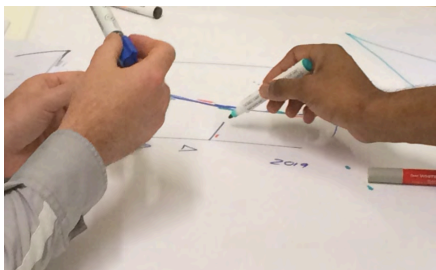




UTS Master of Data Science & Innovation  
 36104 Data Visualisation & Narratives (DVN), 31<sup>st</sup> Mar. 2021

# Knowledge Art

## or... "Participatory Improvisational DVN"



**Simon Buckingham Shum**

Director, Connected Intelligence Centre  
 Professor of Learning Informatics  
<https://cic.uts.edu.au> / @sbuckshum





**Meetings: an ancient, pervasive human activity**

**They're fundamentally about crafting narratives**

**Visualisations are tools to help us tell better stories about how the world was, is, might be...**

# Expanding how we think about “DVN”

Beyond **EXPLORATORY viz**: expert tools to understand the data and **EXPLANATORY viz**: the product of your analysis with a specific message (i.e. “data storytelling”)

What about viz. to support the **FRAMING** of the problem?

How **MALLEABLE** are our visualisations in response to client feedback?

How **FLUENT** are we with our tools, especially when the conversation takes an unexpected turn?

**Think about a time that you (or someone else) introduced a visual, which really engaged those present and led to new clarity/consensus**

What was the context?

Why did it work?

**Think about a time that you  
(or someone else)  
introduced a visual, which  
completely failed**

**What was the context?**

**What went wrong?**

**DVN with a twist:**

**“Participatory Improvisational DVN”**

A pervasive, critical, and surprisingly neglected piece of the DVN jigsaw puzzle:

**What’s YOUR role in helping visualisations  
add value to a meeting?**

**What decisions do you make,  
that can make a difference?**

What makes a viz. “participatory”?



# What makes a viz. “participatory”?





# What makes a viz. “participatory”?



# What makes a viz. “participatory”?



# What makes a viz. “participatory”?

The image shows a screenshot of a OneNote page titled "Phoenix+Sky+Harbor+Internationa". The page contains a map from Google Maps showing directions from Phoenix Sky Harbor International Airport to 951 W Main St. The map is annotated with red handwritten circles and lines. A red arrow points from the text "Here it is!" to a specific location on the map. The text "Awesome!!!" is written in red above the map. The page also includes a sidebar with "Recent Notes" and a list of links.

Recent Notes

- Phoenix + Sky + Harbor + Internat...
- Untitled page
- http://www.windowscentral.co.../onenote-app-windows-811...
- OneNote app for...  
OneNote app for Windows 8.1/RT updated with long...
- http://www.lovemyurface.net/...  
http://www.lovemyurface.net/p...content/uploads/2014/12/love-my-Surface-Skype-Connection-Issue...

Phoenix+Sky+Harbor+Internationa

Thursday, February 15, 2015 7:39 PM

Awesome!!!

Page 1 of 3

Go  
Step  
Fly  
Drive

Google

Drive 11.4 mi, 15 min

Directions from Phoenix Sky Harbor International Airport to 951 W Main St

Here it is!

