When our data don't match the concepts: Reflections on research practice

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Abstract

Our understanding of knowledge in the field of library and information studies and its development is guided by a notion of consensus and accepted ways of working. Research findings make incremental changes to our knowledge and we have become used to acknowledging the constructivist underpinnings of scholarly knowledge by expecting differences in information behaviour and practices by people situated in different contexts and recognising the need for varied approaches to information provision to match these practices. Research thus can be seen to take a 'business as usual' model, as the ways of creating new knowledge are well established both in the consensus of the field and in the rigour of research methods. The purpose of this paper is to explore this notion of 'business as usual' in research in library and information studies, consider how it constrains the development of new understandings and to propose how the communal understanding, the consensus, can be revised. The paper concludes that moving away from a 'business as usual' model will potentially require acts of heroism, including the ability to see the creation of new knowledge as an imaginative process of discovery.

Introduction

In the evidence-based approach to contemporary professional practice and indeed to aspects of everyday life, we are constantly measuring and matching. We acknowledge multiple definitions of information in our practice, matching them to kind of information service we provide or to the relationships between individuals and their use of information. Indicators for social and physical conditions in society are continually accepted or challenged in the media and in this process, a communal understanding of the significance and priority of each condition is reached. In our research into information behaviours, the approach is similar. Our communal understanding is encoded in the epistemologies and concepts we use and our purposes in carrying out research are usually to refine or extend or to re-interpret through new sets of observations. We tend to take this communal understanding as a universal, expecting that whatever the context of our study our conceptual frame will stand and it is the novelty of our context or our research method that will bring new insights. In this process, we often create a tension between practice and research. In our practice, we draw on the breadth of research, identifying a relevant concept for the circumstances, making adjustments to it in ways that we have learned from a constructivist approach to creating knowledge. However, in the research process, we do not take such an approach. Thus, when our data do not fit the concepts, our first reaction is to test for some flaw in definition, data collection or analysis, assuming the problem to be in the application of the concept and the processes of observation rather than in the concept itself. Our understanding of knowledge in the field and its development is guided by a notion of consensus and accepted ways of working. The purpose of this paper is to explore this notion of ‘business as usual’ in research in library and information studies, consider how it constrains the development of new understandings and to propose how the communal understanding, the consensus, can be revised.

From Heroic Narrative to ‘Business as Usual’

Research, that process of exploring the world around us, has long been considered a heroic endeavour. First and foremost, it has been a key element of the Modernist striving for progress, a notion of change for the better of society, and following the Enlightenment tradition from which Modernism springs, it exemplifies progress in knowledge. At a simple level, this heroic narrative has seen research as fundamental to creating the knowledge that will underpin societal progress, adding new truths to the old stock of knowledge, modifying existing theories and models and correcting errors in what a society knows and believes. Echoes of this heroic narrative where knowledge is fundamental to the workings of society are found in Buckland’s exposition of the concepts of information, when he explains that information is a societal construct, that what we know or accept as truth in a society emerges through a process of consensus (1991). For Buckland, though, this creation of new knowledge and its incorporation into the knowledge of a society is not a heroic task, but rather task of the everyday, a continual process of investigation and incorporation, leading to incremental change in our understanding of the world around us.

Karl Popper encouraged scientists to move away from the heroic narrative of creating new knowledge when he wrote that a researcher’s aim is to refute what is currently accepted (1979). In other words, the purpose of research is to test what is currently known and understood. His view was that whatever is currently accepted as scientific knowledge within a society can only be provisional, a product of the understandings at the time it was documented, so that changes in other knowledge and in societal context can give rise to the possibility of falsification, showing that what is perceived as the accepted way of understanding something is in some way wrong. In other words, there is still a noble end to research. On the other hand, Thomas Kuhn, in his influential work, *The Structure of Scientific Revolutions*, considered the practice of research as ‘business as usual’, a cumulative set of practices that lead little by little to a significant change. He coined the phrase ‘normal science’ (1962). Ian Hacking, in his Introduction to *The Structure of Scientific Revolutions*, states that: “Normal science does not aim at novelty but clearing up the status quo. It tends to discover what it expects to discover” (Hacking, 2012, p. xxvi).

