

Monitoring and Evaluation NEWS

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Network visualisation of qualitative data

(or “Participatory aggregation of qualitative information (PAQI)” – yes, a bit of a mouthful)

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1. A summary of the core idea

Problem: How do you aggregate large amounts of qualitative data, in a way that does not destroy the interesting details, and/or prematurely impose your own interpretations on the data ? E.g as we often do by counting frequencies of references to types of things or events of specific interest to ourselves as researchers/evaluators.

Assumption: If we are able to develop better representations of complex bodies of information then this will provide us with more informed choices about how to respond to the content of that information.

The core idea: A combination of two methods can help us aggregate and analyse qualitative information in a way that is participatory, transparent, and systematic.

The two methods are:

1. Pile sorting / card sorting: A simple participatory method of eliciting people’s tacit knowledge, especially the way they categorise people, objects, events etc

2. Social Network Analysis (software): A systematic means of aggregating, visualising and then exploring relationships between people, objects, events

Linking concept: When people categorise people, objects, events, etc, they create *relationships* between those events. Two or more entities in the same category can be seen to be related to each other, by that joint membership. And when they categorise objects they also add information to them, in the form of category labels or descriptions (a form of what Dave Snowden calls self-indexing). This could probably also be called [meta-data](#).

2. Building and exploring collective categorisations of qualitative data

A. Pile sorting

Pile or card sorting is a very simple exercise, where participants are asked to sort a set of objects into groups, on the basis of their similarity (i.e. the attributes that they share), *as seen by the participant*. Having done so, participants are then asked to explain what the objects in each group have in common, and a label is developed for that group, on the basis of that description.

The particular kind of sorting discussed here and in sections 2 is “open sorting” by multiple participants, who are given a common set of objects to sort into categories of their choice. Open sorting means participants are allowed to sort the set of objects into any number of categories, as they see fit. In section 7 a different application of the same basic idea is explained, using closed sorting.

1. Possible objectives for a project (if the focus is on planning),

or

2. Impacts of the project that have been noticed so far (if the focus is on evaluation)

With small groups sorting could be done by individuals. With larger groups, it may be more appropriate to have sub-groups (representing different interests) do their own joint sorting exercise.

Sorting exercises can be done in workshop settings, or online, using services such as [WebSort.net](#) (my preference) or [OptimalSort](#). Online sorting can be efficient in terms of use of time, but opportunities are lost to discuss with the participant their experience of the sorting exercise and their rationale for the completed sorting.

PS1: I have set up [a seperate post](#) on references and resources on card sorting

PS2: How is pile sorting different from [tagging](#)? (a) Tags are usually only one or two words long, whereas descriptions given in pile sort exercises can be whole sentences or longer. The qualitative data is richer; (b) The same tag may be applied to various items at different points in time, and as a result it's meaning may vary each time. Descriptions given during pile sorts are given to a set of objects at the same time. There is likely to be more consistency of meaning.

B. Network analysis of card sorting results

Once you have results from a set of card sorting exercises there three kinds of network visualisations that can be produced, showing three kinds of relationships:

Between the sorted items

Example: [A network diagram](#) showing similarities between 24 districts in Indonesia as seperately pile sorted by 5 staff members of a project working in all those districts.

Items that have been categorised in the same way by different respondents are shown with strong (thick) links. Groups of items with similar characteristics are visible as cliques or clusters of items. For example, Alore, Sumba Barat and Sumba Timur

PS: It would be useful to ask the pile sort participants to look at these aggregated results and identify any other common features of the members of each of the clusters

Items that were categorised differently by different respondents have weak links and are more likely to be on the periphery of the network.

Be <http://mande.co.uk:80/special-issues/participatory-aggregation-of-qualitative->

Go

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Example: [A network diagram](#) showing the similarities in the categories used by 5 staff members, to classify the 24 districts.

Categories that have many of the same items as members are shown to be strongly linked. For example, in the Indonesian [project example](#), the A4 category label was "These are remote areas" and the C9 label was "Islands, you need boats to get there. Small populations, different coping mechanisms" Frequently shared categories tell us about common concerns

Categories with few shared items as members are shown as having weak or non-existent links. For example, those on the top left of the network diagram. These may be of greater value, because they are telling us something that other categories dont.

Between the participants who sorted them

Example: [A network diagram](#) showing the connections between these 5 participants, arising from similarities in the way they categorised the items

Participants who have categorised many of the items in the same groups are shown as having strong links. PS: In [the example above](#), there seem to be more similarities between gender than across gender of participants.

There are two clusters, of men and women.

The network diagrams referred to above have been produced using [UCINET & NetDraw](#). I have set up [a seperate web page](#) on the details of the data processing steps that need to be followed to generate each of these visualisations with this widely used software package.

