

Quantum Entanglements, Diffractive Readings: Montage and Meaning-Making in Qualitative Research

International Journal of Qualitative Methods

Volume 24: 1–7

© The Author(s) 2025

DOI: 10.1177/16094069251392418

journals.sagepub.com/home/ijq

Martina Riedler¹ and Mustafa Yunus Eryaman¹

Abstract

This article engages with the burgeoning field of post-qualitative inquiry to operationalize the work of Karen Barad, exploring how concepts from quantum physics can inform tangible research methodologies. Addressing the gap between Barad's abstract onto-epistemology and research practice, the paper demonstrates how montage can be used as a practical technique for enacting a diffractive, post-qualitative inquiry. Methodologically, the paper performs the approach it advocates, presenting a diffractive reading of existing qualitative studies that use montage. By reading these examples *through* Barad's agential realism, the authors illustrate how montage can be re-conceptualized as a research apparatus. The article provides practical guidance for researchers, framing the steps of diffractive montage not as a representational procedure but as an onto-epistemological practice of world-making. Finally, while considering the limitations of this approach, the authors argue that a quantum-inspired, diffractive methodology offers potent tools for engaging with the complexities of socio-material phenomena in an ethically responsive way.

Keywords

qualitative inquiry, post-qualitative inquiry, quantum physics, Karen Barad, new materialism, posthumanism, diffractive montage, diffraction, entanglement, methodology, agential realism

Truth is inseparable from the procedure establishing it ... but what constitutes procedure? ... The process is that of seeing. (Deleuze, 1988, p. 63)

It is wrong to think that the task of physics is to find out how nature is. Physics concerns what we can say about nature. (Niels Bohr, as cited in Petersen, 1963, p. 12)

Introduction

How do we make sense of, and responsibly engage with, a world of profound complexity and entanglement? This question has propelled a significant shift within the field of qualitative inquiry itself. For decades, interpretivist and constructivist paradigms have rightly centered meaning-making, subjectivity, and the rejection of positivist claims to a single, objective truth (Schwandt, 1994). Yet, in recent years, a *post-qualitative* movement has emerged, challenging some of the foundational assumptions of even these traditional

qualitative approaches (St. Pierre, 2013). This movement, drawing from post-structuralist and new materialist philosophies, questions the persistent binaries of human/nonhuman, discourse/matter, and subject/object that often remain implicit in conventional qualitative work. It calls for a *refusal of method* in the sense of pre-ordained recipes, urging researchers to invent methodologies that can do justice to a world understood as emergent, relational, and more-than-human (St. Pierre, 2021).

The challenge for post-qualitative inquiry is to develop practices that can work *with* this complexity, rather than

¹Faculty of Education, Canakkale Onsekiz Mart University, Canakkale, Türkiye

Corresponding Author:

Martina Riedler, Department of Art Education, Faculty of Education, Canakkale Onsekiz Mart University, Anafartalar Yerleskesi, Canakkale 17100, Türkiye.
Email: riedler@comu.edu.tr



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons

Attribution-NonCommercial 4.0 License (<https://creativecommons.org/licenses/by-nc/4.0/>) which permits non-commercial use,

reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and

Open Access pages (<https://us.sagepub.com/en-us/nam/open-access-at-sage>).

seeking to tidy it into neat thematic categories or narrative arcs (Fox & Alldred, 2021). This is where a dialogue with physics, particularly quantum physics, becomes not merely a metaphorical exercise, but a source of profound conceptual tools. Quantum physics reveals a reality far more probabilistic, interconnected, and observer-entangled than classical physics allowed (Bohr, 1934; Heisenberg, 1958; Schrödinger, 1935). Crucially, the act of measurement or observation is not neutral but actively participates in determining what is observed (the observer effect). The famous double-slit experiment vividly illustrates this: when not observed, particles like electrons behave as waves, seemingly passing through both slits at once to create an interference pattern on a screen behind them. However, the moment an apparatus is used to detect which slit the electron passes through, the wave behavior collapses, and it acts as a discrete particle, passing through only one slit. This suggests reality is not a fixed backdrop but is enacted through specific material-discursive interactions (Ananthaswamy, 2019; Feynman, 1965; Heisenberg, 1927; Zeilinger, 1999). As Vogd and Neher (2025, p.3) elaborate, drawing on Bohr, the “particle or wave character [...] only manifests itself during observation, and different methods of observation can lead to different results”.