‘Business as Usual’ and anomalies

Research in Library and Information Studies seems to follow the ‘business as usual’ approach. ‘Business as usual’ is the phase in a paradigm shift in which understandings of concepts and practice are consolidated through the research process. It signals a sense of stability in both scholarship and practice. In an area focussing on evidence-based practice, with a strong tradition of following models of perceived best practice, it is to be expected that much of the research explores processes of adaptation to new circumstances, as can be seen, for example, in issues of *Advances in Librarianship*, a serial often considered an essential tool for understanding developments in the field of libraries and library science. Other serials, such as the *Annual Review of Information Science and Technology,* which identified itself as a landmark publication giving an overview of trends and developments, have tended to identify a process of evolutionary change in practice and in understandings of key concepts in the field. Research studies also aim to test existing practices and beliefs in new settings, or explore the use of new technologies in the context of established practices. An examination of articles published in this journal shows that examples of each of these 'business as usual' approaches make up the majority of the content of the scholarly articles.

One aspect of 'business as usual' in research practices is the emphasis of the importance of rigour in the processes of conducting research. A consequence of this is that anomalies in the study are usually anticipated – they are there because this is what the researcher expected to find. Usually this means there is an incremental change from what is known, which may have arisen from a difference in setting or in audience or in technology. If the anomaly is not anticipated, the researcher must find a way to explain it or interpret it within the framework of the study; this usually means the use of a broader explanatory frame, as Yerbury and Parker (1998) found when they adopted Norman's approach to re-position their findings on the approaches novice searchers took when these weren't congruent with the literature of the time. If such a broader framework is not available, then it is assumed that the anomaly has arisen from an observational or methodological error and that the study is therefore flawed and not suitable for publication.

Observational or methodological errors are seen to be the mark of shoddy or naïve research, occurring through lack of attention or through ignorance. Research resulting cannot fit the 'business as usual' model. It is for this reason that research training emphasises the importance of understanding and being able to apply research methods.

Scholarly journals tend to entrench the 'business as usual' model through the review process. At the very heart of a process of 'peer' review is that the 'peer' is part of the shared community of scholars, where, following Buckland, there is a consensus on what constitutes information. Review criteria reinforce these notions of shared acceptability. Taylor and Francis, a group that publishes several journals in library and information studies, provides resources for editors and reviewers, suggesting here a range of criteria which reviewers for any of the journals they publish may consider. These include whether the author has addressed a cutting edge question; situated their work in a scholarly context; made an original and significant contribution to the field; presented the methodology and analysis clearly and accurately; and provided a readable manuscript. In most scholarly journals, a reviewer has four options for decision: to accept the submission, to request revisions of a relatively minor nature on which the Editor can make a final decision, to request major revisions that will need to go back to the reviewers for approval or to reject the submission as being inappropriate for that journal.

These criteria for the validation and publication of scholarly are intended to ensure that only knowledge that meets the consensus expectation of a scholarly community is published.

Occasionally, articles are published that do contain errors, whether of misinterpretation or of misrepresentation. Retraction Watch, a part of the US-based Center for Scientific Integrity, publishes a blog (retractionwatch.com) that gives details of papers in the life sciences about which concerns have been expressed and those which have been retracted. The Committee on Publication Ethics (COPE) has guidelines setting out the circumstances under which a journal editor should consider retracting a paper. These include the following:

- they have clear evidence that the findings are unreliable, either as a result of misconduct (e.g. data fabrication) or honest error (e.g. miscalculation or experimental error)
- the findings have previously been published elsewhere without proper cross referencing, permission or justification (i.e. cases of redundant publication)
- it constitutes plagiarism
- it reports unethical research (COPE, 2009).

In the social sciences, too, there is concern with the integrity of research findings, as a recent article in The Conversation, entitled 'The "train wreck" continues; another social science retraction' (Borwein, 2015). Here, Borwein suggests four reasons for the increasing incidence of fraud. Although his focus was social psychology, the points seem relevant to all the social sciences, including information studies. The four points are: lack of rigour and 'community standards'; the ease with which fraud can occur in fields that focus on assessing interest and novelty; the perceived imbalance of benefit over cost in committing academic misconduct; and the 'hunger for novelty' among journals who increasingly rely on the media and social media to promote potentially appealing research results. Thus, it may not be surprising that editors are wary of research studies that report anomalous findings or that indicate that a different approach was taken. Borwein, like others (eg Kim and Adler, 2015; Poldrack and Gorgolewski, 2014) supports the provision of open access to research data, wherever possible, as part of the research process safeguarding the process and giving a greater relevance to the members of the scientific community in the setting of community standards and the creation of consensus.

