The Elephant in the Room: Arguments Against Horizontalized Line-by-line Coding in Qualitative Research

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In this note, we argue against the use of horizontalized line-by-line coding in qualitative research on the grounds that it is unnecessarily time-consuming and overwhelming; that it impedes researchers' attempts to progress from descriptive to interpretative analysis; and that it is disingenuous. We argue that researchers' *familiarization* with the data – literally, becoming familiar with it through the preliminary exposure (Terry et al., 2017) that typically occurs as a matter of course when one conducts research, such as via data collection, transcription, or read-through – should be conceptualized as the necessary first stage of qualitative analysis. This is because, via familiarization, researchers naturally – i.e., without particular effort – develop an understanding of the recurrent and significant elements of the data (Stern, 2007), thanks to humans' highly-evolved capacity to identify, make sense of, and communicate patterns in data (e.g., Carroll, 1993; Erreich, 2024; Mattson, 2014).

Consequently, these elements may be conceptualized as tacit templates or sensitizing concepts, thereby enabling researchers rapidly and confidently to jettison irrelevant data, uncoded, and to elevate relevant data through the application of higher-order, interpretative codes.

Defining Horizontalized Line-by-line Coding in Qualitative Research

Qualitative research concerns the analysis of non-numerical data – typically, (transcribed) text (Willig, 2001). Such analysis is an active process of generating meaning from the data by coding it – i.e., applying short, conceptual labels ("codes") to units of data, then to groups of related codes (Urquhart, 2013), to summarize and categorize their meaning in relation to the research question (Miles and Huberman, 1994).

Different qualitative methodologies use different analytic methods. This note relates to *inductive* (a.k.a. *bottom-up*) methods, whereby theory is conceptualized as emerging from the data – in contrast to *deductive* (a.k.a. *top-down* or *a-priori*) methods, whereby existing theory is evaluated against the data (Bingham and Witkovsky, 2022).

Inductive methods comprise several stages whereby codes become increasingly interpretative, rather than descriptive, and account for increasingly large units of data (e.g., Charmaz, 2014; Larkin, Watts and Clifton, 2006). The first stage entails reviewing the data from start to finish and assigning a descriptive code to each line, sentence, or perceived *unit of meaning*: "a complete idea or concept or interaction" (Morehouse, 2012: 86), which could be anything from a single word upwards. That is to say, line-by-line coding is not conceptualized as necessary to qualitative research, although it is advocated in constructivist grounded theory (e.g., Charmaz & Thornberg, 2020). Additionally, in phenomenological methodologies (Eddles-Hirsch, 2015) researchers code *horizontally*, assigning equal value to each unit of meaning (Moustakas, 1994).

Subsequent stages entail generating higher-order, interpretative themes that subsume multiple lower-order themes and codes and, ultimately, provide an explanation of the perceived salient elements of the research phenomenon in relation to the research question (Miles and Huberman, 1994).

Arguments Against Horizontalized Line-by-line Coding in Qualitative Research

Coding text literally by line, as opposed to by sentence or sense-unit, is patently arbitrary (Glaser, 1992), at least in text, such this note, where the majority of line breaks are a function of formatting (i.e., running out of space between margins), rather than meaning (e.g., starting a new paragraph to denote a new point). This approach inevitably fragments natural sense-units, undermining coding.

For example, in *Harry Potter and the Philosopher's Stone* (Rowling, 2014), the first in a well-known series of books about the eponymous boy-wizard (for a summary, see Lowne and Bauer, 2023), the oft-quoted revelation, "Harry – yer a wizard." (p. 55), covers two lines, splitting after the em dash (that, whether intentionally or not, amplifies its suspense). Yet, coding the lines from which this quotation is drawn in two units, as (1) "'Ah, go boil yer heads, both of yeh,' said Hagrid. 'Harry – ", and (2) "yer a wizard.'", would be nonsensical: "Harry – " begs the question "What [were you going to say]?", and "yer a wizard" begs the question "Who [is a wizard]?". The former answers the latter, and vice-versa. Clearly, "Harry – yer a wizard" is a unit of meaning and ought therefore to be coded as such. (Note that we shall use *Harry Potter* throughout this article to illustrate our arguments solely because we assume it is a text with which the majority of readers will be familiar).

