# UWS Academic Portal

## Did they really say that? An agential realist approach to using computer assisted transcription software in qualitative data analysis

Jenkins, Nicholas; Monaghan, Karen; Smith, Michael

[Link to publication on the UWS Academic Portal](Link to publication on the UWS Academic Portal)

# Did they really say that? An agential realist approach to using computer assisted transcription software in qualitative data analysis

Nicholas Jenkins, Karen Monaghan & Michael Smith

Published online: 10 Aug 2021.

Submit your article to this journal ↗

Article views: 41

View related articles ↗

View Crossmark data ↗

Routledge
Taylor & Francis Group

# Did they really say that? An agential realist approach to using computer assisted transcription software in qualitative data analysis

Nicholas Jenkins[a], Karen Monaghan[a] and Michael Smith[b]

[a]School of Education and Social Science , University of the West of Scotland, Glasgow, UK; [b]School of Health & Life Sciences, University of the West of Scotland, Glasgow, UK

## ABSTRACT

Transcription is an integral part of much qualitative data analysis, yet rarely has it received close attention in debates over the use (or non-use) of *computer assisted qualitative data analysis software* (CAQDAS). This article draws upon a mixed-methods study that involved transcribing conversational interviews with carers, third sector practitioners and policy-makers, to explore how *computer assisted transcription software* (CATS) can affect data and its analysis in ways unanticipated at the outset by researchers. From an agential realist perspective, the article outlines three steps towards making principled choices over the use (or non-use) of CAQDAS in qualitative data analysis. These steps require navigating extremes associated with technological determinism; that we re-think our understandings of the software-data-researcher relationship; and that we move away from asking how well a given CAQDAS can 'perform' and towards exploring what a given CAQDAS can (and cannot) do.

## Introduction

Since the early 1990s, the use of *computer assisted qualitative data analysis software* (CAQDAS) has been a contentious issue that has attracted impassioned advocates and staunch critics in equal measure. Early CAQDAS enthusiasts, for example, referred to the emergence of programs such as *Atlas.ti, HyperResearch* and *Ethnograph* as something akin to a 'digital revolution' (Gibson et al., 2005) that may be capable of reshaping qualitative research across a range of disciplines; including sociology, anthropology, nursing and business management, amongst others (Buston, 1997; Gibson et al., 2005; Morison & Moir, 1998; Webb, 1999; Weitzman, 1999). Using CAQDAS, advocates argued, could enable researchers to better manage large, complex and 'messy' datasets (Buston, 1997; Paulus & Lester, 2016; Sinkovics & Alfoldi, 2012) and automate repetitive analytical tasks, such as text searching and text retrieval, that were hitherto done by hand (Buston, 1997; Morison & Moir, 1998; Weitzman, 1999). This could allow researchers to dedicate more of their time to engaging in complex analytical tasks, such as axial and explanatory forms of coding that are central to the creation of grounded theory (Bringer et al., 2006; Morison & Moir, 1998; Webb, 1999). CAQDAS, it was further argued, could not only facilitate high-level qualitative data analysis but could help make the process more transparent, reflexive and trustworthy, thereby broadening its appeal to both researchers and funders (O'Kane et al., 2021; Sinkovics & Alfoldi, 2012; Weitzman, 1999; Woods et al., 2016). Critics of the CAQDAS 'revolution', in contrast, pointed to the potential

for such software to impose analytic procedures and methodological assumptions upon researchers; leading, for example, to 'coding fetishism' (Richards, 1997) or to researchers engaging in analytic activities without a sense of purpose and a clear rationale (Coffey et al., 1996; MacMillan & Koenig, 2004). Indeed, even CAQDAS' perceived advantages, such as its time-saving potential and potential for increased rigour and transparency, were criticised as false prophets that risked portraying a false sense of objectivity in qualitative data analysis and promoting a corresponding lack of reflexivity amongst CAQDAS users (MacMillan & Koenig, 2004).

Regardless of whether CAQDAS was positioned as either a 'digital revolution' (Gibson et al., 2005) or a 'trojan horse' (Morison & Moir, 1998), what is interesting to note within these early debates is how little attention was paid to the rapid digitisation of transcription work, despite the fact that by the end of the 1980s and during the height of the CAQDAS debate, most qualitative researchers had switched to using personal computers (and away from typewriters and notepads) when transcribing their data. This transition, in turn, enabled new transcription techniques, such as moving, copying and pasting words from one part of the transcript to another. Yet, in stark contrast to some of the more contentious aspects of the CAQDAS debate, transcription tended to be positioned as a 'mundane, technical, or unproblematic' (Lapadat & Lindsay, 1999, pp. 66–67) precursor to CAQDAS usage. As Webb (1999) states: 'Before analysis begins, data (e.g. interview transcripts) are word processed and saved . . . so that they can be imported into the CAQDAS' (p. 323).

It is perhaps unsurprising that transcription has been largely ignored in debates about the use (or non-use) of CAQDAS. As several researchers have previously alluded to, transcription has long been the *Cinderella* of qualitative data analysis. Methods textbooks rarely afford the practice serious consideration and equally rarely are transcription processes and their effects included in researchers' accounts of their analysis process (Cibils, 2019; Clark et al., 2017; Halcomb & Davidson, 2006; Lapadat & Lindsay, 1999; MacLean et al., 2004; Poland, 1995; Tilley, 2003). This has led to researchers such as Cibils (2019) to refer to transcription as 'one of the most under appreciated of processes in qualitative research' (p. 1133). The tendency to ignore transcription within the CAQDAS debate has continued well into the twenty-first century. As Paulus et al. (2013) highlight, rapid advancements in digital technologies – including voice recognition software and hypermedia – have important implications for the transcription process, yet the methodological implications of these developments have tended to be ignored within mainstream textbooks on qualitative research. These have tended instead to discuss in-the-field considerations, such as encouraging novice researchers to use reliable recording equipment and to factor in sufficient time to undertake transcription.