When Anomalies can't be Explained

In the social sciences, concepts are acknowledged as social constructs and as such, they are not always appropriate for the context in which they are used. From time to time, they do not represent the reality of everyday life, as Brenda Dervin pointed out in an influential article published in 1989. Here, she argued that information users are inventions of the research process and that the traditional approach to categorisation, using demographic, sociographic and psychographic indicators, led inevitably to inequities in information provision. She noted that the traditional categories for describing information use patterns in individuals and groups allowed researchers to predict who would access information systems with confidence, and allowed practitioners a straightforward way to repeat seemingly successful designs for information services and systems. The weakness in the traditional conceptualisation of the behaviours of information users was not identified and thus, inequities were perpetuated. Today, in information studies, we may take it for granted that it is important to take a useroriented or user-centred approach to information service provision. However, a footnote to the article, which states that ‘the article is based on extensive literature reviews and a 17-year programmatic series of studies’ suggests that back in 1989 Dervin may have thought it important to bolster her expertise in suggesting the need for a re-conceptualisation of a key concept.

Concepts from Western scholarship may translate poorly or not at all into research in other cultures. In Library and Information Studies, we have a long tradition of recognising the various ways in which knowledge is categorised, from the contrasting of explicit knowledge with tacit knowledge (Polanyi, 1958) to notions of ‘non-scientific’ knowledge dubbed indigenous knowledge or traditional knowledge. We acknowledge that the knowledge of historians is different from that of biochemists or managers. We contrast ‘local knowledge’ with ‘generic knowledge’ (Delvaux and Schoenaers, 2012, p. 107). However, this acknowledgement of the validity of differences does not mean that we have descended into relativism. Rather, it shows that we are aware of the impact of context on the creation, use and management of information.

On the other hand, the principle of ‘cognitive universalism’ (the sense that concepts can be applied regardless of context) is strong in the scholarship of the field. Delanty (2014, p. 10) asserts that modernist project offers a way to see commonality in concepts existing across time and space, as ideas that are not particular to a context but rather which are part of the structures and workings of modernity. One concept that has been as claimed as a universal concept is social capital, with its link to notions of equality and inequality in contemporary society. Thus, a study investigating the ways in which young activists created a sense of community through sharing information, knowledge and experiences online sought to extend a previous study, using social capital as a way to explain relationships. The first study had focussed on young activists in Australia and had shown how the data gathered from these young people demonstrated clearly relationships that could be understood through the concept of social capital (Yerbury, 2009, 2010), at the same time as adding to the way that social capital might be understood in an online environment. The second study arose from the opportunity to spend time in Rwanda in 2011.

This study was conceptualised as ‘business as usual’, and it was assumed that, like the Australian study, it would extend understanding of the concept of social capital through its application in a different context. A number of studies had been carried out into the use of the mobile phone and other information and communication technologies and linked to the development of social capital (Goodman, 2005, Donner, 2006, 2007). It was also known that students in Rwanda were very active in community development issues, from AIDS awareness and prevention to environmental sustainability to reconciliation. This study adapted questions from previous questionnaire based studies in Rwanda and other places in southern Africa as well as from the Australian study as the basis for an interview schedule. The responses in the interviews did not match those from the Australian study, nor did they match those from the previous studies carried out in Rwanda. At one level, this was anticipated, because of the differences in context and in subjects of the study. However, the lack of congruence went well beyond what might be expected in the clarification of a concept through testing it in different contexts. This was clearly not 'social capital' as known in the literature. Aspects of the notion of collectivism and the protocols for sharing information that the young people identified suggested that the underlying concept might be *Ubuntu*, a Bantu word for a type of human kindness towards others. But a clear question was how to understand this culturally different concept. Does it have a 'family resemblance' to 'social capital'? In other words, is there an essential common factor? Or is there a series of similarities but nothing in common? Recognising that making sense of these findings required a different approach, either culturally or conceptually, expert advice was sought at a conference attended by African academics renowned for their expertise in this area. They were reluctant to name the concept emerging from the findings *Ubuntu* or anything else, being aware of the issues and problems around culture and cultural relativism; at a conceptual level, the advice was to disaggregate the concept of social capital into 'the social' and 'capital'. The fascinating process involved in reconceptualising the data in the interviews was useful in identifying a view of the social at odds with the social underpinning social capital, but not necessarily aligned with Ubuntu and a view of capital that bore no relationship at all to any Western expression of capital. From this, it was clear that the young people in this study were not engaged in creating social capital, but at the same time it was not clear how to conceptualise what they were doing. This was definitely not 'business as usual' either from a Western perspective, or, it appeared, from an African perspective.