3. Building and exploring collective theories-of-change (ToC)

How do you get many different stakeholders to develop some form of collective theory-of-change, through a process that is systematic and transparent process, with minimal biasing influence by the facilitator? And without assuming that everyone will agree with each other? The method described below would be most useful where there is no central and authoritative version of what the theory of change is. For example amongst a group of independent organisations, or in a network that has no central secretariat.

the evaluation of specific parts of the ToC.

It is also conceivable that the method could be used retrospectively, to reconstruct history, in the form of a theory of change about what has already happened (versus what will happen). This may be especially useful in advocacy activities, which can be very reactive and not as amenable to planning.

The method is as follows:

Participants brainstorm a set of desired outcomes(events in the short and long term) and record them on Post-Its or some other similar medium that can be easily move around.

Alt: In the case of advocacy activities it may be better to brainstorm a list of *people, or organisations*, who will be the subjects and objects of influencing activities

Individual participants are then asked to sort items into groups of *any size*. Within each group they identify the one event seen as the influencer of the others, then list the others in consecutive order of the extent to which they are influenced, from most to least. For example, one person's sort results may look like this:

Group 1: A, D, F, C, (means A is believed to influence D, F, and C, and have most influence on D, less for F and least for C)

Group 2: D, A, G, (means D is believed to influence A and G, and have the most influence on A and less on G)

Group 3: F, C, A, (means F is believed to influence C and A, and have the most influence on C and less on A)

Participants can use as many of the items generated in the brainstorm as they want to, but they don't need to use all of them. The same item can be used in more than one grouping (thus recognising that it has multiple causes)

The pile sort data is then entered into a filethat is readable by network visualisation software

There are two software packages that can be used: [UCINET](#) and [yED](#).

[yED](#) is probably the simplest so I will describe it here

Here is [an imagined set of cause sort data](#)

These are then entered into an Excel file [available here](#). This is in an edgelist format, where each row shows one causal relationships, along with the attributes of that relationship. Here the relationship has a rank importance, some qualitative description and the source person who identified the relationship

The Excel file is then opened by yED and this kind of [network diagram](#) can be produced. Nodes show card ID numbers, links show the rank given to them, and node size reflects the number of incoming links. I have not yet worked how to automate the coloring of links according to who proposed them

Using UCINET

The same pile sort results can be recorded in [Ucinet](#)'s DL Rankedlist format. (See [example](#)). Each row lists an item and the others it affects.

The DL format is then converted to a UCINET file that can be read by NetDraw, using these commands:

Data>Inputs text file>DL>Input text file in DL format

This new file is then opened by NetDraw. See this [example network diagram](#), using the example data above (PS: This was randomly generated, not the result of a real participatory process).

Here each participants' causal links are each shown as a different color. Grey links are ones which two or more participants agreed on. Big nodes are those with many incoming links i.e. where impact of all the causal influences should be most evident.

It is possible to filter links on the basis of which participant proposed them, and what rank was given to them

Qualitative information can be imported into the file, to provide commentary on each item and link by creating node and link attribute.txt files (to be detailed)

A final participatory stage could be added to this process. For example, participants could be asked to look at the aggregate network structure and then discuss and come to agreement on the relative importance of the causal links from any given node to others. The resulting ranking would help the filtering out of the weaker causal links and create a simpler model that would be easier to work with a communicate to others

PS: Expected linkages between events in a Theory of Change can also be identified using a matrix in an Excel spreadsheet, projected on to the wall of a workshop. I have found this useful when trying to identify the details of how various project Outputs were expected to influence various project Outcomes (aka Purpose level changes in a Logical Framework)

Outputs are listed in rows and Outcomes in columns. Cells detail the expected relationship between the row Output and the column Outcome. 100% points are allocated down each column, according to participants' views of how much each row Output is expected to influence that column Outcome. The values given in all the cells of a given row are added up to provide an indication of the relative importance of that row Output. This is

This is a more speculative section. I recently posted the following comments on the [MSC email list](#), about the imaginative use of MCS by Claudia Fontes:

“I have been reading a draft report of Claudia Fontes’ work with DOEN Foundation in the Netherlands, which I have mentioned here before. In one visited country the initial set of MSC stories were sorted by the participants into four (I think) domains, based on the similarities that the stories shared with each other. (Note: Not on the basis of their fit with different officially defined goals/objectives). Based on participants’ comments, Claudia then constructed a relatively simple interpretation of how each of these kinds of events (as in each grouping) was perceived to influence one or more of the others.

In effect she was constructing a larger scale story, that brought all the individual stories into a larger and more coherent picture. I thought this had a lot of merit. It is a way of developing a macro theory of change, from the bottom up (i.e. individual stories).