Whilst under-appreciated, 'the rendering of recorded talk into a standard written form' (Edwards, 2006, p. 304) has long been one of the mainstays of qualitative data analysis, as it constitutes 'one of the first steps in the analysis process' (Paulus & Lester, 2016, pp. 413–414). Transcripts enable researchers to skim their data more quickly and effectively than many could achieve by playing back audio and video recordings. Transcripts can be subjected to keyword searches and other forms of string variable manipulation, in ways that audio and visual recordings cannot. Transcription can be used to anonymise research participants and provide extracts from the dataset that can be used within journal articles, reports and other forms of dissemination to support researchers' claims. And yet, researchers also have highlighted that transcription is a time-consuming and laborious process that can profoundly affect the data being analysed (Green et al., 1997; Hammersley, 2010; Lapadat & Lindsay, 1999; Poland, 1995; Tilley, 2003). The process of transcribing data can introduce intentional, accidental and unavoidable alterations (Poland, 1995). Transcribers need to rely upon interpretive processes and cultural knowledge, not only to accurately render what is being uttered in the recordings, but to convey the meaning of what participants are saying (Cibils, 2019; Green et al., 1997; Hammersley, 2010). As such, transcripts can unintentionally render words spoken by participants out of context, by omitting nonverbal and paralinguistic forms of behaviour used by the speakers to imbue their verbal

utterances with meaning (Hammersley, 2010; Parameswaran et al., 2020). Even when transcribers compensate for the absence of such information – by using Jeffersonian transcription, for example, – most researchers would likely agree that 'it is very different to read a nonverbal action versus seeing it simultaneously as the participant is speaking' (Parameswaran et al., 2020, p. 641). Further, transcription work is often out-sourced to junior researchers and ancillary workers, who are not members of the research team, did not collect the data themselves and may have little familiarity with the research aims (Gregory et al., 1997; MacLean et al., 2004). These peripheral and potentially vulnerable workers can nevertheless become entangled within the transcription process, leaving the 'prints' of their emotional responses, interpretations and decision-making on the transcripts (Gregory et al., 1997; Tilley, 2003).

Faced with the practical, ethical and epistemic challenges that transcription entails, some qualitative researchers have sought to move beyond transcription altogether in qualitative data analysis (e.g. Kvale, 1996). In this context, the rise of CAQDAS has been heralded as reducing, or even eliminating, the need for transcription. Gibson et al. (2005) highlight how *Atlas.ti* can be used to assign analytic codes directly to digital voice recordings – a practice that has since become known as 'live coding' (Parameswaran et al., 2020). Live coding, advocates argue, brings researchers closer to their data by enabling the analyst to draw upon the full richness of verbal interaction and by reducing their reliance upon transcription. Others, however, have argued for augmentations to the transcription process as a means of ensuring closeness to data and trustworthiness in the transcripts. These include, for example, the creation of robust transcription protocols and quality assurance rubrics (e.g. Clark et al., 2017) or the annotation of verbatim transcripts with researchers' own 'event memories' (Sinclair, 2020). In this context, Paulus and Lester (2016) highlight the potential for an emergent form of computer assisted transcription software (CATS) to facilitate a third way, between full reliance and zero reliance upon transcription to analyse qualitative data; namely *syncronised transcription*. Synchronised transcripts are hybrid transcripts within which written text is hyperlinked throughout to corresponding sections of the digital audio and visual recordings. Synchronised transcripts, Paulus and Lester (2016) argue, enable researchers to work more closely with their data by enabling them to move seamlessly between interpretive acts of reading and listening and in so doing, 'avoiding the risk of transforming everyday talk to nothing more than words on paper' (Paulus & Lester, 2016, p. 414).

Since the publication of Paulus and Lester's article (Paulus & Lester, 2016), the potential for qualitative researchers to work with synchronised transcription has increased dramatically. Rapid advances in artificial intelligence (AI) has led to software developers such as *Trint* (https://trint.com/) and *Verbit* (https://verbit.ai/) as well as established CAQDAS providers such as *QSR International* (https://www.qsrinternational.com/) offering fully automated, fully synchronised transcription services. These platforms replace earlier reliance upon voice recognition (VR) software, which tended to be the mainstay of CATS during the 1990s and early 2000s. Instead, these contemporary CATS use a mixture of machine learning and cloud computing to render hypermediated transcripts that can be created within minutes (or even seconds) following upload to a secure server. These synchronised transcripts can also be rendered in multiple languages and (so the companies claim) to very high levels of accuracy. In addition to promising fast and accurate transcription, these CATS offer researchers access to secure, collaborative online text-editors within which they can verify, edit, manage, review and even code their transcripts and audiofiles. Such activities can be performed by multiple researchers, each working on the same transcript, from different terminals and from anywhere in the world with internet access. *Prima facie*, this combination of quick, accurate and fully synchronised transcription combined with access to online editing tools and secure collaborative workspaces make these CATS highly appealing to qualitative researchers, especially for researchers working to tight timescales and on limited budgets, as subscription costs typically associated with CATS are much lower than those associated with manual transcription. Whilst this is the case, there is a dearth of literature that explores how such CATS have been used by qualitative researchers and what effects these CATS may have on the data

and the analysis process. Drawing on an agential realist methodology, as outlined by Barad (2007), this article seeks to critically explore the use of CATS as part of a mixed-methods project conducted between January 2019 and April 2021.