Explaining anomalies by changing the research question

Occasionally, a researcher may find that the results of the study do not match the research question posed, or in a quantitative study, are not related to the hypothesis, so that a new hypothesis is derived or a new research question identified. Kerr (1998) dubbed this action HARKing, Hypothesising After the Results are Known and considered it inappropriate behaviour for a researcher. In a similar vein, Kumar (2008) refers to the practice as 'data torturing', in his view, an unethical research practice involving manipulating the data to give the researcher what he or she wants to find.

In another study carried out in Rwanda in 2011 among young activists online which again had been conceptualised as a 'business as usual' study, and again using interviews to collect the data, it emerged that the information practices of the young Rwandans in the study did not match those of their Australian counterparts, nor did they match the expectations generated from the literature, using the concept of information literacy (Yerbury, 2015). The young activists in each study had similar backgrounds, being university students, although there were more students from science and engineering among the Rwandans. They had similar access to the internet for their online activities and in terms of their understanding of the workings of civil society online and its use in activism, they had similar backgrounds as activists, with two having been part of the same international project that some of the Australian participants had been engaged in. Yet the findings showed that the Rwandans did not make contact online with people they did not know. An evaluation of the research processes showed that there was no problem with the research method or with the data collection, and as the Rwandan participants shared the same characteristics as the Australian participants, there was no problem arising from the selection of participants. Thus, the first question was what did these findings mean and how could they be understood. From the perspective of Kerr (1998) or Kumar (2008), this approach would seem to be unethical, an attempt to twist the data in some way to present some other perspective, certainly a practice which did not support the 'business as usual' of the rigorous processes of research.

Theorists following Peirce (1995) do not see this as an unethical approach. Indeed the question of what a set of findings might mean is at the heart of the research endeavour. Peirce posited abduction as a discovery method, focussed on how we can understand the data, suggesting that the key question is not 'how do the data answer a research question?" but rather "what do the data make us think about?" As van Maanen et al. state (2007, p. 1149) abduction 'begins with an unmet expectation and works backwards to make the surprise meaningful'. It is a process that involves an interplay between the empirical world and the conceptual, a constant toing and froing that uses theorising and intuition. When taken as a process of discovery, understanding the data can be filled with clues and conjectures and analysis as it follows a path of critical reasoning. The exciting approach to innovative research outcomes, however, is not often found in the research literature in any field.

Once again, the notion of 'business as usual' has a role to play in keeping studies of abduction, discovery-based studies 'hidden from view'. The conventions for presenting research studies in journal articles lead the editor to require a structured piece, where theory is separated from method and results from discussion and conclusions. Readers, van Maanen et al. suggest, also prefer a 'business as usual' approach, accepting conclusions that reflect their expectations, based on context and existing knowledge. Garud argues that if as researchers we want to 'claim the authority to speak' (Garud, 2015, p. 452), we must abide by the conventions of scholarship, which may involve conforming to the requirements of journals and meeting the demands of reviewers and editors who hold power over us as researchers. If we do not, then our field may lose credibility and we and other researchers may lose legitimacy and compromise that consensus that underpins our professional and scholarly community. How then might it be possible to break out of a cycle where the research process is seen as an exercise in validation is a question asked by researchers seeking the riskier, but potentially more innovative, path to a research approach. Garud notes that one possibility is to establish formats for papers using abduction and have them adopted by key journals, so that the approach might become more strongly institutionalised and contribute more effectively to scholarly debate. In other words, Garud is suggesting that a concerted effort be made to create a new consensus around what is acceptable as ways to represent the processes of research.