I could also see potential for how participatory exercises could be developed to enable the participants themselves to directly identify which kind of events (i.e. sets of stories) was expected to influence which other kinds of events (sets of stories)...”

It connects to a phrase in [Dave Snowden’s text](#) on narrative research: “At the heart of this project is a view of meta-narrative as an emergent property or strange attractor arising from social interaction which is discoverable and actionable...”

The risk with any meta-narrative is that it becomes exclusive and dominant. If the causal links between sets of stories were identified through the process outlined in section 3 above (i.e building up an aggregate view from many individual views) minority interpretations would still be visible and investigatable.

5. Associative links

In this August 2010 posting ([Meta-narratives, evaluation and complexity](#)) I raised the idea of a network of stories.

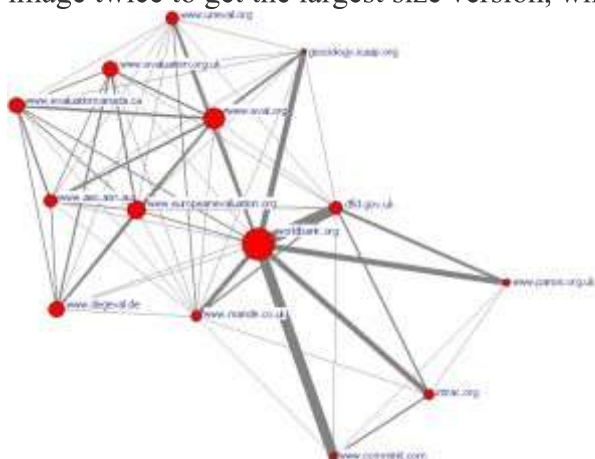
“Stories beget stories. The telling of one can prompt the telling of another. If stories can be seen as linked in this way, then as the number of stories recounted grows we could end up with a [network of stories](#). Some stories in that network may be told more often than others, because they are connected to many others, in the minds of the storytellers. These stories might be what complexity science people call “attractors” Although storytellers may start off telling various different stories, their is a likelihood many of them will end up telling this particular story, because of its connectedness, its position in the network. If these stories are negative, in the sense of provoking antipathy towards others in the same community, then this type of structure may be of concern. Ideally the attractors, the highly connected stories in the network would be positive stories, encouraging peace and cooperation with others. This network structure of stories could be explored by an evaluator asking questions like “What other stories does this story most remind you off? or, “Which of these stories does that story most remind you of?” Or versions thereof. When comparing changes over time the evaluator’s focus would then be on the changing contents of the strongly connected versus weakly connected stories.” ...and the overall structure of the network

The answer to the question “What other stories does this story most remind you off?” or, “Which of these stories does that story most remind you of?” would provide data on network linkages of the kind already discussed above. We can list the answers in the form of two lists in Excel, that can be later imported by network software. Firstly, we can list all associations as links in From and To columns in one worksheet. Additional columns in this worksheet can describe the attributes of each link, such as the participants’ explanation of how they saw the connection between the two stories . Secondly, we can list all the stories as nodes in one column in a second worksheet. Additional columns in this worksheet can describe the attributes of each of the stories, as coded by the interviewer, or even by the respondents themselves. This formatted network data can then be imported by Ucinet, Visualyser or yED, and possibly others.

6. Seeing web pages as the equivalent of pile sorting exercise results.

Web pages are piles of links, brought together by website designers who think the links have some form of shared relevance. Links to other websites can be seen to be conceptually linked when they are referred to on the same webpage, in the same way that items on cards can be seen to be conceptually linked when they are included in the same pile, produced by a card sorting exercise. A single Google search for *two* web page addresses will produce a list of sites where both are listed. See this example of a Google search for “[www.dfid.gov.uk](#), [www.worldbank.org](#)“. The number of the sites containing both of these links tells us something about the relative strength of that conceptual link (i.e a lot of people see some form of commonality, though not necessarily the same form).

I then Google searched for all pair combinations of these web addresses (i.e. =91). Five combinations of web site addresses were never found. The rest of the results were compiled in an adjacency matrix (sites x sites) where each cell listed the number of other websites citing both the row website address and the column website address. This data was then imported into Ucinet and then Netdraw, to produce the network diagram shown below (which shows the above-median strength links only). In the diagram www.mande.co.uk is connected to two groups: (a) evaluation societies to the top left and (b) development aid oriented websites to the bottom right. This exercise really needs to be re-done, with a more systematic and exhaustive approach to listing the website addresses to be searched for in pair combinations. NB: Click on the image twice to get the largest size version, which is more readable.