## About the study

The study within which our discussion is situated is a mixed-methods evaluation exploring outcomes associated with advocacy-based education and peer support amongst unpaid (familial) carers of people living with dementia. *tide* – a UK wide network of carers and former carers of people living with dementia – is the focus of our evaluation. *tide* was established in England (UK) in 2015, following the *Carers' Call to Action* (CC2A) campaign. *tide* seeks to disrupt and reshape approaches to dementia by establishing a community of carers across the UK and empowering carers to make their voices heard (see: https://www.tide.uk.net/). In 2017, *tide* established a dedicated network of carers in Scotland (UK) and in 2018, the lead author was commissioned to conduct an independent evaluation of the *tide* network in Scotland, to run from January 2019 to April 2021. To date, qualitative data obtained as part of the evaluation includes data from over 30 conversational interviews involving carers, tide staff and senior managers/policy makers. In October 2019, the research team decided to pilot the use of one CATS platform (*Trint*) to help transcribe these data. Established in 2014 by former journalist Jeff Kofman, *Trint* is one of the current CATS providers (https://trint.com/). Using a mix of automated speech recognition (ASR) and natural language processing (NLP) algorithms, the software attempts to match human utterances to written words that are then hyperlinked, time-stamped and presented to the user in an online (cloud-based) text editor. Within this text editor, users can review, verify and amend their transcripts, check time stamps and assign identifiers to individual speakers. In the sections that follow, we explore how *Trint* affected our data and our analysis in ways that we had not unanticipated and which, we strongly suspect, were largely unintentional features of the software's original design.

Within the evaluation, our approach to qualitative data analysis was informed by *Framework* (Ritchie & Spencer, 1994). Originally developed by applied social policy researchers Jane Ritchie and Liz Spencer, *Framework* is a step-wise approach that is ideally suited to projects where the aims of qualitative data analysis are descriptive and interpretive as opposed to theory generating. Whilst this is the case, key stages in the Framework process (*familiarisation; identifying a thematic framework; charting; mapping and interpretation*) align closely with the three concurrent processes of *data condensation, data display* and *conclusion/verification drawing* that, Miles et al. (2019) argue, are common amongst a wide range of approaches to qualitative data analysis. Our approach to understanding how *Trint* affected our data and our analysis, however, is informed by the concept of entanglement, which is central to the broader agential realist approach (Barad, 2007; Haraway, 2016). Entanglement is increasingly becoming a popular concept within qualitative research, yet it is often poorly defined and articulated within the field. A contentious concept, borrowed from the world of quantum physics, entanglement refers to the ability of unconnected particles (e.g. photons or electrons) to affect each other – a process that Albert Einstein famously, if somewhat dismissively, is said to have referred to as: 'spukhafte Fernwirkung' (roughly translated as '*spooky action at a distance*'). Within the social sciences, the concept of entanglement has been most notably developed by feminist scholar and particle physicist, Karen Barad (Barad, 2007). For Barad, and others working within the *new materialist* tradition (e.g. Coole & Frost, 2010) entanglement provides a conceptual nexus between social constructionist and materialist worldviews. For Barad, processes of *intra*-action involving material and semiotic forces create *Cuts* through which objects and other phenomena are rendered mutually distinct. In this way, the concept of entanglement invites methodologists to explore ways in which qualia, meaning, technology and human bodies *intra*-act, through the transcription process, to produce *Cuts* (transcripts) that serve to render qualitative data discrete and use-able. Notions of entanglement can help move methodological debate beyond exploring whether transcripts merely record qualitative data or conversely,

construct them – as Hammersley (2010) previously sought to do, albeit through reference to a subtle realist (as opposed to an agential realist) framework. To illustrate the value of this approach for understanding the role that automated transcription may play in qualitative data analysis, the following sections explore how *Trint* became entangled within each stage of the *Framework* process. After this, we explore how our agential realist approach to incorporating CATS within qualitative data analysis can be applied more broadly across the CAQDAS debate, to help guide researchers in making *principled choices* (Weitzman, 1999) about the use of computer software within qualitative data analysis.

## Step 1: familiarisation

Familiarisation is a common pre-cursor to formal qualitative data analysis. Within *Framework*, it refers to the process through which the analyst 'becomes immersed in the data by listening to audiotapes, studying the field or reading the transcripts' (Srivastava & Thompson, 2009, p. 75). Key to familiarisation is the ability to access qualitative data quickly, easily and in a variety of mediums, including written and audio formats. It is in this early stage that we found the use of *Trint* most profoundly affected the data and analysis. As stated above, one of the primary affordances of modern CATS is the ability to synchronise text with audio and visual recordings. This enables researchers to switch seamlessly between reading, hearing and seeing data; this was possible in *Trint* because each segment of text was timestamped and hyperlinked to corresponding sections of the interview recording. This ability to hear and read data in one place, and to move effortlessly between the two, facilitated a level of familiarisation that would have been difficult to reproduce by moving between audio recording and transcript, were each contained within discrete digital files (e.g. as '.doc' and '.mp3' files). Whilst we anticipated this, what was not anticipated was how familiarisation would be unintentionally enhanced by the very low levels of 'accuracy' and very high number of 'errors' that *Trint* produced. Whilst the owners of software such as *Trint* and *Verbit* claim their transcripts are up to 99% accurate on initial rendering, we found that the 'accuracy' of the initial transcripts was considerably lower. 'Accuracy' varied across the transcripts, but this was only partially affected by the quality of the audio-recordings. What primarily appeared to affect the accuracy of the initial renderings was the speaking practices of interview participants. Transcripts of participants speaking with regionalised accents or using regionalised dialects (e.g. *Scots*) were much less 'accurate' compared with transcripts of participants speaking with accents and dialects that more closely resembled received pronunciation. Given that much qualitative research is focused on exploring the views and experiences of marginalised populations, this would, at first glance, appear to be a *major* limitation and a primary reason for not using CATS in qualitative data analysis. Based on our own experiences, 'verifying' automated transcriptions may take as long, if not longer, than if we had transcribed the interviews ourselves, using standard word-processing software and intelligent verbatim conventions. Further, whilst the machine learning algorithms that modern CATS rely upon are designed to help the software 'learn' new words, there was scant evidence that *Trint* was 'learning' how to produce more 'accurate' transcripts as the process went on. What we found, in contrast, was that the software repeatedly mis-rendered words that are in common use in the UK but are used less in North American countries. Figure 1, for example, highlights some of the copious ways in which *Trint* repeatedly mis-rendered the word 'carer' as it was spoken by our interview participants.

