Reasoning within Hybrid Thematic Analysis

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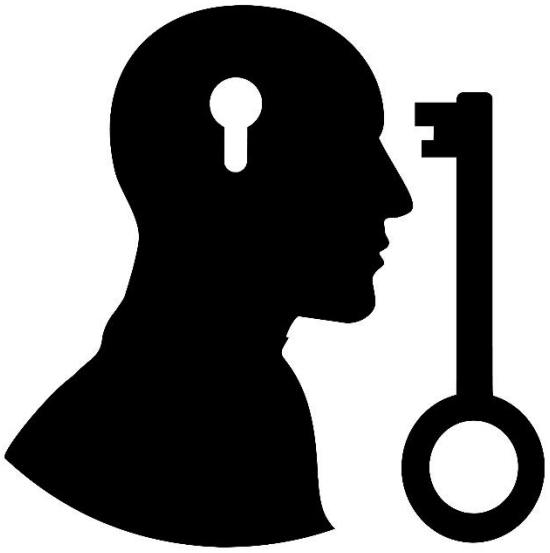

Abstract

In this paper I focus on types of reasoning involved in hybrid approaches to 'Thematic Analysis'. Four types of reasoning are considered: inductive, deductive, abductive, and retroductive. I argue that awareness of these four inter-related types of reasoning is useful in the development of effective and transparent thematic analyses by research students as well as by professional researchers. As an educator and researcher mainly engaged in practitioner research or in collaborative research with teachers, and based in the professional field of teacher education, my perspective is perhaps more pragmatic than philosophical. I have therefore tried to ground the argument using concrete examples of extracts within thematic analyses by my doctoral research students. For those relatively new to Thematic Analysis, the paper does not cover the basics of the method and makes some assumptions of prior knowledge, but it points towards relevant reading. I propose that, despite some contested issues of definition and overlap, a basic understanding of four types of reasoning (inductive, deductive, abductive, and retroductive) is useful to research students and researchers when conducting Hybrid Thematic Analysis, particularly if positioned within a critical realist perspective.

Keywords

hybrid thematic analysis, inductive, deductive, abductive, retroductive

Introduction

In qualitative research, involving interpretation of narrative rather than numerical data, the transparent and systematic analysis of data is a key element of quality and rigour. The approach to qualitative analysis known as 'Thematic Analysis' is flexible and reasonably accessible and is often suggested to teachers for their practitioner research projects. Thematic Analysis has perhaps been rather loosely applied in many educational research projects, but a helpful literature has developed to support its more rigorous application (Braun & Clarke, 2006; 2012; 2019; Fereday & Muir-Cochrane, 2006; Boyatzis, 1998). Good quality research papers reporting on qualitative educational research should include a clear account of the approach to analysis and the presentation of findings should demonstrate how that approach has been applied.

In this paper I argue that awareness of four types of 'reasoning', inductive, deductive, abductive, and retroductive, is useful for research students and professional researchers in developing effective thematic analyses. The paper reflects my learning from doctoral supervision and draws on examples from the theses of four educator colleagues: Dr Susan Harness, Dr James Burch, Dr Kevin Proudfoot and Dr Andy Ash.

Thematic Analysis can arguably be used across a range of research philosophical positions, from a strongly interpretivist stance (Braun & Clarke, 2019), through critical realist positions (Proudfoot, 2022; Ash 2023) and even on towards a realist or positivist stance (Boyatzis, 1998). The label 'Hybrid Thematic Analysis' has been used for an approach involving both inductive and deductive reasoning (Braun & Clarke, 2019; Fereday & Muir-Cochrane, 2006). This hybrid approach involves a bottom-up (inductive reasoning) and top-down (deductive reasoning) process and has been evaluated as a useful approach in teachers' practitioner research by Xu and Zammit (2020) and possible to integrate within mixed methods research (Proudfoot, 2022).