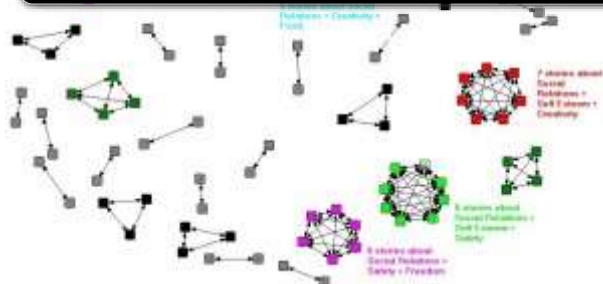


7. Networks of self-categorised stories

When people tell stories, during the use of a [Most Significant Change](#) process or through other means, they can also be asked to self-classify those stories. You can see this as one of the options built into the use of [SenseMaker®](#) in Kenya, (described in Cognitive Edge's [Final Report](#) of their work there with [GlobalGiving](#)). Respondents were given 12 categories to choose from and asked to select three which they think were most relevant to their story (See page 15 of the pdf). You can see the same approach built in to this [draft online survey](#), I prepared to enable a Dutch NGO to collect MSC stories from their grantees' stakeholders. In this second example there is an extra step (Question 3), where the respondent also generates their own headline for the story. This headline is effectively their unique descriptor, for a story that fits the specific combination of categories they have chosen.

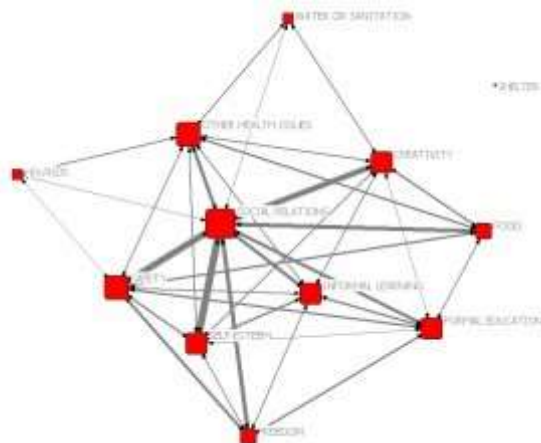
This self-categorisation data can be summarised in a "two-mode" matrix in Excel, showing listed stories x listed categories that apply to them (as seen by respondents). Using [Ucinet](#), this matrix can then be converted into two kinds of "one-mode" matrix, showing: (a) how specific stories are connected to specific stories, by being given the same set of categories, (b) how specific categories are connected to specific categories, by being applied to the same set of stories. Both these matrices can be visualised as networks, using [NetDraw](#). The following network diagrams use data from a sub-sample of 195 of the 3000+ stories collected in Kenya by Cognitive Edge. The first diagram shows stories that are connected to each other by having three shared categories. Each cluster of stories is connected by a different and specific set of shared categories (NB: If they were the same categories they would all be in one cluster).

The point of this exercise is that the combination of self-categorisation plus network visualisation enables the stories to be self-organised into groups which are likely to share some commonalities of content. These groups would not be easy to find simply by a directed search for different combinations of categories, because the number of possible combinations of 12 categories (in pairs, triplets and larger groups) is very large (see more on this below). Click on the image (twice) to fully enlarge it.



Using NetDraw it is possible to click on each story node in the original network diagram and identify its contents, as summarised in its title. These could also be displayed in the above network diagram, but that would produce a very crowded picture.

The second network diagram below shows how the 12 categories on offer were connected, by being applied to the same sets of stories. Only the above average strength connections (i.e. above the mean number of shared stories) are shown. Categories on the opposite sides of the network e.g. HIV/AIDS and Freedom, Water or Sanitation and Freedom, usually applied to quite different sets of stories, whereas categories in the centre were often applied to the same sets of stories.



The attached paper ([Scales and categories: Exploring different options for self-signifying stories](#)) reviews the different options within the SenseMaker® software suite (as used in Kenya) for securing self-descriptions of stories provided by respondents. Two of the three kinds of options discussed in the paper can also be incorporated into easy-to-design online survey instruments available via third parties like [SurveyMonkey.com](#). These are the use of multiple categories (discussed above) and simple bipolar scales. Social network analysis software can then be used to analyse the data that is generated. Services like SurveyMonkey.com also have a valuable additional function whereby participants can access and search the aggregated survey results, including filtering of responses according to any of questions, and types of responses to those questions. So, for example, one could search for all stories given both category X and category Y.