Whilst 'verifying' transcripts probably took more of our time than if we had decided to transcribe the data ourselves, this did not discourage us from continuing to use the software; on the contrary, we came to see it as a major benefit for two key reasons. First, as Gregory et al. (1997) highlight, transcribing interviews within which people discuss sensitive and emotive issues can be emotionally labour intensive. In this context, identifying some of the more comical – and at times surreal – ways in which these algorithms 'interpreted' human speech, provided a valuable source of amusement during the transcription process. Team members shared and commented on some of the 'gems'

| Utterance | | (Mis)Rendered | |
|---|---|---|---|
| "Carer(s)" | advocators | Cunard's | keynote |
| | Akitas | curve's | keynoted |
| | Akito | cuter | keytar |
| | al Qaeda | data | kicked |
| | Annotators | educators | Kidane |
| | cable | executer | Kidders |
| | cadeaux | fairness | kidney |
| | cagers | formulators | kids |
| | Caird | fornicators | Kieran |
| | campaigners | haters | killers |
| | Canada | hear | kingdoms |
| | Candace | indicators | kissed |
| | candidacy | James | Kudasai |
| | candidate | Kadosh | Kunar |
| | cane | Kaeding | Kutas |
| | canegrowers | Kaner | leader |
| | Canters | kantanas | MacInnes |
| | careers | Kantaras | mentioned |
| | careless | Kanters | okay |
| | carriers | katar | painters |
| | carter | Kater | partners |
| | cater | Kator | Peters |
| | caterer | Katter's | pianist |
| | caterson | Keener's | player |
| | cheaters | Keevers | prosecutors |
| | Clanchy | Keita's | Qantas |
| | comeback | Kenya's | Quito |
| | commuters | keris | teethers |
| | creators | Keter | theatres |
| | cricketers | ketut | Terrorists |
| | Cuba | key | |

**Figure 1.** Examples of automated transcription errors.

they had uncovered whilst verifying the transcripts (see Figure 1). Whilst this may sound tangential to some, sharing these AI-gaffs provided a much needed source of tension relief as we immersed ourselves in carers' experiences of caring for loved ones diagnosed with progressive, terminal neurocognitive conditions. As Cibils (2019) acknowledges, being able to pause, smile and share 'innocent' transcription slips can provide much needed respite from the emotional and psychological demands of data immersion. Second, whilst the process of validating transcripts was time-consuming and laborious, it facilitated a level of familiarisation that we believe would not have been achieved were we to have been presented with highly 'accurate' initial renderings. Engaging seamlessly in interpretive processes of listening and reading, yet consistently experiencing a level of cognitive dissonance between the two, enabled us to get to know our data back-to-front and front-to-back. In this context, the low levels of 'accuracy' created by the initial renderings was advantageous, as it enhanced and deepened our familiarity with the data. This paid dividend during subsequent steps in our *Framework* analysis, as this article goes on to discuss.

## Step 2: identifying a thematic framework

Within *Framework*, identifying a thematic framework belongs to the family of analytical techniques that Miles et al. (2019) refer to as: *data condensation*. Data condensation (also referred to as data

reduction) is a key feature of qualitative data analysis and is central to the design of many existing CAQDAS packages; see, for example, Richards (1997). As Miles et al. (2019) highlight: 'Data condensation refers to the process of selecting, focusing, simplifying, abstracting, and/or transforming the data that appear in the full corpus (body) of written-up field notes, interview transcripts, documents, and other empirical material.' (p. 8).

Whilst a key affordance of CAQDAS, data condensation is not restricted to the analysis of data that has already been collected. Anticipatory data condensation, for example, occurs at the outset of the research process when researchers decide 'which conceptual framework, which research questions, which cases, and which data collection methods to choose' (Miles et al., 2019, p. 8). Within *Framework*, anticipatory data condensation occurs ostensibly through the creation of the thematic framework (Ritchie & Spencer, 1994). The thematic framework is the formal identification of prior themes and issues that the researcher anticipates will take centre stage within the overall analysis. Our thematic framework was informed by our Theory of Change for *tide*, which was co-produced by members of the research team and *tide* staff during a collaborative workshop that was facilitated by the research team at the outset of the evaluation. The thematic framework identified three prior considerations that were used to aid data condensation throughout data collection and analysis. Within the thematic framework, each consideration was given a written description and assigned a colour. For reasons we explain in the following sections of the paper, the choice of colour to assign to each consideration was determined by the range of highlighter colours available within *Trint*'s online text editor. Having constructed the thematic framework (using Microsoft Excel), we used *Trint*'s pallet of highlighters to effectively condense the data. This process was done in ways similar to coding interview transcripts within other CAQDAS, such as *NVivo, HyperResearch* or *Atlas.ti*. Colour-coding synchronised transcripts created visual reference points that showed us where relevant data resided within each of the synchronised transcripts, as they related to our *primary* considerations. This, as we argue next, enabled us to develop new ways of *charting* our data within the Framework approach.