Phoenix Sky Harbor International Airport

# What makes a viz. “participatory”?

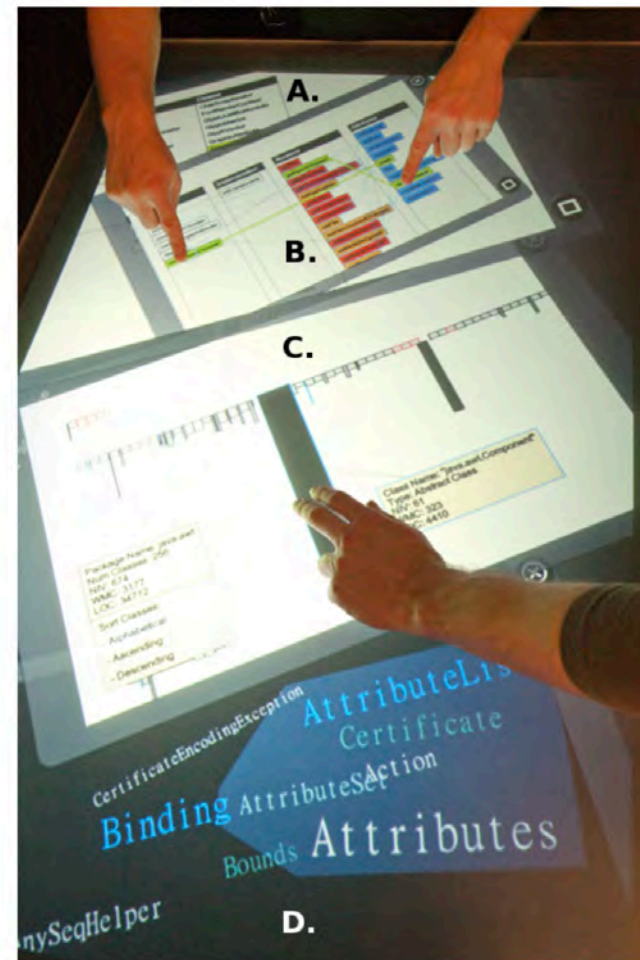


Figure 1: SourceVis. Users interacting with visualizations: A. Metrics Explorer, B. Class Blueprint, C. System Hotspots View, D. Wordle Vocabulary.

# What makes a viz. “participatory”?



**A session where participants are more engaged in talking with each or working on something else, while someone works on the ostensibly shared visualisation**

# What makes a viz. “participatory”?



When the visualisation plays an integral role in shaping the discussion

# What makes a viz. “participatory”?

**LAND USE PLANNING (LUP) TOOLS**  
**A bottom-up tool**



**PARTICIPATORY 3D MAPPING IN THE UPPER SURINAME RIVER BASIN**

A tool for an inclusive land use planning and decision making in Suriname.

Sara O.I. Ramirez Gomez



<https://twitter.com/ppgis/status/797401186269859840>

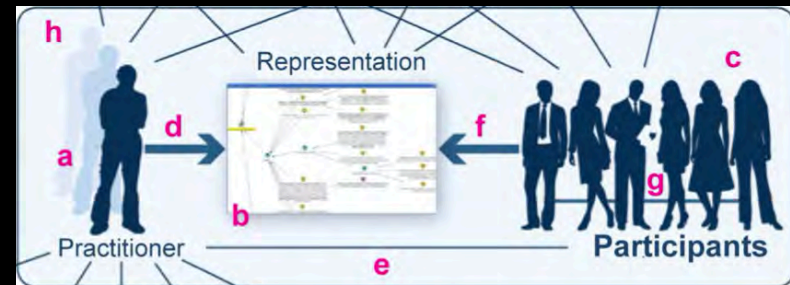
# What makes a viz. “participatory”?