As suggested above, such “directed” searches do have their limitations. The number of possible combinations of categories escalates dramatically as the number of available categories increases. They double each time an additional category is added. So where twelve categories are provided there are 4096 possible combinations (of singles, doubles, triples (etc up to 12) combinations of categories!! Even where respondents are told to only use up to three categories out of the twelve there are still 2573 possible combinations!! The details behind this calculation are available in [this spreadsheet](#). Looking for clusters of stories within such a big combinatorial space is therefore like looking for the proverbial needle in the haystack. Fortunately this where the network software is so useful. With Netdraw you can set filters to find all all stories connected by 1 or 2 or 3, etc shared categories. The diagram above shows all stories connected by three categories of stories.

There is another positive side to this unexpectedly large number of combinations of categories. Though we might be providing only a dozen pre-defined categories, respondents can by careful choice of combinations of categories produce quite specific descriptions of their stories. What initially looks like a [Procrustean bed](#) ends up looking more like a five star hotel.

PS1: On the implications for the use of the [Most Significant Change technique](#): MSC involves a social process wherein there is a reflection on a *variety* of changes that have taken place, the *selection* of the most significant of these, and the *retention* of that choice for wider use. When a number of those retained choices are

how those groups of stories are put together prior to discussion and selection. In the original use of MSC in Bangladesh stories were placed in one category or another, which were based on the NGO's four main concerns (changes in quality of people's lives, changes in sustainability, changes in people's participation, and any other changes). These were mutually exclusive categories.

Since then there have been many other approaches to grouping stories prior to selection. The network of self-categorised stories discussion above suggests two different approaches. The first is only slightly different approach, and involves allowing respondents to classify their own stories using *a number of non-exclusive categories*. With this approach a particular MSC story might belong to multiple categories and could even be selected as the most significant within each of those categories. That would not necessarily be a problem, in fact the story concerned might thus be identified as especially meaningful because of its multiple significances. The second is significantly different, which is to find and use emergent/self-organised groupings of stories, through the network visualisation described above. I suspect this has been done before on a modest scale in participatory workshops, where groups of participants were asked to read through and sort stories into groups they think have something in common. What is significantly different here is the scale on which it can be done, with hundreds of stories, something that impossible in via face-to-face participatory methods.

PS2: On the implications for grantee's progress reporting to grant giving funds: Almost all grantees of funds from development agencies or foundations are required to provide some form of periodic progress reporting, using a standardised format. A radical alternative would be ditch almost all that reporting, except the most essential, and allow/encourage grantees to report any kinds of "significant changes" whenever they wanted to, and to classify those changes using a set of non-exclusive categories (as discussed above). If done via an online survey mechanism the same grantees could be given the right to search all inputted data from all grantees. A more sophisticated option, probably via a designed website, would be to allow the same grantees to provide comment, and provide a value rating, on any contents they do find (with their identify disclosed, to stop collusion). The same facility could also be given to their grant making body.

8. References

My earlier explanations of this type of analysis can be found here:

[Reflections on Dave Snowden's presentations on sense-making and complexity](#) (2009),

[A re-analysis of results of an objective identification exercise, for a bushfire prevention program](#) (2007)

["I See How You Think: Using Influence Diagrams to Support Dialogue"](#) (2009) Newell B, Proust K. ANU Centre for Dialogue. The authors describe how they facilitate individuals to develop their own casual networks, then through discussion, create a new shared causal network. As they note, skilled facilitation is very important in this type of highly participatory process.

[Assessing Local Knowledge Use in Agroforestry Management with Cognitive Maps](#) (2009) Marney E. Isaac , Evans Dawoe , Krystyna Sieciechowicz, in [Environmental Management](#), Volume 43, Number 6. The authors interviewed 12 individual cocoa farmers to establish their views of the causal steps, and linkages between them, that connected up an initial step of "clearing land" to a final end point of "productive cacao" or "less productive cacao". They allowed for emergent steps that may not be common for all interviewed farmers. However, key words were identified to represent common steps. Data was visualised by Decision Explorer software, but analysed using common SNA measures (e.g. number of nodes, links, density, degree centrality. Comparisons of farmers cognitive maps were made on these variables. They did not however generate an aggregate cognitive map, using the steps named and used by two or more respondents. They usefully differentiated between "ordinary variables (nodes) and "transmitter variables", with the former has bi-directional links and the latter having outard links only. The latter were seen as factors out of the control of the farmer, where as the former were seen as being within control. The status of some of the nodes were used as management indicators to guide decision making. They also note that "*Amid complex decision making processes the similarity of the cognitive maps suggests a high likelihood of generaizing individual farmer management techniques. This similarity may be strategically beneficial for regional shifts in agrarian policy toward sustainable practices at the landscape scale*"

[Visualizing Proximity Data](#) (2007) Rich DeJordy, Stephen P. Borgatti, Chris Roussin, Daniel S. Halgin, on the merits of network models versus multi-dimensional scaling (MDS) for analysing the results of pile sorts (described in the title as proximity data). They identified the potential well before I did. I have been more focused on its application.

paper describes a network visualisation of the sorting of photographs taken by participants. The pile sorts were carried out. The first was an unconstrained pile sort, generating 41 categories (described as themes). The second was a constrained pile sort where the researchers seem to have predefined the common categories to be used by all participants, based on the results of the first sorting. The results of these pile sorts were then visualised as a two-mode network (group labels x items), and then shared and discussed with the participants. "Participants were asked to interpret the relationships between piles and pictures to foster a better understanding of how they perceived the pictures and themes."