Coding each and every line (or unit) of text, horizontally, from beginning to end, is inevitably time-consuming (Urquhart, 2013) and likely overwhelming (Glaser, 1998). An endeavour may be time-consuming and overwhelming, yet (conceptualised as) "worthwhile", such as completing a doctoral thesis. However, we argue that horizontalized coding is, emphatically, not worthwhile; indeed, that it is actively counterproductive insofar as it generates a relatively large number of codes, many, if not the vast majority, of which will inevitably be irrelevant (Stern, 2007). Hence, as Glaser (1998) argues, it slows the analytic process, thereby impeding the development of theory: the relevant is obfuscated via immersion in the irrelevant . For every "Harry –/ yer a wizard" (Rowling, 2014: 55), there are innumerable "'But –'"s (p. 38), "'Hey, Ron.'"s (p. 104) and "lamb chops, sausages, bacon and steak, [and] boiled potatoes"es (p. 131) – i.e., insignificant content.

Granted, when one encounters a text for the first time, one cannot necessarily distinguish between the significant and the insignificant. Hence, on reading *Harry Potter and the Philosopher's Stone* (Rowling, 2014) for the first time, one notes that "Professor

Quirrell…. was looking very peculiar in a large purple turban" (p. 130), but most likely writes this off as an incidental sartorial observation; that is, until page 315, when he removes said turban to reveal that "[w]here there should have been a back to Quirrell's head there was a face…". This is Voldemort's face: the villain of the piece.

However, if one is familiar with a text before coding it, as, we shall go on to argue, it benefits and therefore behoves one to be, it is disingenuous to code irrelevant quotations, such as "Hey, Ron" (p. 104), while knowing one will subsequently jettison them. Conversely, it is disingenuous to code significant quotations, such as "Harry –/yer a wizard" (p. 55), as if one weren't going to elevate them at the earliest opportunity into a higher-order code or theme.

It is a truism that the recurrent and significant elements of qualitative data will, by very definition, "rise to the top and stick in the investigator's mind" (Stern, 2007: 118) during the process of data collection, transcription, and textual read-through. The relevance of such arising data ought therefore to be trusted, just as one trusts in one's ability effectively to summarize a book one has recently read (or a film or play one has recently seen) solely by reading it as one usually would. For example, one might summarize *Harry Potter and the Philosopher's Stone* as a novel about the eponymous boy wizard and the villain Voldemort rather than about a boy named Ron who is greeted informally by others. Or, to take another example: what is this note about (so far)? Could you summarize it now, or do you need to go back to the beginning and code it line-by-line?

We are reminded, here, of the Indian parable about a group of blind men who attempt to understand what an elephant is (Baldwin, 2022). Each man touches a different part of the elephant, which leads them to draw different conclusions. For example, the man who touches the elephant's trunk concludes that an elephant is like a snake; the man who touches its tail concludes it is like a rope; the man who touches its flank concludes it is like a wall, and so

on. Critically, as one iteration of this story ends, "[p]eople who have eyes sometimes act as foolishly" (Baldwin, 2022) – as, for example, were a researcher familiar with elephants, on sighting an elephant, faux-naïvely to encode "snake"; "rope"; "wall", and so on, rather than immediately coding "elephant".

Finally, it is worth noting that coding line-by-line, sentence-by-sentence, or in consistent units, is not a requirement of qualitative research. Even Charmaz (2014), who developed the qualitative methodology constructivist grounded theory (CGT), with which line-by-line coding is particularly associated, highlights that one may choose to code units of different sizes. Indeed, Charmaz (2011) argues that CGT coding methods should be conceptualized as flexible guidelines rather than as prescriptive, and exhorts researchers to "[d]o what works for you" (p. 165).