## Step 3: charting

Charting, within Framework, refers to the process by which '(d)ata are "lifted" from their original context and rearranged according to the appropriate thematic reference' (Ritchie & Spencer, 1994, p. 182). As such, it belongs to the family of techniques that Miles et al. (2019) refer to as *data displays*. Displaying data is a crucial bridge within a variety of approaches to qualitative data analysis, as it serves to connect interpretive acts of condensation with subsequent processes of making and verifying conclusions. According to Miles et al. (2019) there are three 'families' of data display in qualitative data analysis: *Matrices; Networks*; and, *Graphics*. Within *Framework*, charting conventionally belongs to the *Matrices* family, as it enables highly synthesised data to be arranged in a tabular format to facilitate cross-case comparisons and to explore convergence and divergence within and across codes and cases. Yet, as our analysis moved into the charting phase, we found *Trint* could facilitate a form of data display that effectively combined *Matrices* and *Graphics* families.

Graphic displays, according to Miles et al. (2019), are 'act(s) of imaginative data condensation and analysis that . . . (evoke) an at-a-glance understanding of the entire study' (p. 110). Because *Trint*, like other CATS, creates synchronised transcripts within which audiorecordings and written text are hypermediated throughout, colour-coding sections of the interview text were automatically transposed to corresponding sections of the audio file's timeline, effectively combining conventional coding and 'live coding'. This created colourful, annotated timelines that could then be charted (see Figure 2). Timeline-charting, as we later came to refer to it, enabled us to observe the distribution of prior considerations across groups of participants. Calling forth the data in this way enabled us to visualise, for example, how interviews with external stakeholders tended to contain more data on *Recommendations & Improvements* ('green data') and that these data were more likely

**Figure 2.** An example of a timeline matrix.

to be distributed throughout the interview, compared with interviews with carers. Timeline-charting, we suspect, could also be employed longitudinally, in order to display the distribution of data from the same participants over time. This is an area that we are currently exploring within the analysis.

## Step 4: mapping and interpreting

The final step within the *Framework* approach (*mapping and interpreting*) involves researchers proposing statements and assertions that are rooted in the data. In order to achieve this, ' . . . the analyst reviews the charts and research notes; compares and contrasts the perceptions, accounts, or experiences; searches for patterns and connections and seeks explanations for these internally, within the data' (Ritchie & Spencer, 1994, p. 186). This process of making and verifying conclusions in this fashion is not unique to *Framework* but is, rather, a consistent feature of qualitative data analysis. As Miles et al. (2019, p. 9) for example, state:

> From the start of data collection, the qualitative analyst interprets what things mean by noting patterns, assertions, propositions, explanations, and causal flows. The competent researcher holds these conclusions lightly, maintaining openness and skepticism, but the conclusions are still there, vague at first, then increasingly explicit and grounded.

There exists a wide variety of interpretive techniques that analysts can employ to help them make sense of their data. Miles et al. (2019) highlight thirteen 'specific tactics for drawing meaning from a particular configuration of data in a display' (p. 274). Whilst these techniques are not always referred to by others using the same nomenclature, they tend to be used across various schools of qualitative data analysis and are facilitated by a range of existing CAQDAS. Whilst *Trint* and other CATS may not have been designed with the aim of facilitating these latter stages of qualitative data analysis, we found that *Trint* enabled new ways of mapping and interpreting our data. As discussed in the previous section, timeline-charting enabled us to observe patterns in the data that may not have been made visible, had we transcribed our data manually. However, we also found that recent additions to *Trint*, launched whilst we were conducting our analysis, facilitated a level of closeness to the data that was instrumental when we were seeking to 'verify' our interpretations.

As Miles et al. (2019) argue, initial interpretations – however plausible – should not be taken at face value, and require some form of verification. In this context, we found the *New Story* function, introduced to *Trint* in November 2020, towards the end of our initial analysis, enabled us to develop and refine our interpretations. This story-lining tool enabled extracts from across the transcripts that had been colour coded using the same highlighter colour to be extracted and re-assembled, to form a new, synchronised and synthesised transcript. Within *Trint*, a New *Story* can be created either from the main dashboard or from within an individual transcript (see Figure 3). Within the re-assembled *Story*, we were able to read and listen to each coded segment from across the dataset, as they related to each prior consideration. This new affordance enabled us to check for the presence of elite bias in our analysis, in ways that would be difficult to replicate if only listening to the audio recordings or only reading sections of interview transcript. Elite bias occurs in data analysis when
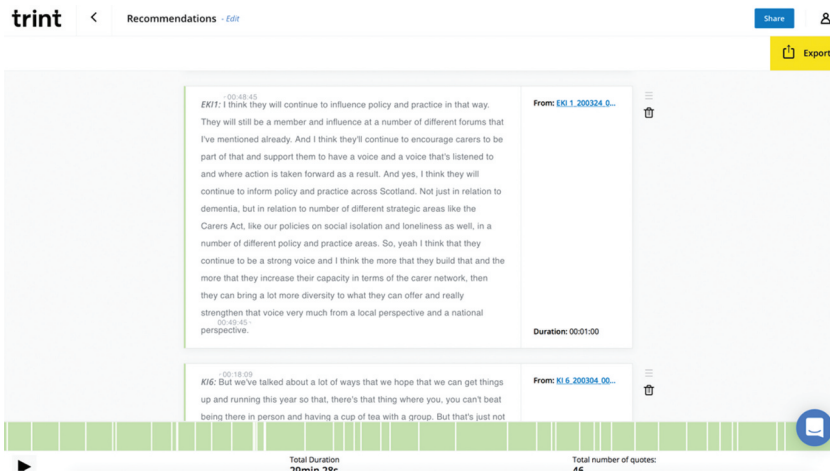
**Figure 3.** Example of a *New Story*.