[Recommending Collaboration with Social Networks: A Comparative Evaluation](#) (2003) by David W. McDonald. "A Successive Pile Sort (SPS) [4, 29] technique was used to collect the second social network. In this technique, the name of every member in the group is written on a card. Participants sort the cards using a high level rubric supplied by the researcher. Each participant is free to interpret the rubric in her own way. The first sort results in a number of "piles" which are, in turn, sorted using the same rubric. *The level of the sort at which individuals or groups are broken apart indicates the connection weight between the members. The connection weights are aggregated across all participants to create an edge weighted social network*" *Participants were challenged to create sorts with the rubric "who hangs out together." This rubric was designed to reveal the social structure rather than work context structure at MSC. Motivating the SPS collection by asking "who hangs out together" was one way to consider the more sociable aspect of interaction at MSC. Each participant required between 45 and 90 minutes to sort 47 cards."*

PS: 6th July 2010. In Social Network Analysis the term *Cognitive Social Structures* refers to social networks, as perceived by the members of those networks (or others). What has been described above is different and could be referred to by the term *Social Cognitive Structures*: i.e. the social structures created by overlaps in people's cognitive structures (i.e. their classifications and causal relationships).

[SenseMaker Demonstration Videos](#), on the Cognitive Edge website (2010)

[Collector site Walkthrough](#): "This video provides a guided tour of a SenseMaker® Collector website created for the GlobalGiving project. See how a SenseMaker® project signification framework presents online and how narrative fragments are entered and signified by respondents"

[Explorer – Distribute and Cluster views](#): "This video shows the SenseMaker® Explorer Distribute and Cluster views for exploring narrative data collected with a SenseMaker® Collector website. This particular screen-cast shows how Distribute and Cluster views can be used to explore for patterns in signification data.

[Explorer – Triad and Cluster views](#): "This video shows how triad distributions are created using SenseMaker® Explorer's Cluster view. Creating visuals representative of triad distributions allows scanning of large volumes of narrative fragments (stories and other unstructured data) to quickly identify patterns from multiple perspectives.

And the [Final Report](#) of their work there with [GlobalGiving](#)).

Cognitive Edge case studies

[GlobalGiving narrative pilot project: narrative analysis final report](#)

[GlobalGiving using SenseMaker® for technology-aided feedback loops to detect change](#)

Rick on the Road blog

[Meta-narratives, evaluation and complexity](#)

MandE NEWS postings

[Using stories to increase sales at Pfizer](#): A commentary

[Discourse Network Analyzer \(DNA\)](#)

Larry Dershem brought this to my attention, it looks very relevant and related to all above. Here is a summary description of the software

"DNA is a Java-based application for qualitative category-based content analysis. It serves two purposes: coding statements of actors into categories, and converting these structured data into networks that are readable by UCINET, visone and other network-analytic software packages. The software can extract either bipartite (affiliation) networks or adjacency networks. It is complementary to semantic network analysis applications because it neither relies on algorithms for automatic text processing, nor does it focus on the internal meaning or mental representation of a single text or document. Instead, tags are applied to the text data by manual inspection, thus rendering it more flexible, yet at the same time more work-intensive. DNA can be used to code a large body of text documents and then convert them into graphs. The application is currently being developed, tested and heavily used in my dissertation research project on German [pension politics](#). Updates will be posted here as soon as something has been published. If you use DNA, I would love to hear from you about

There has been some very interesting work done by Hidalgo and Hausmann on product space, discussed by Tim Harford in the New York Times ([The Art of Economic Complexity: A new way to visualize a country's development](#)) and by others elsewhere. Hidalgo and Hausmann have mapped the world's "product space" using trade data on 774 product classifications, from cotton undergarments to phenols. Countries are in effect the same as piles seen in pile sorting exercises and products are what have been sorted. Different countries have different combinations of products in their "pile". Products are closely connected on the underlying network if they tend to be exported by the same economies. Finding products which are near to each other in product space means there is a good chance that a country producing one might be able to produce the other. At the fringes of the product space are development dead ends. Better-connected nodes represent industries that offer promising prospects for growth.