A 'hybrid' Thematic Analysis applied to rich data combines inductive and deductive reasoning but may also extend to abductive and retroductive reasoning. In this context an initial definition of abduction is that it is creative, imaginative, or insightful reasoning to reach a speculative conclusion about something unexpected or surprising which is found in the data. A mundane example would be that you arrive home to see your partner's car in the drive and speculate that they have come home from work before you (Lipscombe, 2012). The data seems clear, but the conclusion drawn is only what seems a most probable explanation; it is speculative. In this paper I am discussing abductive reasoning within Thematic Analysis, rather than considering a more substantial commitment to abductive analysis (Thompson, 2022). This abductive reasoning may be developed further into retroduction, meaning reformulating existing theory to account for these emerging findings. To continue the mundane example, if you were using network theory as part of your analysis, and it turns out your partner stayed at home and connected online to her colleagues that day, you would have to adjust through retroductive reasoning the 'physical location' dimension of your initial and somewhat out of date theoretical framework. Some

views of abductive analysis include this retroductive theory development step (Thompson, 2022).

Within the last twenty years Thematic Analysis has shifted from a mysterious art towards a more transparent process. It remains as difficult but necessary work for a qualitative researcher. Braun and Clarke's recent accessible and up to date text provides a useful guide (2022) and the pursuit of high-quality analysis is usefully discussed by Nowell and colleagues (2017). Being aware of the four types of reasoning is helpful during the challenging work of data analysis.

Generating Themes

Before focusing on the four types of reasoning it is important to confirm a key aspect of Thematic Analysis. In qualitative analysis the researcher is 'interpreting' narrative data. Thematic Analysis is about generating themes, rather than 'searching' for them within the data. In Thematic Analysis the researcher generates themes across the data set. A theme is generally more explanatory than a code:

> *'A good code will capture one idea; a theme has a **central organising concept**, but will contain lots of different ideas or aspects related to the central organising concept (each of those might be a code)'* (Braun and Clarke, 2013: 224).

It is not feasible within this paper to cover the whole topic of Thematic Analysis but there is a useful and growing literature to inform the interested researcher (Braun & Clarke, 2006; 2012; 2019; Fereday & Muir-Cochrane, 2006). In completing a Thematic Analysis, including within the generation of themes, the analyst will use different types of reasoning.

Types of reasoning

Four types of reasoning can be distinguished in hybrid approaches to Thematic Analysis:

- Inductive reasoning: coding data and generating themes, but building from the data itself.
- Deductive reasoning: coding and generating themes by critically and flexibly applying a theoretical framework to the data.
- Abductive reasoning: generating possible explanatory themes by creatively speculating on the most likely explanation to surprising data.
- Retroductive reasoning: within a critical realist perspective, developing or adjusting existing theory to better explain themes generated.

Approaches to Thematic Analysis that involve an element of bottom-up inductive reasoning but also an element of top-down deductive reasoning, have been termed 'hybrid' (Fereday & Muir-Cochrane, 2006; Braun & Clarke, 2019). This hybrid approach to Thematic Analysis is justifiable within a critical realist philosophical perspective whereas a post-modernist or interpretivist perspective would perhaps

require a ‘reflexive’ approach relying primarily on inductive reasoning (Braun & Clarke, 2019). Abductive reasoning may be considered as sitting between inductive and deductive reasoning, but it is a contested issue not least because to some extent it is a speculative process (Lipscombe, 2012). In presenting a transparent analysis the researcher may explicitly report their abductive reasoning process whilst making its status clear. Retroductive reasoning arguably goes beyond empirical evidence: ‘Retroduction… describes a continuous, spiral movement between the abstract and the concrete, between theoretical and empirical work, involving both an interpretive and a causal dimension of explanation.’ (Belfrage & Hauf, 2017: 24). Building from a pragmatist perspective this retroductive reasoning is considered part of abduction: from this point of view it might be argued that this fourth term is superfluous (Alvesson & Kärreman, 2007). These two additional forms of abductive and retroductive reasoning are complex and contested and overlapping, but I propose that engagement with them offers a useful practical tool for the researcher in completing a high-quality Hybrid Thematic Analysis. Although, in the pursuit of clarity, Thematic Analysis has been presented as a sequence of steps (Braun & Clarke, 2006; 2012) in practice it is an iterative process. Therefore, I will not suggest that the four different forms of reasoning are only used within particular steps, such as coding or generation of themes, but rather propose that they are deployed in different stages of analysis and often in an iterative fashion, with considerable variety between different research projects, not least influenced by the philosophical perspective of the researcher.