Arguments for Harnessing the Power of Familiarization

We argue that, in qualitative coding, "what works" (Charmaz, 2011: 165) is to harness the power of familiarization – i.e., the knowledge of their data researchers can attain by collecting it, transcribing it, or reading through it as a text. Humans are inherently meaning making beings (van der Kolk, 2014): we have evolved rapidly to synthesize information to develop schemas and to make decisions (Kahneman, 2012). Indeed, superior pattern recognition and processing – i.e., the capacity to identify, encode, and communicate patterns derived from environmental stimuli – is "the essence of the evolved human brain" (Mattson, 2014:1). The human brain is wired to find patterns in data even without expending conscious effort (Kurzweil, 2013). Furthermore, our intuitive ("system one") conclusions and decisions are demonstrably often much the same as those we reach through a more laborious, conscious cognitive process ("system two") (Haidt, 2001; Kahneman, 2012). Hence, when coding familiar data, we can trust in our capacity accurately to identify what is relevant.

We argue, then, that researchers' natural process of familiarization with their data, via data collection, transcription, or textual read-through, should be formalized as the necessary first stage in qualitative coding. Although familiarization is already "prevalent in many forms of qualitative analysis" (Byrne, 2021:1398; see also Brooks et al., 2015), it is all too frequently followed by what we would term "faux-naïvety" or "pseudo-unfamiliarity"; that is, engaging in an initial stage of coding as if one had no prior knowledge of the data, as described above. Instead, we argue that, having familiarized oneself with the data – i.e., having an appreciation of its recurrent and significant elements – one should then trust and harness this familiarity to enable one to code relatively quickly and "accurately" by jettisoning irrelevant data at the outset, without coding it at all, and applying relatively higher-order, interpretative codes to relevant data, in accordance with the latter stages of one's chosen qualitative coding process.

For example, in coding "Professor Quirrell…. was looking very peculiar in a large purple turban" (p. 130), the narrative significance of the adjectives "peculiar" and "large" likely passes the first-time reader by. Consequently, a researcher unfamiliar with this text (or one familiar yet engaging faux-naïvely) could only code this line descriptively; say, as "Quirrell looks peculiar in turban". However, a researcher familiar with this text (and trusting their familiarity) would recognize this line as a clue: Quirrell looks "very peculiar" because he has been compelled to find and wear a form of head covering "large" enough to conceal Voldemort's face. He has chosen a "turban" that is "purple"; however, the type and colour of the covering is, here, insignificant: a capaciously hooded robe, for example, would have had the same concealing effect. As such, a researcher familiar with this text could code it interpretatively, as a clue, with wider reference to how Rowling plants subtle clues to Quirrell's villainy throughout the novel while redirecting the first-time reader's suspicion to his colleague, Professor Snape – e.g., "Clue to Quirrell's concealment of Voldemort".

Further, we argue that one should choose the option of coding text in units of meaning, which will naturally vary in size. For example, one might sensibly code "Harry – yer a wizard" (Rowling, 2014: 55) as a unit; or, indeed, pages 51-56, inclusive, which amount to this revelation. One is therefore still coding systematically, from beginning to end, and comprehensively, yet more efficiently. Hence, this approach fulfils the same function as line-by-line coding while addressing the above criticisms of it.

This approach to coding is essentially a form of more-or-less tacit *template analysis* (Brooks et al., 2015) – an established process in qualitative research whereby data is analyzed with reference to tentative *a priori* themes, which have been identified in advance – here, via the natural process of familiarization – as likely to be relevant to the analysis. These themes therefore function as more-or-less tacit *sensitizing concepts*, which "give researchers initial but tentative ideas to pursue and questions to raise about their topics" (Charmaz, 2014:30; see Author A, 2018). For example, one would expect to emerge from reading *Harry Potter* with an appreciation of the particular relevance of material relating to the initial misdirection and subsequent revelation of Quirrell's villainy and Snape's innocence. Hence, one would be alert to such material, and group it together, were one then formally to code this text.