The first network diagram in the NYT is unfortunately wrong when it says "The underlying grey template represents the "product space" It is the *structure of the links* that represents the product space, products that are many links (i.e. degrees) in the chain away from each other are more distant in the product space.

Rating: 0 (from 0 votes)

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6 Responses to "Network visualisation of qualitative data"

[Patrick Lambe](#) has emailed me the following useful question:

Hi Rick

Thanks for this – I'm intrigued by this, but I'm missing the last link... which is how insight is derived, and what kinds of insights are derived. This is something common to all network visualisation techniques I find... OK so there's a map, so what? In social network analysis, for example, the map typically helps analysts/participants identify places in the network that look like they warrant further investigation – eg bottlenecks, disconnects, cliques. These can be either positive or negative forces, depending on the drivers behind that structure, and the overall context. There are different ways of undertaking that investigation to find the "story" behind the structure. I'm curious about where the sensemaking portion lies in the PAQI model – do you have examples of insights and how they are derived and then actioned? I understand this is a work in progress!

My response was as follows:

Hi Patrick

Good questions

I don't think I can promise anyone automatic "insight" as a result of using the PAQI or any other method. And I doubt if David would do so either re his use of Sensemaker.

Both are tools for providing better/different forms of *description* of large amounts of qualitative data (and much larger amounts in the case of Sensemaker)

With many forms of measurement and description it is useful to ask people what they expect to be found and then show them what is actually found, and to then discuss and learn from the difference. An NGO in India that I have been working with carried out a large baseline survey of capacities of CBOs in a HIV/AIDS program, that generated a set of performance scores. In response to my suggestion they asked the grantees supporting the CBOs what their expectations were about the CBOs' scores, then they shared the actual scores, then discussed then differences. In a number of instances this led to agreement on how the survey instrument needed to be changed. I hope in other cases it led to agreement on how the CBOs needed to change!

On the PAQI web page I started with this **assumption**: *If we are able to develop better representations of complex bodies of information then this will provide us with more informed choices about how to respond to the content of that information.*

That is what David is doing, providing better representations of large amounts of qual data, less tainted by researcher's existing beliefs. I think he would then argue the need to explore the outliers, as well as any central tendency or "averages" The ability to explore data, that is both aggregated but has some structure, is common to both David's Sensemaker and PAQI

... differences between expected and actual results, there could be two ways forward. Ask what are the implications for (a) project design and activities, (b) improved use of this PAQI method). On the former, I would love to know whether given the existence of at least two main clusters of districts (two more can also be identified less distinctly) whether there is any difference in the project strategies being pursued in those areas. And if there is none, should there be a difference?

On the significance of measurement on its own, I often use an imagined situation where two people walk into a room each holding a tape measure. They both proceed to measure the dimensions of a large hole in the wall. One walks away happy, the other walks away unhappy. The first is an air conditioning installer, the other is a security expert. So what use is a tape measure (/network diagram)? Its just numbers on arbitrary scale (/a set of dots connected by lines). Well it turns out it is important if we have prior expectations about what we want to see, but probably meaningless if we dont. Theory *and* measurement are *both* needed.

Does this help?

PS: There are other ways of eliciting expectations prior to sharing results, with network diagrams. One easy method is to show network diagrams without visible labels on the nodes and ask participants to identify who is where. Then to make the labels visible.

By [rick davies](#) on [Apr 2, 2010](#)

Nice Website!

Here tow more references you might be interested in:

* Brandes, U., Kenis, P.N., Raab, J., Schneider, V., & Wagner, D. (1999). Explorations into the Visualization of Policy Networks. *Journal of Theoretical Politics*, 11(1), 75-106.

* Brandes, U., Kenis, P.N., & Raab, J. (2006). Explanation through network visualization. *Methodology: European Journal of Research Methods for the Behavioral and Social Sciences*, 2(1), 16-23.

Papers can be freely accessed through:

<http://publications.uvt.nl/repository/p.kenis/publications.html>

By **Patrick** on [Oct 24, 2010](#)

Dear all,

I recently had the occasion to use Rick's PAQI technique in an assignment for DG Translation of the European Commission about the "contribution of translation to the multilingual society in the EU" (see the final report "here": http://ec.europa.eu/dgs/translation/publications/studies/multilingual_society_study_fr.pdf. It's in French but an English summary is available).

At first we had not planned to do so: we expected to perform an extended literature review to answer the very vague yet simple question "What are the effects of translation?". But after days identifying and reading books and articles, and doing interviews, we started to understand that there was no simple answer to that question, and we found out that we simply did not have a way to make sense of so much fragmented and conflicting information with the planned tools.