In the next four sections I use selected short extracts from four projects that used Thematic Analysis. The reader is asked to focus on the discussion of different types of reasoning rather than getting too distracted by the projects from which the extracts are taken. For readers requiring a more complete engagement with the underlying analyses, the complete theses for the four doctoral research studies are available online.

Nurse Educator Identities and Tutorials

Susan Harness completed a two-stage study of ten nurse educators based in ten different universities across the UK. First, she used semi-structured interviews to generate data for a phenomenographic analysis of nurse educator identity. Second, each nurse educator made a video of a tutorial with a student nurse and then completed a video-stimulated recall interview. The phenomenographic framework for nurse educator identities was used to support deductive reasoning within a hybrid Thematic Analysis (Harness, 2018; Harness & Boyd, 2021).

This first example provides a reasonably straightforward hybrid Thematic Analysis and the use of inductive and deductive reasoning. In her project Susan Harness, in effect, developed her own theoretical framework for application in a hybrid Thematic Analysis through a first stage phenomenographic interview data analysis. Second stage generation of data consisted of video of a tutorial with a student nurse and then a video-stimulated recall interview with the nurse educator tutor, who is interviewed whilst watching, fast forwarding, and pausing, the tutorial video. A hybrid Thematic Analysis of the stage two data began with inductive reasoning, through

coding and working to generate bottom-up themes. The next stage applied the phenomenographic multiple identities framework using deductive reasoning to consider if data existed that supported the top-down themes suggested by the five multiple identities in the phenomenographic framework. In practice these two stages of analysis become iterative. This analysis identified just one theme in the bottom-up inductive analysis, which was labelled as 'boundary-crossing' but did find evidence to support the multiple identities themes (Harness & Boyd, 2022). In this analysis quotations from the video-stimulated recall interview always included an extract of the tutor speaking to the student during the tutorial, as well as the tutor's comments on that section of the video, from the stimulated recall interview. An example of a coded data quotation used to illustrate this theme is provided in extract one, in the box below:

EXTRACT ONE: Boundary-crossing (inductive reasoning) theme (Harness & Boyd, 2022: p.8)

Tutorial video extract: 'And we are all the same. Because you are involved, you are invested in this; it's important, but because you're involved and you're invested, I'm involved and invested. We want to make a good health visitor out of you.'

Recall interview lecturer comment: 'I want to make sure that the students get a lot out of the course and that they are brilliant health visitors… it's a thing they have to pass for the profession to maintain its standing in society… even if I think someone is a really terrible practitioner if they pass their academic work they've passed their academic work. I feel a bit frustrated that I can't say I don't think they'll be good in practice…'

Note: The boundary-crossing theme was more than just telling stories from clinical experience. Tutors also mentioned to students, during tutorials, their higher academic qualifications and publications, which we interpreted as a way to establish their credibility as a scholar within the university.

In the second part of the hybrid Thematic Analysis the multiple identities framework was applied using deductive reasoning. One of the strongest multiple identities discovered by the phenomenographic analysis was 'clinical nurse', so that although the nurse educators were no longer in clinical practice, some of them for more than a decade, they still strongly identified as a clinical nurse. The video and stimulated recall interview data included considerable evidence of this top-down theme, which we labelled as 'foregrounding clinical nurse identity' (Harness & Boyd, 2022). The deductive reasoning process involves working with the data to see if coded segments are available that align to the themes suggested by the theoretical framework. Such a theme, generated from the theoretical framework, is in effect hypothesised, and the matching coded data is then sought to confirm that the theme can be justified. If little or no matching data segments were found then the theme would be rejected as not confirmed by the analysis. An example of a coded quotation used to illustrate the boundary-crossing theme is provided in extract two, in the box below:

EXTRACT TWO: Foregrounding clinical nurse identity (Harness & Boyd, 2021: p.8)

Tutorial video extract: 'There's something about a nurse who loves wound care because actually it's a fascination for some and I used to love it when… we'd go to a messy leg ulcer and we got it all cleaned up and it would be brilliant and it's such a feeling of achievement to do it… OK so my job here is just to check your assignment as you know and make sure everything is OK…'