'data from articulate, well-informed, usually high-status participants' are accorded preferential treatment in contrast to data provided by 'less articulate, lower status' participants (Miles et al., 2019, p. 289). By listening-reading our thematically coded data, we were able not only to see if data from particular participants were more likely included within each code, but also to listen for the distribution of regional accents and dialects that may, in turn, signify differing positions of status, power and marginality.

## Discussion

So far in this article, we have sought to explore how our use of computer assisted transcription software (CATS) shaped the expression of our data and the direction of our qualitative analysis. We have highlighted, for example, how very low levels of 'accuracy' in the initial renderings led to us dedicating more time to cleaning, correcting and (in so doing) *familiarising* ourselves with our data than anticipated. We have highlighted how the ability to colour code written text and audio timelines simultaneously created new opportunities for displaying data. And, we highlighted how new functions that were introduced to the software during the data analysis enabled us to create new, synchronised and sythensised transcripts that, in turn, led to new ways of 'verifying' emergent interpretations. In this final section of the paper, we turn our attention to an often-used maxim that researchers must make *principled choices* when determining which form of CAQDAS to use. As Weitzman (1999) for example, argues:

> . . . a researcher needs to be able to make a *principled choice of software*: one that balances the capabilities of the software with the specific needs of the researcher and the project. (Weitzman, 1999, p. 1242, *Italics Weitzman*).

At first glance, it is difficult to disagree with such an assertion. How, for example, could any methodologist worth their salt advocate that researchers make ad-hoc, ill-informed or otherwise unprincipled choices? The issue with Weitzman's recommendation, we argue, is not its plausibility but, rather, its application. In other words, *how* should researchers go about making principled choices when it comes to CAQDAS? One of the causes of this ambiguity is that methodological attention has tended to rest on technical considerations – such as time and labour saving potential – which are often discussed without reference to broader methodological and epistemological principles (MacMillan & Koenig, 2004). Drawing on our agential realist perspective, this final section therefore seeks to outline some tentative steps towards

making *principled choices* – or *response-able* choices (Haraway, 2016) – about CAQDAS (non)use.

One step, we believe, is to address the thorny issue of technological determinism in debates about CAQDAS. Whilst some of the early concerns expressed about the use of CAQDAS (e.g. Coffey et al., 1996) have been demonstrated to be largely unfounded, it is too simplistic to say that early sceptics were either subject to 'paranoia' (Seale, 2001) or that their concerns were based on having little or no direct experience of using CAQDAS (Jackson, 2017). Software users can become affected by digital technologies in profound ways and in ways unanticipated by end-users and software developers alike. Researchers cannot, therefore, ignore the possibility of becoming affected by the software they use and simple-sounding solutions, such as trying to 'understand how [CAQDAS] may influence research practices and outputs' (Woods et al., 2016, p. 385) are unlikely to be in-and-of themselves sufficient. Yet, neither should we allow initial caution and scepticism to result in blanket non-use policies, assuming such policies would be feasible in 21st century qualitative research. Adopting extreme, unqualified and un-nuanced positions at either end of the spectrum within the CAQDAS debate risks polarising researchers and constructing an artificial bifurcation of CAQDAS 'zealots' on the one side and CAQDAS 'haters' on the other. Previous attempts to address issues of technological determinism in CAQDAS have tended to rely on practising reflexivity as a means of situating oneself and one's use of CAQDAS technologies within broader accounts of the research process. Woods et al. (2016), for example, argues that using CAQDAS may itself enable researcher reflexivity at various stages of the process. It is difficult to ascertain, however, whether the reflexivity these authors identify in their review of the methods literature is the result of CAQDAS use *per se* or – more accurately, we believe – by researchers deciding to write about their use of such software in academic journals. Whilst commendable, practicing reflexivity is not a panacea capable of overcoming the many challenges and pitfalls associated with qualitative data analysis. Further, and as has been argued by Barad (2007), reflexivity as a methodological concept is not without its limitations nor its questionable ontological assumptions.

As such, another step towards making *principled choices* about CAQDAS use is to develop more robust methodological concepts for understanding connections between CAQDAS, qualitative data and researchers. Traditionally, within the debate, CAQDAS have been positioned as tools that reside within the qualitative researcher's 'tool kit'. When used effectively, so the argument goes, these tools can enable high quality, precision data analysis. In contrast, when used poorly, they limit, damage or otherwise hinder good qualitative data analysis. In line with arguments presented earlier in this paper, we argue that the tool kit metaphor fails to recognise the entangled nature of qualitative data analysis and the complex *intra*-actions involving qualia, meaning, technology and human bodies, through which data are rendered distinct and useable. Positioning CAQDAS as tools that are ontologically distinct from the data they seek to manage and the researchers that seek to use them, conceals the ways in which CAQDAS form part of a knowing assemblage; an assemblage that is comprised of intra-acting human and non-human elements. Thus, from an agential realist perspective, CAQDAS form part of a complex process of observation through which certain data are *called forth* into being. What we have sought to demonstrate in this article is how *Trint* made data and their interpretation visible in ways that we had not anticipated. We did not consciously use *Trint* to arrive at a deep understanding of our data, neither did *Trint* force us to interpret the data in the ways that we did. And yet, through the mutual entanglement of what *Trint*, our data and our selves can (and cannot) do, our data and our analysis were made visible and meaningful. Adopting the metaphor of entanglement, as opposed to the tool kit, enables us to understand CAQDAS as something that is not ontologically distinct from ourselves (as analysts) but, rather, is part of the ways in which data and their interpretation are brought into being within mundane, everyday processes of qualitative data analysis.