So we decided to answer differently. It had to be cheap, it had to be methodologically sound, and it had to be quick enough to keep more or less on schedule, and of course it had to be able to answer in a detailed way to the question asked. My first idea was to rely on concept mapping as developed by William Trochim (see "here": <http://www.socialresearchmethods.net/mapping/mapping.htm>), but the statistical method used to show the clusters of answers (multidimensional scaling) is out of my reach, when network analysis as used in Rick's PAQI is a lot easier to me.

The method used:

* First, based on the work done, we listed 50 assumptions detailing effects of translation (e.g. "translation gives access to ancient cultures").

* Then we set up an expert panel of 9 members + 1 member of the Steering Committee (the others would not want to participate because they felt they had not enough expertise) and asked them to comment, revise and complete the list (which they did: the final list was composed of 83 different items). Because we were dealing with experts from 7 countries, we asked a professional translator to edit the list, in order to avoid misunderstandings;

* Then we asked the experts to sort and rank the items. We used websort.net (free for 10 participants or less) for the sorting and a googledocs questionnaire for the ranking.

* After that we analysed the results using the free network analysis software

"Cytoscape": <http://www.socialresearchmethods.net/mapping/mapping.htm>, which I have been using since two

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(they also sent a 200-word note and a 100-word note to the Steering Committee)

The method proved tremendously useful. The clusters turned into sections of the report, and the relations between items within those clusters often provided a “story” on how translation was having effects on society. The mix of statistics and expertise in the method was also highly credible for the Steering Committee and also for the experts of the field, and for a reduced cost. It is also a scalable method: we used it with 10 experts, but it is definitely possible to make the same with 100 or more participants.

Now an advice on the conditions for success: it is crucial to spend as much time as possible on the first phase (definition of the assumptions that will be ranked and sorted). Had we had enough time, I would have organised at least another round dedicated to improving the wording and make sure that there are no ambiguity left. This is all the more important that the assumptions we had were simple sentences, to make sorting and ranking easier, but complex causal relations can only difficultly be reduced to simple assumptions.

Thomas Delahais (“euréval”:www.eureval.fr)

By [Thomas Delahais](#) on [Jan 5, 2011](#)

Hi Rick,

I would largely echo Patrick’s comments above; this is fun to think about, but the value is in operationalizing the concepts.

We’ve developed a tool for PAQI that focuses less on developing visualizations of data, and more on interaction with the data. The tool is an iPhone app called EthnoCorder (<http://www.ethnocorder.com>). It basically lets you code statements of actors WHILE recording those statements using digital video. So you get essentially the same type of data you would from sensemaker (i.e. it could be plugged into the analytical/visualization software discussed above, as it gets exported in standard SQL format), but you also have the video to drill down into as primary data later (sensemaker basically uses secondary data, the actual statement of the actor is lost). EthnoCorder pulls Participatory Video work into this conversation. Our surveys don’t simply collect data and stories, and allow for real-time indexing, but through iterations of the process, we also use EC as a platform for screening stories, collecting further reactions, and coding those statements (the iterations of the MSC process). It’s all closely related conceptually, but with more emphasis on interacting with the data in a participatory way. This makes a big difference when we start recognizing Patrick’s point that all the analytics really need to result in a sense-making process that people can meaningfully engage with.

I can see spending time mastering these data visualization suites, tinkering with them, and being amazed by the complex images they can produce, but still only having secondary information. With EthnoCorder I can deal with the data using easily accessible spreadsheet software like Excel, and directly relate that back to the primary qualitative data (we embed demonstrative video clips in our reports to allow the reader to interact with the primary qualitative data that the quantitative analysis draws on). You get a thorough, rich understanding of the data without getting tangled in a web of artificial network graphs. This lets you spend more time engaging the actual problem.

Even using basic descriptive statistics we already get blow-back from donors complaining that our reports read more like ‘research’ than ‘development’. I think this goes to show how starved the industry still is for really solid analysis of qualitative data that forces us to confront the complexity of the contexts we work in. I find the most helpful advice from Snowden’s (2007) writings to be that leaders responding to complex problems need to “increase levels of interaction and communication”. I’m not convinced that a focus on data visualization really does that. EthnoCorder is much better suited for this task, and I’m looking forward to seeing all these tools and ideas converge.

I’m always interested in looking at the data in different ways, and I bristle when people assert dismissively that I’m using ‘fancy tools’, so I am not saying that these data visualization packages are worthless. However, I think we have to be careful of being mystified by technology and math, lest we lose touch with the reality of issues at hand.

Cheers,

Nathan

By [Nathan Horst](#) on [Jan 28, 2011](#)

Hi Nathan

I have written a detailed response to your post, in [this attached Word doc](#).

I can’t copy the text here without losing important formatting

regards, rick davies

By [rick davies](#) on [Feb 3, 2011](#)

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