Challenging 'Business as Usual'

There are key tensions in the 'business as usual' approach to creating new knowledge, especially as it relates to aspects of knowledge related to professional practice. In a field that is itself concerned with the flow of information, with developing and supporting an informed citizenry and students with high levels of information literacy, it is clear that we should be able to open up discussions about information and knowledge and the plethora of concepts surround these notions without putting ourselves as information professional in a position where we create a social hierarchy of knowledge. The many definitions of information, developed in the latter part of the twentieth century by scholars from Popper (1979) to Buckland (1991) and from Farradane (1979) to Dervin (1989) and Barlow (1994), were important as they were documented because they enabled a focus on a specific aspect of information provision as professional activities moved away from the management of physical objects for retrieval to the use of those objects and their content to meet information needs. Brenda Dervin's work served to bring focus to the person, rather than to disembodied senses of need for information or uses of information services or products and in the twenty-first century, scholars such as Mackenzie (2003) and Savolainen (2010) have encouraged practitioners and scholars to be more cognisant of the everyday practices of informing.

In this context, as researchers and practitioners, we have adopted a constructivist approach, becoming familiar with the idea that context is important in understanding information cultures and that personal circumstances will have an impact on an individual's information practices. We recognise that a key concept will take different forms, depending on the context in which it is found and we make adjustments accordingly. In our information practice, we are also very comfortable with multiple definitions of the term 'information', recognising when we mean an artefact or a societal or personal process of becoming informed, or something else. As researchers, too, we are able to articulate the definitions for the particular concept of relevance to our study.

The consequence of this routinisation of the plurality of contexts at the point of operationalisation of information practice is, at least potentially, that we may overlook the question of how to question broader concepts of knowledge and societal relationships, creating a tension between those concepts that we accept must be considered as contextually bounded and those that are accepted as universal. Delvaux and Schoenaers (2012) identify a similar issue in the context of understanding the concept 'scientific knowledge' and propose the need for a balanced approach and categories that bring together the micro and the macro, the locally applied and the perceived cognitively universal. Such an approach may facilitate a reconsideration of concepts so that those that appear universal may no longer be taken for granted, but will also become a focus of investigation.

A second challenge to 'business as usual' can be found in exploring the opposition between theory and data. To some extent, all researchers confront issues around how to balance the conceptual and the empirical in their research (Delvaux and Schoenaers 2012, p. 1147), too much emphasis on the empirical and there is no room for the complexities of theorising and too much emphasis on theorising will lead to conclusions that are too remote from the practice to be useful. As Leifer notes (1992, p. 286), in the social sciences, virtually everything that happens can be construed as data; and as Weick points out, a theory could be 'a guess, conjecture, speculation, supposition, proposition, hypothesis, conception or model' (van Maanen et al 2007, p. 1147).

In the practice of librarianship and information provision, it is as though it has been possible to have the best of both worlds, although this has clearly led to two forms of knowledge: on the one hand are the empirically driven representations of 'best practice' and on the other the theory driven reports of research. The relatively recent move to "evidence-based practice" has been an attempt for decision-makers to bring a systematic use of new knowledge to bear on problems; this new knowledge can include not only published research and analytical reports, but local data, data from open access sources and practical knowledge, experience, opinion and even intuition.

However, the challenge of producing rigorous, imaginative research where theory is appropriately supported by data remains. Van Maanen (2012, p. 1149) suggests that interesting scholarly work can emerge from 'the discontinuity between some (but not all) of the theoretical assumptions of the researcher and the research audience and some (but not all) of the discovered or claimed fact of the matter'. In other words, interesting work emerges exactly at that point where the notion of 'business as usual' is threatened and there is reason to re-assess the consensus of knowledge on a topic.

Recognising the Limitations of Business as Usual

A 'business as usual' approach to research in librarianship and information studies is premised on several factors. An acknowledgement of incremental change can arise from a re-thinking of the users of an information service or product, from the implementation of a new technology or from a move into a different context. Rigour in research studies is, rightly, highly valued, but a mismatch between the anticipated outcome of the study and the actual findings does not necessarily signify an error in the implementation of a research method. The processes of leading to the validation and publication of reports of research in a scholarly journal institutionalise a notion of' business as usual', where the criteria for peer review and the required structure of a journal article can stifle innovation. Following from this, a fear of allowing fraudulent research to slip through may lead editors to reject articles taking a discovery-based approach and conversely, researchers may fear that their work using a discovery-based will be rejected and therefore not submit it to review or write it up as though it conformed to a different scholarly tradition. Researchers and practitioners are familiar with a constructivist approach to understanding information cultures, and users and their information practices, and are adept at situating information seeking and use within particular contexts. However, at the same time, they may take an uncritical approach to the universalism of other concepts, including the assumption that concepts relating to information and its use can be used validly across cultures. Finally, business as usual in research has tended to favour a theory-driven model, where the same models or concepts are explored in different context of practice, and this limits the development of new knowledge in a practice driven field of knowledge.