Recall interview lecturer comment: 'Yeah. My identity as a nurse is fundamental. It's part of my fabric and what makes me who I am; what makes me tick. I think it makes you feel on a very simplistic level, it makes you feel warm inside and I'm trying to think why. I'm trying to intellectualise that and I'm struggling. I suppose I still think I'm in nursing and yet I know I have this job in the university…..it is so difficult to get my head around it sometimes…'

These first two examples, from Susan Harness's doctoral study, demonstrate inductive and deductive reasoning within a hybrid Thematic Analysis. This provides a reasonably straightforward example of reasoning within a hybrid Thematic Analysis and perhaps for some researchers, for example students studying at master's level, this is probably a sufficient level of understanding to successfully complete an analysis. Note however, a distinctive feature of Susan Harness's analysis was that the theoretical framework came from her own phenomenographic analysis, rather than more directly from a critical reading of the literature. Further examples of hybrid Thematic Analysis will now show how explicit abductive and retroductive reasoning might strengthen analysis, and perhaps were implicit even within this first nurse educator example.

Helping Student Teachers See into Practice

James Burch completed an ethnographic case study of one teacher educator over a one-year period which included generating data through substantial observation, teacher educator interviews, student teacher focus groups, researcher journalling, and collaborative analysis with the teacher educator (Burch, 2020). The study focused on how student teachers engage with theory and research and apply it within their work-based learning of how to teach during school placements, and in what ways the pedagogy of the teacher educator supports that engagement and application.

This example of hybrid Thematic Analysis particularly illustrates explicit use of abductive reasoning by James Burch during his one-year generation of data focused on a university-based teacher educator and their group of postgraduate student teachers. In some ways it was a determination to pursue hybrid thematic data analysis from the start of data generation, accompanied by reflective research journalling and ongoing critical review of literature, that led James Burch to appreciate the role abductive reasoning was having within his approach to data

analysis. The quotes from his thesis in extract three below, show how he understood his use of abductive reasoning:

EXTRACT THREE: Helping student teachers to see into practice: The view from a teacher-education classroom (Burch, 2021: p.58)

'When reflecting on the memoing process, I realised that much of my memoing activity was of a *thinking-from*, abductive nature. I found it helpful to conceptualise abduction as a series of excursions into the literature occasioned by seeing something in the empirical material that warranted an explanation. The empirical material provided the conceptual tinder, whilst the writing-as-thinking dimension of memoing acted as the developmental spark.

…Atkinson, Coffey and Delamont (2003, p.149) … liken this process to weaving because of the 'dialectical shuttling between the domain of observations and the domain of ideas'.'

Notice that it was 'seeing something in the empirical material' that led him to seek explanation through an excursion into the literature. It is a contested aspect of interpretive qualitative analysis, as to what extent the researcher is able to 'bracket out' their knowledge of theory and previous research when pursuing bottom-up, data driven, inductive reasoning. This kind of inductive reasoning is pursued in grounded theory approaches (Corbin & Strauss, 1990; Charmaz, 2006) and also within Braun and Clarke's 'reflexive' Thematic Analysis (2019). In James Burch's hybrid approach to Thematic Analysis, his ongoing engagement with previously published literature allowed him to develop a more flexible theoretical framework than that applied by Susan Harness. For example, he critically engaged with literature on 'realistic' teacher education (Kessels & Korthagen, 2001) and this informed the generation of a theme labelled as 'orchestrating lived experiences' illustrated in extract four.

EXTRACT FOUR: Orchestrating lived experiences theme (Burch, 2021: p.72)

'I suggested to the TE that the fashioning of '*lived experiences'* was a dominant feature of her pedagogy. She concurred by stating, '*I want them to* ***feel.*** *I want them to* ***experience*** *things'* (D2, emphasis in original). We agreed that a theme could be based on the creation of such experiences, hence *orchestrating lived experiences.*

*…**asynchronous contingency management*** entailed 'engineering' situations that appeared to be purely happenstance, but which were, in effect, carefully constructed…

Student teachers' reactions were often predictably unpredictable, both affectively and cognitively, such experiences called for in-the-moment analysis choreographed by the TE… *synchronous contingency management.'*

In some ways perhaps, James Burch was also demonstrating retroductive reasoning here, by extending the theoretical framework developed by Korthagen and colleagues of realistic teacher education (Kessels & Korthagen, 2001). Within the theme of orchestrating lived experiences he identified the two elements, of asynchronous and synchronous contingency management by the tutor. The asynchronous element was more 'simulated' whereas the synchronous was more 'realistic' and arising from the direct self-reported experiences of the student teachers from their school workplaces. In this example, and from a pragmatic perspective, abductive and retroductive reasoning appear to be overlapping, but when placed within an explicit critical realist methodology, as in the next examples of doctoral projects by Kevin Proudfoot and Andy Ash, they are arguably more distinctive.

