plymouth) need to intervene to strengthen the network, and if so how?
- How can we calculate the impact this network has, and how can we leverage it?

Questions for you

- Do you think this approach might be useful in projects you are working on?
- What do you think we're missing or getting wrong?
- Are there any other approaches that you've used a bit like this?

Resources

- Arrows (graph DB prototyping tool)
<https://arrows.app/>
- Growing with Nature:
<https://growingwithnature.info>
- D3blocks (network analysis and visualisation library):
<https://d3blocks.github.io/d3blocks/pages>

Thanks

Find out more about us:



<https://www.thedata.place>

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