From this position, we arrive at another step towards making principled choices of CAQDAS; which is, we argue, to shift our points of reference when evaluating software. Traditionally within qualitative research, evaluative assessments of CAQDAS have been based on teleological criteria, wherein the features of software are evaluated against their desired functions, as opposed to their observable effects.

Since the CAQDAS debate first arose, researchers have tended to focus on the extent to which software such as *Atlast.ti, HyperResearch* and *NVivo* can make analysis either more transparent, authentic, valid, reliable or trustworthy. Reliance upon these abstract indicators of quality, we argue, tends to result in researchers delivering overly-fixed and overly-generalised evaluations of CAQDAS – evaluations which are often far removed from the specific conditions within which the software was being used. An alternative approach is to ask ourselves, 'What can a CAQDAS do?' This more open and exploratory form of questioning starts from the assumption that our evaluations of each CAQDAS will only ever be partial, socially-situated and open to new possibilities. Yet, by shifting our focus away from asking how a given CAQDAS 'performs' and towards asking what a given CAQDAS can 'do', we open up new possibilities for making *principled choices*. In our project, for example, we observed how *Trint* disrupted our assumptions about how data analysis would unfold. It made possible new ways of displaying data that, in turn, affected decisions about how to direct our analytic attentions. Had we clung to a fixed desire that automated transcription *must* save us time and money, then we would have stopped using *Trint* very soon into our analysis. Rather, understanding *Trint* and its place within entanglements of researcher-data-software became our primary reference point for evaluation. This included observing counterfactuals or, in other words, what *Trint* cannot do. We observed, for example, that *Trint* could not produce Jeffersonian transcriptions that have long been the mainstay of conversation analysis. In short, attending to what was and what was not made possible through entanglements of researchers-data-*Trint* was more than an exercise in CAQDAS related intellectual acrobatics. It was, instead, part-and-parcel of our attempts to observe the very data that we were seeking to analyse.

## Summary

Debates regarding the use and abuse of CAQDAS in qualitative data analysis are likely to continue for some time to come. As new technologies emerge, and others advance in complexity, new issues and new effects are likely to be observed and debated within the field of qualitative research. Computer assisted transcription software, we have argued, is but one of the many facets of the contemporary CAQDAS debate, albeit one that has, since the 1990s, been largely neglected. Understanding digital technologies and their effects requires more than technical proficiency and technical evaluation. It requires that we revisit our conceptual and methodological frameworks and ask ourselves whether or not these are up to the task of understanding the complexities of new digital technologies. Entanglement, we believe, is a promising concept that may help qualitative researchers explore the ways in which humans, machine algorithms, ideas and evidence *intra*-act in the construction of matter and meaning. This, in turn, may help us to become more response-able (Haraway, 2016) for the worlds that our analyses calls forth into being.

## Acknowledgments

## Disclosure statement

## Funding

## Notes on contributors

Dr **Nicholas Jenkins** is a Senior Lecturer in Sociology & Social Policy at the University of the West of Scotland, UK.

Dr **Karen Monaghan** is a Research Assistant at the University of the West of Scotland, UK.

*Michael Smith* is a PhD student at the University of the West of Scotland, UK.

## References

Barad, K. (2007). *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. Duke University Press.

Bringer, J. D., Johnston, L. H., & Brackenridge, C. H. (2006). Using computer-assisted qualitative data analysis software to develop grounded theory project. *Field Methods*, *18*(3), 245–266. https://doi.org/10.1177/1525822X06287602

Buston, K. (1997). NUD*IST in action: Its use and its usefulness in a study of chronic illness in young people. *Sociological Research Online*, *2*(3), 39–51. https://doi.org/10.5153/sro.89

Cibils, L. (2019). The underreported significance of transcription decisions: Perspectives gained from two different vantage points. *The Qualitative Report*, *24*(5), 1133–1146. https://doi.org/10.46743/2160-3715/2019.3801

Clark, L., Birkhead, A. S., Fernandez, C., & Egger, M. J. (2017). A transcription and translation protocol for sensitive cross cultural team research. *Qualitative Health Research*, *27*(12), 1751–1764. https://doi.org/10.1177/1049732317726761

Coffey, A., Beverley, H., & Paul, A. (1996). Qualitative data analysis: Technologies and representations. *Sociological Research Online*, *1*(1), 80–91. https://doi.org/10.5153/sro.1

Coole, D., & Frost, S. (Eds.). (2010). *New materialisms: Ontology, agency, and politics*. Duke University Press.