# Knowledge Art framework: the focal activity

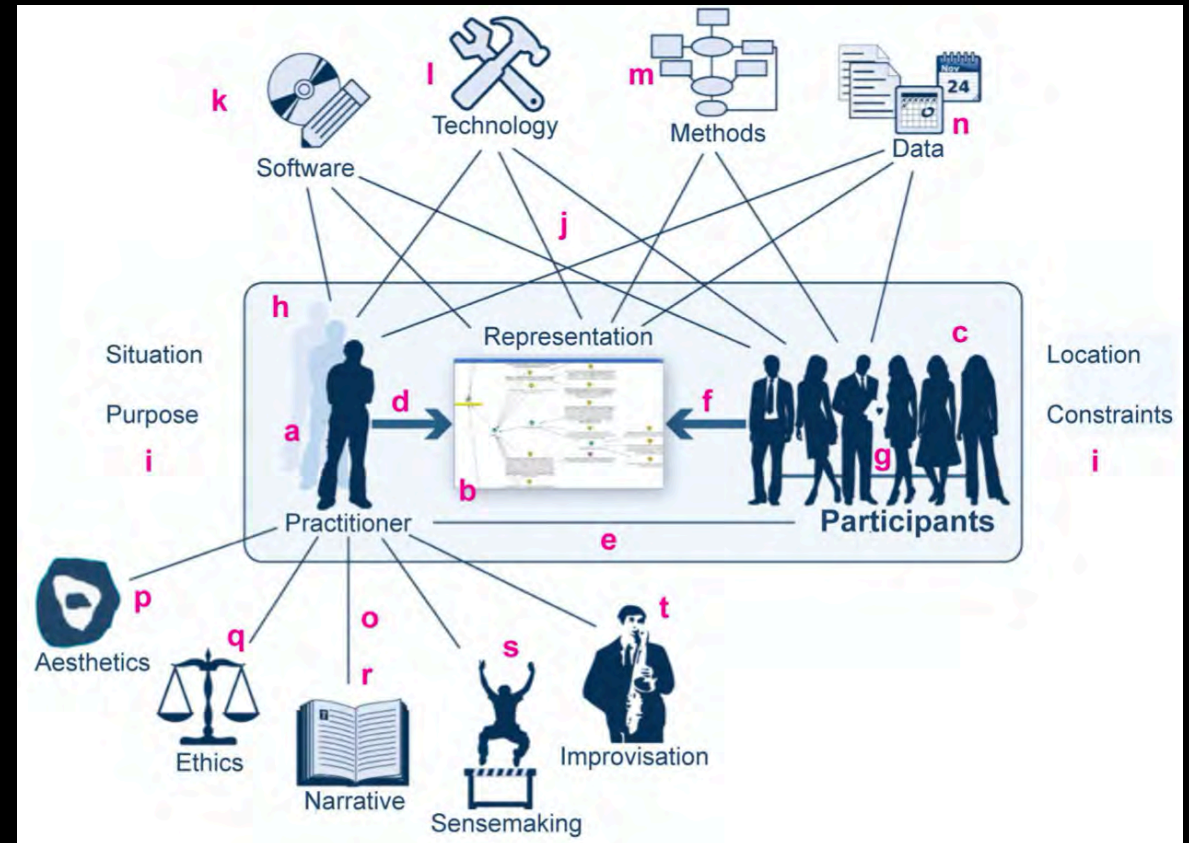
The facilitation skillset  
of crafting participatory  
visual representations  
to facilitate joint sensemaking





# Knowledge Art framework: critical fluencies

The facilitation skillset  
of crafting participatory  
visual representations  
to facilitate joint sensemaking





# Knowledge Artistry

**Aesthetics.** The choices we make for shaping a visualisation – what's foregrounded, excluded, how polished, how editable...

**Ethics.** How our moves affect the other stakeholders: recognise/ignore their contribution, change meaning, shift topic...

**Narrative.** The context for a session: spoken/unspoken expectations of why we're here, how we should proceed, what kinds of meanings will be made, or outputs produced...

**Sensemaking.** How we interpret unexpected events or anomalies

**Improvisation.** How well we make spontaneous, unplanned moves with the visualisation when breakdowns occur

- “Raw viz” (direct from your power tools) or a simplified version, more accessible to lay people?
- Does a fixed or malleable viz open up more productive conversations? What's editable?

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**Improvisation.** How well we make spontaneous, unplanned moves with the visualisation when breakdowns occur

- Does a visualization empower or disempower stakeholders? Amplify or muffle their voices?
- If the viz tool can't reflect someone's feedback, what are we saying to them?
- When do you change the topic of conversation in order to focus on un-explored parts of the viz?