Working towards a new heroism

The model of 'business as usual', which can be so useful in building a store of knowledge around a concept of practice, is cramping the development of new knowledge and understanding, but the consensus around what constitutes information and the ways it should be created, disseminated and used is very strong, bolstered not only by the ways of knowing of librarianship and information studies but also by the established epistemologies of the social sciences more broadly. Thus, any challenge to this model will involve clarity of purpose and courage, wide reading and imagination for the not yet written. It will not arise overnight, as it will require something along the lines of a paradigm shift, with conflicting viewpoints being presented and debates being aired. An agenda for such a challenge is relatively easy to draw up, but, as Garud (2015) noted, it may be very difficult to get the changes institutionalised.

Such a shift can involve personal responsibility for challenging the assumptions underpinning the currently accepted ways of understanding the field of librarianship and information studies. This could involve acknowledging diversity – in the contexts of practice, in the definition of key concepts, in the approaches to research method – and rejecting obvious and easy explanations and justifications in the literature and in decision-making in practice. Embracing novelty is often encouraged as a way to keep the consensus current, but an uncritical acceptance of the exotic merely for its novelty value will in the end undermine a knowledgebase that has taken several decades to develop. Being suspicious of the exotic and making the effort to separate out the frivolous from the well-founded innovation plays an important role in the development of any consensus.

Supporting such a shift will be a risky undertaking, taking a step away from the supportive umbrella of consensus. For researchers, it may mean not taking refuge in a single research method and being willing to justify the choices and decisions made in a research study. It may also involve the more risky undertaking of engendering debate in the literature and at conferences, submitting papers that will be rejected because they are at odds with received wisdom on method or outcomes or presentation, opening a conversation around these anomalies or engaging an editor in discussion about the reasons given for an article being rejected.

Acknowledging the relationship that researchers in information studies have with others fields and disciplines, and recognising the influences of the epistemologies of the social sciences on research in librarianship and information studies, they could be encouraged to read widely to understand the debates related to knowledge and information in these other fields and to demonstrate their scholarly expertise by submitting articles to journals in these fields. This can be a disheartening exercise as there will inevitably be rejection as we learn about the consensus operating in other fields, but is essential if scholars in our field are to contribute to the discussions about the role of information and knowledge in a society and to the clarification of concepts previous considered to be cognitive universals.

In creating any new consensus, reviewers and editors have significant roles as gatekeepers. Active members of any community of knowledge should be able to expect to be called on as a reviewer, but the reality is that few have the opportunity to take on this responsibility. These roles are institutionalised; editors and reviewers are the guardians of the quality of scholarly knowledge in a field. Thus innovation and change can be difficult to achieve.

Attempts to democratise opportunities for evaluative feedback on scholarly work have been met with dismay and even derision from those inside the institution. Open access journals have been seen as a threat to the quality of scholarly information (Nicholas et al., 2015) at the same time as they are acknowledged to bring new understandings and conceptual innovations to a broader audience (Lewis, 2012). Garud's suggestion (2015) for finding ways to link the data from a study to the published report of that study is becoming a reality in some areas of science, where the terms and conditions of funding may make this a requirement; it remains to be seen to what extent this will open up scholarly work to wider scrutiny.

The most heroic act, however, may be the one which requires the creation of new knowledge to be seen as an imaginative process of discovery. This act is not one for researchers alone, but one that prompts practitioners to look beyond the solution of a problem in practice, that calls on reviewers and journal editors to be open to challenges to prevailing beliefs and practices, that encourages teachers of Library and Information Studies to take less conservative approaches to reading in university coursework programs and that gives space to doctoral candidates to move away from the conceptually and methodologically constrained work seen as 'safe' in the examination process.

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