We would emphasise, here, that our argument is for the formalization of familiarization as the first stage in the process of qualitative coding, rather than for the formalization of the process of familiarization, per se. For example, to familiarize oneself with *Harry Potter*, one need only read it, as one would read any other book; trusting, as we have illustrated, that this will enable one more rapidly to identify relevant and jettison irrelevant data when one progresses to subsequent, formalized stages of coding. A researcher may choose to formalize, to a greater or lesser extent, the process of familiarization by recording the themes that have stuck in their mind (Stern, 2007) – e.g., "Misdirection and subsequent revelation of Quirrell's villainy" – and using these as sensitizing concepts, as

described above. However, we would argue that this is unnecessary, as it would merely be an externalization of what already exists in the researcher's mind; useful, perhaps, for evidencing one's coding process, yet not necessary for conducting it.

Countering Arguments Against Familiarization

Advocates of line-by-line, horizontalized coding argue it upholds research quality by ensuring the resultant analysis is grounded in the data itself (e.g., Charmaz, 2014; Glaser, 1992). However, as we have argued, coding via familiarization, templates or sensitizing concepts, and sense-units, is also data-grounded. Moreover, as qualitative research upholds multiple forms of quality assurance, it need not insist on a particular approach to coding, as unsubstantiated analysis will become apparent during the quality assurance process.

For one, irrespective of whether one takes a bottom-up (line-by-line, horizontalized) or more top-down (template analysis; sensitizing concepts) approach to data analysis, one is required to evidence, in the Analysis section of one's paper, that one's theory is substantiated by the raw data. This safeguards against unsubstantiated analysis: one could argue that *Harry Potter* is fundamentally concerned with greeting Ron, but one could not sufficiently substantiate this argument with evidence from the text.

Further, quality may be assured via *negative case analysis* (Henwood and Pidgeon, 1992): actively seeking contradictory instances in the data; and *constant comparison* (Charmaz, 2014): comparing codes with each other to ensure they are consistently applied and best fit the data.

Yet further, quality may be assured via *reflexivity*: identifying, and presenting an account of, one's personal and theoretical positioning in relation to the research (Mead, 1962); and *triangulation*: discussing one's interpretation of the data with others, or assigning multiple researchers to analyse the same data, to facilitate identification of unconscious biases and alternative interpretations (Carter et al., 2014).

Indeed, qualitative researchers are typically exhorted to (endeavour to) *bracket* – i.e., to set aside their positioning: their beliefs, biases, and subjectivities – during the process of analysis (Creswell and Miller, 2000), on the grounds that this increases the validity of the emergent theory (e.g., Glaser, 1992). However, it is important to note the distinction between a belief, bias, or subjectivity and a valid conclusion about a text reached following a process of familiarization. For example, to note the distinction between a religiously intolerant belief that "people who wear turbans are villainous", leading to a bias against turban-wearers, and the knowledge, having read *Harry Potter*, that Professor Quirrell, who wears a turban (to conceal Voldemort), is, in fact, villainous.

Conclusion

In this note, we have argued that the decision to use horizontalized, line-by-line coding impedes the process of data analysis in qualitative research as it is unnecessarily time-consuming and hampers the development of higher-order codes and theories. We argue that qualitative data analysis would be far more efficient were researchers to approach it from a point of familiarity, trusting that their unique and highly evolved capacity as humans naturally to synthesize data will thereby enable them to jettison the irrelevant and elevate the relevant on first pass. In short, qualitative researchers ought no longer wilfully to blind themselves to the methodological elephant in the room.

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