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**Improvisation.** How well we make spontaneous, unplanned moves with the visualisation when breakdowns occur

- What are the power dynamics and trust levels?
- Are we here only to validate your analyst's story, or to elicit new stories?
- Are the stakes high? Will this viz shape future narratives? (e.g. impact people, agendas, arguments...?)

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**Improvisation.** How well we make spontaneous, unplanned moves with the visualisation when breakdowns occur

- “This viz isn't right: can you show me teams 1-3 + 23, masking dimensions D1+D2?”
- How do we handle surprise and discontinuity: what do we do if the viz conflicts with their understanding?
- Sketching and tinkering are ways to articulate and sharpen emerging thoughts: is this representationally possible, and encouraged?



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**Improvisation.** How well we make spontaneous, unplanned moves with the visualisation when breakdowns occur

- “Disciplined improvisation” combines pre-defined, structured methods with creative, spontaneous ones: our software toolkits need to facilitate this...
- What is your improvisational repertoire with the representations?
- What’s the learning curve?

**“Knowledge Art”  
in the kitchen  
with my wife  
and 6 yr old!**

<https://vimeo.com/69912504>



## “Knowledge Art”: how to get better at it?

Here are some snippets of feedback that I've given in mentoring sessions.

You may find these help convey the kinds of practices we're talking about...

## “Knowledge Art”: example feedback

It was good that you tried to be responsive to the clients, but you didn't give them the chance to shape the conversation at the start.

You had a lot of your own pre-prepared work to present and did not pick up quickly enough that they were not very engaged.

Try to adopt a more open disposition so that it is more client-led, prepare for but don't dominate the direction of the conversation, and be ready to start sketching in response.

## “Knowledge Art”: example feedback

You gave really clear encouragement to the clients to get stuck in and use their pens. You did this in a fun but also serious way.

This seemed to pay off when one client started to annotate your sketch, and continued to throughout the meeting.

The other one is less ready to, and might have been encouraged to?

## “Knowledge Art”: example feedback

You dominated the airtime with your show and tell, since you seemed to have framed your role to be “the expert advisor”, rather than the advocate who will help the client tell their story (they are the domain experts, not you) using data.

## “Knowledge Art”: example feedback

Clients could literally reach out and gesture around the visuals. If you had encouraged them to get their pens out, you could have had them co-designing with you. It was only at this point that we really got into thinking through visualisation.

## “Knowledge Art”: example feedback

You recognise the influence that your decisions had on the clients’ access to the representation (table vs whiteboard), and ability to edit it (the need to give them ‘permission’ to get their pens out and help shape the design).

There are ways to overcome the natural sense of social reserve that can hold people back from pitching in, otherwise you can dominate the airtime, and they don’t want to invade your ‘personal space’ around the whiteboard/flipchart.



## “Knowledge Art”: example feedback

You recognise that you struggled to improvise around your map when they started to get creative with new ideas. As you note, perhaps at those moments you can also invite the client to sketch their thoughts.

Alternatively, you can ask for clarification of what the specific problem is that they believe the visualisation should solve.

## “Knowledge Art”: example feedback

I appreciate your observations about which tools made you feel safe and vulnerable, and their different ‘affordances’ for sensemaking. You not only experienced but recognised the challenge of simultaneous listening and capturing in real time.

It’s good to see that you realise the importance of empowering the client to shape the outcomes not only verbally but visually.

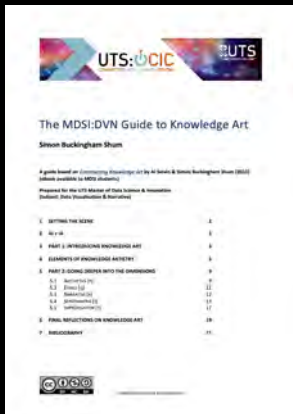
## “Knowledge Art”: example feedback

You brought a laptop to show a spreadsheet — but you only opened this when one of the clients requested, after about 10mins of monologue.