Teacher Motivation to Improve their Practice

Kevin Proudfoot completed a mixed method study of schoolteachers' motivation to improve their practice within high accountability workplace contexts in schools in England (2018). Using a theoretical framework based on Self Determination Theory (SDT), he developed an online survey attitude scale, gaining a large sample of anonymous teacher responses (n=323) and applied exploratory ordinal factor analysis (Proudfoot & Boyd, 2022). A hybrid Thematic Analysis was applied to narrative data generated by a free text prompt at the end of the online survey as well as a number of face-to-face semi-structured teacher interviews. The analysis, including the synthesis of numerical and narrative data analysis, arguably used all four types of reasoning (Proudfoot, 2022).

A key finding related to teachers' perspectives of a policy on performance-related pay, and there was some tension between the results of the factor analysis and the qualitative analysis of narrative data. Within his data analysis process Kevin Proudfoot considered the handling and resolution of this tension to have involved abductive and retroductive reasoning, as illustrated by extract five.

EXTRACT FIVE: Instrumental Theorization theme (Proudfoot, 2022: p.317)

'The distinction between an emolument (a just reward for services already rendered) and an incentive (a future-orientated inducement) was important, as some teachers interviewed appeared more in favour of an emolument, as differentiated from an incentive…

It was the comparison of the qualitative and quantitative data which led abductively to the generation of the idea of an emolument to explain an unexpected variation with the synthesis, and by extension, this led to greater complexity in the retroductive theorization of instrumental motivation more broadly.'

As a former teacher of English language and literature, Kevin Proudfoot enjoyed his use of the term 'emolument' as compensation or reward for excellence, which was welcomed by some teachers, as distinguished from the incentive of performance related pay, which was seen in a negative way by many teachers. This nuanced

finding was considered to contribute to a more sophisticated understanding of instrumental motivation. His study contributed to understanding of using hybrid Thematic Analysis, including all four types of reasoning, within a critical realist perspective and an integrated mixed methods approach. Kevin Proudfoot's methodology paper makes a useful contribution, not least because he used non-parametric factor analysis due to the ordinal nature of data produced by his Likert scale attitude scale, but also because he demonstrates synthesis within a convergent mixed methods research study design, and explicitly illustrates abductive and retroductive reasoning within his analysis (Proudfoot, 2022).

Mathematics teachers' communication using representations

Andy Ash completed an in-depth qualitative study of the use of representations within the practice of a schoolteacher teaching mathematics. Data generation included observation and field notes, classroom video, teacher interviews, researcher journalling and an element of collaborative analysis. He used a three stage hybrid Thematic Analysis, with retroductive reasoning particularly emphasised during the third stage application of Legitimation Code Theory (Ash, 2023; Maton & Chen, 2016).

Thematic Analysis is considered by Braun and Clarke to be a flexible approach, a method more than a methodology, and so might be used within a range of philosophical positions (Braun & Clarke, 2006; 2012; 2019). Andy Ash positioned his research within a critical realist perspective (Archer, 1995; Archer et al., 1998; Bhaskar, 2011) and sought to align his design, including his approach to qualitative analysis, within that (Ash, 2023). This led him to adopt a hybrid Thematic Analysis approach so beginning with first stage inductive reasoning, but then in a second deductive reasoning stage applying a theoretical framework that he developed from critical review of the literature. In a third stage of analysis however, which he positioned as retroductive reasoning, he applied Legitimation Code Theory (LCT) focusing on the specialisation and semantic dimensions (Maton & Moore, 2009; Maton, 2014; Maton & Chen, 2016). LCT is a developing framework that builds on Basil Bernstein's code theory and provides a practical toolkit to focus on knowledge within educational research and which supports retroductive reasoning. The social realism perspective underpinning LCT seemed compatible with Andy Ash's critical realist perspective, and he engaged with the literature on retroductive reasoning, within and beyond the LCT literature, as exemplified by extract six.