Edwards, D. (2006). Transcription. In V. Jupp (Ed.), *The Sage dictionary of social research methods*.(Vols. 1-0). London, : SAGE Publications, Ltd doi: 10.4135/9780857020116

Gibson, W., Callery, P., Campbell, M., Hall, A., & Richards, D. (2005). The digital revolution in qualitative research: Working with digital audio data through Atlas. Ti. *Sociological Research Online*, *10*(1), 57–68. https://doi.org/10.5153/sro.1044

Green, J., Franquiz, M., & Dixon, C. (1997). The myth of the objective transcript: Transcribing as a situated act. *TESOL Quarterly*, *31*(1), 172–176. https://doi.org/10.2307/3587984

Gregory, D., Russell, C. K., & Phillips, L. R. (1997). Beyond textual perfection: Transcribers as vulnerable persons. *Qualitative Health Research*, *7*(2), 294–300. https://doi.org/10.1177/104973239700700209

Halcomb, E. J., & Davidson, P. M. (2006). Is verbatim transcription of interview data always necessary? *Applied Nursing Research*, *19*(1), 38–42. https://doi.org/10.1016/j.apnr.2005.06.001

Hammersley, M. (2010). Reproducing or constructing? Some questions about transcription in social research. *Qualitative Research*, *10*(5), 553–569. https://doi.org/10.1177/1468794110375230

Haraway, D. (2016). *Staying with the trouble: Making kin in the chthulucene*. Duke University Press.

Jackson, K. (2017). Where qualitative researchers and technologies meet: Lessons from interactive digital art. *Digital Futures*, *23*(10), 818–826. https://doi.org/10.1177/1077800417731086

Kvale, S. (1996). *Interviews: An introduction to qualitative research interviewing*. SAGE Publications.

Lapadat, J. C., & Lindsay, A. C. (1999). Transcription in research and practice: From standardization of technique to interpretive positionings. *Qualitative Inquiry*, *5*(1), 64–86. https://doi.org/10.1177/107780049900500104

MacLean, L. M., Meyer, M., & Estable, A. (2004). Improving accuracy of transcripts in qualitative research. *Qualitative Health Research*, *14*(1), 113–123. https://doi.org/10.1177/1049732303259804

MacMillan, K., & Koenig, T. (2004). The wow factor: Preconceptions and expectations for data analysis software in qualitative research. *Social Science Computer Review*, *22*(2), 179–186. https://doi.org/10.1177/0894439303262625

Miles, M., Huberman, A., & Saldana, J. (2019). *Qualitative data analysis: A methods sourcebook*. Sage.

Morison, M., & Moir, J. (1998). The role of computer software in the analysis of qualitative data: Efficient clerk, research assistant or trojan horse? *Journal of Advanced Nursing*, *28*(1), 106–116. https://doi.org/10.1046/j.1365-2648.1998.00768.x

O'Kane, P., Smith, A., & Lerman, M. P. (2021). Building transparency and trustworthiness in inductive research through computer-aided qualitative data analysis software. *Organizational Research Methods*, *24*(1), 104–139. https://doi.org/10.1177/1094428119865016

Parameswaran, U. D., Ozawa-Kirk, J. L., & Latendresse, G. (2020). To live (code) or to not: A new method for coding in qualitative research. *Qualitative Social Work*, *19*(4), 630–644. https://doi.org/10.1177/1473325019840394

Paulus, T. M., & Lester, J. N. (2016). ATLAS.ti for conversation and discourse analysis studies. *International Journal of Social Research Methodology*, *19*(4), 405–428. https://doi.org/10.1080/13645579.2015.1021949

Paulus, T. M., Lester, J. N., & Britt, V. G. (2013). Constructing hopes and fears around technology: A discourse analysis of introductory qualitative research texts. *Qualitative Inquiry*, *19*(9), 639–651. https://doi.org/10.1177/1077800413500929

Poland, B. D. (1995). Transcription quality as an aspect of rigor in qualitative research. *Qualitative Inquiry*, *1*(3), 290–310. https://doi.org/10.1177/107780049500100302

Richards, L. (1997). User's mistake as developer's challenge: Designing the new NUD*IST. *Qualitative Health Research*, *7*(3), 425–433. https://doi.org/10.1177/104973239700700307

Ritchie, J., & Spencer, L. (1994). Qualitative data analysis for applied policy research. In A. Bryman & R. Burgess (Eds.), *Analyzing qualitative data*. Routledge.

Seale, C. (2001). Computer-assisted analysis of qualitative interview data. In J. Gubrium & J. Holstein (Eds.), *Handbook of interview research,*173-194. Sage.

Sinclair, M. N. (2020). Unsettling transcription through "event memory": Problem and possibility in exploring the phenomenological question. *Qualitative Inquiry*, *26*(5), 447–453. https://doi.org/10.1177/1077800418819633

Sinkovics, R. R., & Alfoldi, E. A. (2012). Progressive focusing and trustworthiness in qualitative research: The enabling role of computer-assisted qualitative data analysis software (CAQDAS). *Management International Review*, *52*(6), 817–845. https://doi.org/10.1007/s11575-012-0140-5

Srivastava, A., & Thompson, B. (2009). Framework analysis: A qualitative methodology for applied policy research. *Journal of Administration and Governance*, *4*(2), 72–79. https://ssrn.com/abstract=2760705

Tilley, S. A. (2003). "Challenging" research practices: Turning a critical lens on the work of transcription. *Qualitative Inquiry*, *9*(5), 750–773. https://doi.org/10.1177/1077800403255296

Webb, C. (1999). Analysing qualitative data: Computerized and other approaches. *Journal of Advanced Nursing*, *29* (2), 323–330. https://doi.org/10.1046/j.1365-2648.1999.00892.x

Weitzman, E. A. (1999). Analyzing qualitative data with computer software. *Health Services Research*, *34*(5 Pt 2), 1241–1263. PMID: 10591282

Woods, M., Macklin, R., & Lewis, G. K. (2016). Researcher reflexivity: Exploring the impacts of CAQDAS use. *International Journal of Social Research Methodology*, *19*(4), 385–403. https://doi.org/10.1080/13645579.2015.1023964