You did not seem to consider using the wall-monitor instead of leaving clients trying to see your small laptop screen, and you did not even zoom into Excel to ease collaboration with a bigger font.

So you must take control of your visual environment and use it to your advantage.

# Thank You! To learn more... practice... and read...



## MDSI DVN Guide to Knowledge Art

<http://simon.buckinghamshum.net/2019/05/knowledge-art-learning-resources>

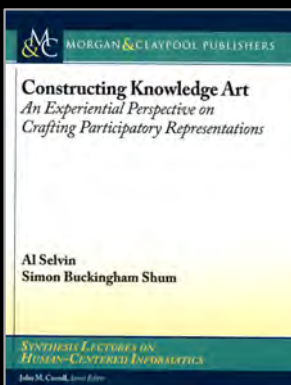


## Al Selvin: Open University seminar

<http://simon.buckinghamshum.net/2011/12/making-representations-matter-al-selvin-phd>

## Knowledge Art blog

<http://knowledgeart.blogspot.com>



## ...based on the book...

Selvin, A. & Buckingham Shum, S. (2015). *Constructing Knowledge Art: An Experiential Perspective on Crafting Participatory Representations*. Morgan Claypool (Synthesis Lectures on Human-Centered Informatics).

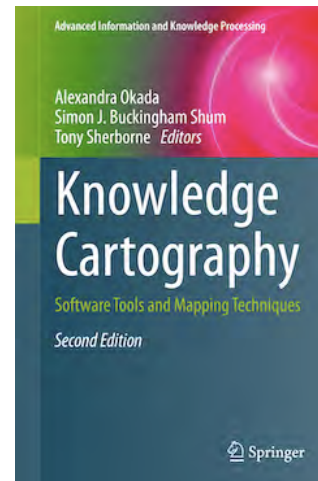
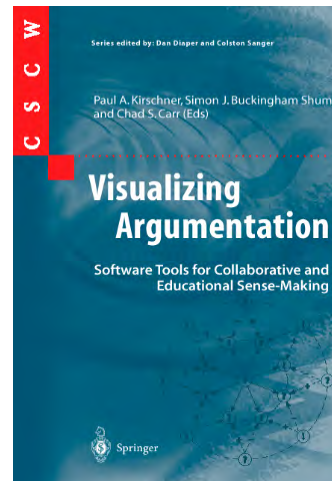
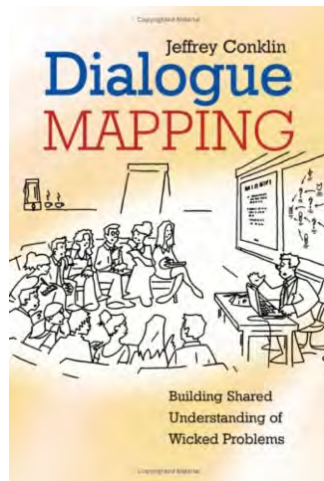
<https://doi.org/10.2200/S00593ED1V01Y201408HCI023>

## ...based on the PhD...

Selvin, A. (2011). *Making Representations Matter: Understanding Practitioner Experience in Participatory Sensemaking*. Doctoral Dissertation, Knowledge Media Institute, The Open University, UK.

<http://oro.open.ac.uk/30834>

# To go deeper on mapping ideas + dialogue...



All books in the UTS Library. Plus these blogs, papers, videos...

Jeff Conklin: <http://cognexus.org>

Al Selvin: <http://bit.ly/alselvin>

Paul Culmsee: <http://www.cleverworkarounds.com/category/dialogue-mapping>

Simon Buckingham Shum: <http://simon.buckinghamshum.net/tag/compendium>

Kailash Awati: <https://eight2late.wordpress.com/category/issue-based-information-system>