EXTRACT SIX: Beliefs and Knowledge: Mathematics teachers' communication using representations (Andy Ash, 2023: p.89)

'Retroduction is one of the more practical methodological tools proposed by critical realist philosophy and involves looking for underlying patterns that can explain why themes are occurring within empirical data (Danermark, et al., 2002; Olsen, 2007; Belfrage and Hauf, 2017).

It is a form of analytical reasoning that can be put alongside more traditional forms such as induction and deduction, although it is also distinct from these in that it claims to move beyond what is empirically observable (Danermark, et al., 2002; Olsen, 2007).

By utilising retroduction the researcher is prompted to look beyond empirically identifiable themes within the data, towards explanations for why these themes are there. In short, retroduction requires explanations for explanations (Scott, 2010).'

Extract six includes some challenging ideas for a systematic qualitative analysis, including that retroduction moves beyond what is empirically observable. Engaging with the concept of retroductive reasoning provides a helpful reminder to research students that part of their purpose is to question and even develop existing theory, even if it has been developed and published by prestigious thinkers. Within a critical realist perspective it is useful to develop qualitative analysis methods to include retroductive reasoning. For example, Belfrage and Hauf propose a 'critical grounded theory' method (2017), and in a similar way Andy Ash has arguably developed and applied a 'critical Thematic Analysis' method. He could be considered to have extended understanding of hybrid Thematic Analysis by adding a more explicit third retroductive reasoning stage. The application by Andy Ash of the semantic dimension in LCT is illustrated by extract seven, and it shows how he used previously coded segments of data and located them on the LCT framework for the semantic dimension.

EXTRACT SEVEN: Applying the semantic dimension of LCT (Andy Ash, 2023: p.184)

The Semantic dimension of LCT focuses upon the complexity (semantic density) and context dependence (semantic gravity) of meaning, and its communication between people (Maton & Chen, 2016).

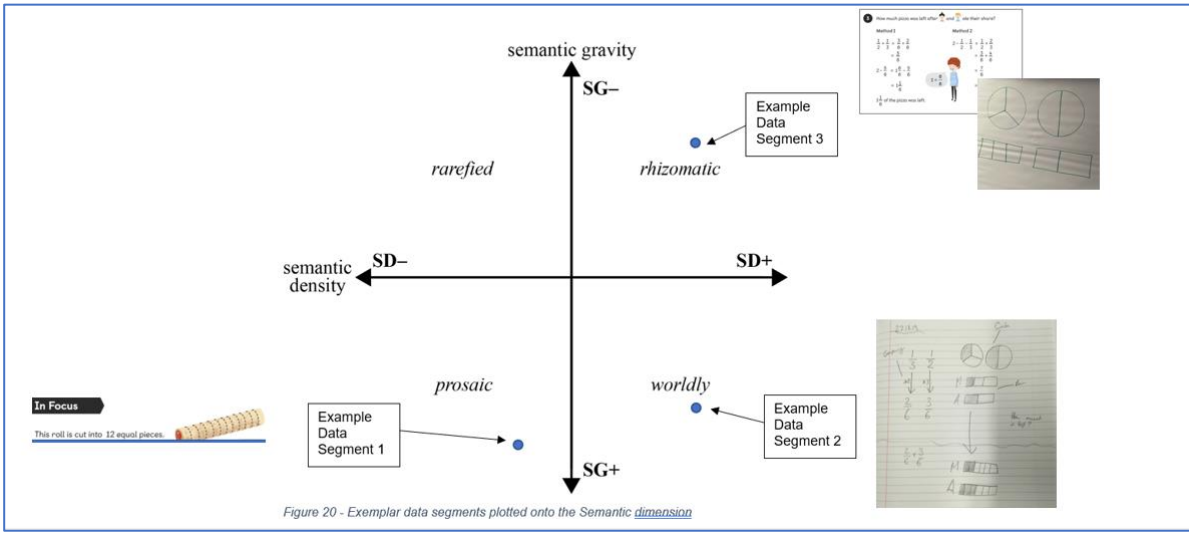

Figure 20 - Exemplar data segments plotted onto the Semantic dimension

To illustrate his analysis Andy Ash provides three examples of coded data and justifies his interpretation of their positions as ‘prosaic’, ‘worldly’ or ‘rhizomatic’. The semantic dimension of LCT has provided these three themes and through deductive reasoning as part of hybrid Thematic Analysis the researcher has matched the data segments to the themes. However, the overall process of analysis is much more

EXTRACT EIGHT: Mapping the Semantic Dimension of LCT (Andy Ash, 2023: p.194)

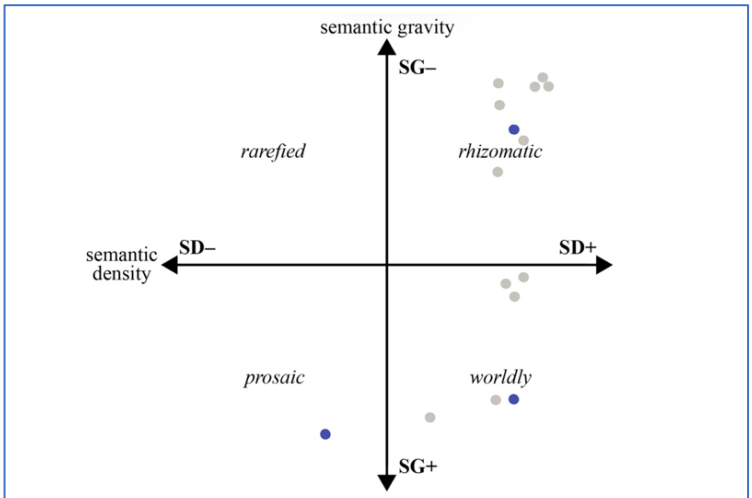

Figure 22 - A representation of all lesson segments plotted onto the Semantic dimension (exemplar segments in blue)

…most lesson segments fell into the ‘rhizomatic’ code, although there were also quite a few that were coded as ‘worldly’ and just one coded as ‘prosaic’. As the semantic wave demonstrated, both lessons began with high levels of semantic gravity (in either the ‘prosaic’ or ‘worldly’ quadrant) but then gradually progressed through ‘worldly’ and into the ‘rhizomatic’ quadrant. Therefore, the lesson segments in the ‘rhizomatic’ quadrant are all from the middle to the end of each lesson.

iterative than this idea of a third stage implies. All of the relevant coded segments of data were mapped by Andy Ash on the Semantic Dimension and this is shown in extract eight.

Extract Eight shows how Andy Ash presented the overall distribution of coded data segments and he also used a graph method to show how the different themes occurred during the observed lesson, which is referred to as the ‘semantic wave’. In this example the researcher argues that the LCT stage is a way to explicitly enrich the analysis using retroductive reasoning, building theory to explain the findings of the hybrid Thematic Analysis. In previous realist-informed research journal papers, where abduction and retroduction would be expected to be evident, a recent critical literature review found they were seldom explicitly applied and discussed and that induction and deduction appeared to dominate theorising (Mukumbang, Kabongo and Eastwood, 2021).

Conclusion

I propose that engaging with these four types of reasoning can be useful to a researcher who is using a hybrid approach to Thematic Analysis. It is important to explicitly own your perspective and acknowledge that Thematic Analysis is a ‘family of methods’ with no single correct way (Braun & Clarke, 2023). Inductive and deductive reasoning are well-established as fundamental concepts and processes, but they are not straightforward and are usefully problematised by considering other forms of reasoning that are likely to be happening, even if less consciously. Becoming aware of abductive reasoning to some extent makes the creative or speculative element of hybrid Thematic Analysis as a process more explicit, and so raises the awareness and sensitivity of the analyst. This should be helpful in ensuring a rigorous approach during the difficult interpretive work of qualitative analysis. Engaging with the concept of retroductive reasoning reminds the researcher that theory is merely that, theoretical, and part of the purpose of qualitative research is to question and sometimes develop or extend existing theory. If you are looking for a more sophisticated and scholarly insight into reasoning within thematic analysis then I recommend Kevin Proudfoot’s paper on hybrid thematic analysis in mixed methods research (2022). I am grateful to my research students for developing and extending my thinking about Thematic Analysis and forms of reasoning involved within it.

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