These insights find profound resonance in the work of physicist and feminist theorist Karen Barad (2007). Barad’s agential realism offers a radical “onto-epistemology” where being (ontology) and knowing (epistemology) are understood as inseparable. For Barad, reality is not composed of pre-existing, independent entities that subsequently interact (interaction), but rather emerges through “intra-actions”—the mutual constitution of entangled agencies. Phenomena do not pre-exist their observation but are enacted through the specific “apparatus” of engagement.

While the philosophical implications of Barad’s agential realism are widely discussed, a significant gap remains in translating its complex tenets into actionable research practices (e.g., Fox & Alldred, 2021; Liang & Weber, 2024; Sandle et al., 2024; Vogd & Neher, 2025). This paper addresses this theory-practice gap by operationalizing Barad’s onto-epistemology through the qualitative technique of montage. Our primary contribution is not to introduce Barad’s thought, but to provide a practical guide for researchers seeking to enact a diffractive, post-qualitative inquiry, thereby moving from abstract philosophical debate to tangible methodological application.

Situating Barad: A Generative Framework Amidst Debate

Before proceeding, it is crucial to situate our engagement with Barad’s work. As critics rightly point out, Barad’s agential realism is built upon the Copenhagen interpretation of quantum physics, a view famously developed by Niels Bohr. This interpretation, while historically dominant, is by no

means the only one. The world of quantum physics is rife with profound debate over its fundamental nature, featuring contending theories from the pilot-wave theory of David Bohm, whose metaphysics of an *undivided wholeness in flowing movement* is argued to be closer to the philosophy of Deleuze and Guattari (Gualandi, 2017; Murphy, 1998), to the many-worlds hypothesis, to more recent interventions around quantum superdeterminism (Hossenfelder, 2020).

We acknowledge this complex and contested terrain. Our purpose in this article is not to make a claim about the ultimate nature of physical reality or to argue for the supremacy of the Bohrian-Baradian view. Instead, we approach agential realism as a powerful and productive conceptual framework that provides a vocabulary and an ethical orientation for tackling persistent problems in qualitative inquiry. In doing so, we heed the caution of critics like Koponen (2024), who questions whether the application of quantum concepts in social science results in new conceptualizations or “merely inspiring metaphors” (p. 44). Koponen argues that without a clear, testable link, such borrowings risk becoming “fashionable nonsense” (p. 54). By positioning our use of Barad as a *generative heuristic* rather than a literal transcription of physics, we aim to leverage the inspirational power of her framework for methodological innovation while remaining grounded in the specific demands and context of qualitative research.

Diffractive Implications for Qualitative Research: Ethics, Reflexivity, and Method

Embracing a Baradian, quantum-inspired framework transforms how we approach qualitative research methodology and ethics. If phenomena emerge through intra-action within specific research apparatuses, then the researcher’s methods, theoretical framings, and very presence are not external influences but constitutive elements of what comes to be known. This moves beyond traditional notions of reflexivity, which often focus on the researcher’s bias on a separate reality, towards an understanding of the researcher’s inherent entanglement within the reality being studied (Bozalek & Zembylas, 2017; Schwandt, 1994). This deepens the ethical stakes: research practices are world-making practices, and researchers bear responsibility for the realities they help enact (Barad, 2007; de Freitas, 2017).

Positionality, therefore, is not merely about disclosing researcher identity but about acknowledging the material-discursive apparatus through which the research phenomenon is being enacted. The apparatus itself is a *dynamic (re) configuration of the world*, a specific *spacetime-mattering* encompassing social institutions, material objects, embodied histories, and scientific practices.

For instance, in a qualitative study of student engagement in a science classroom, the research *apparatus* is not just the researcher with their interview questions. It is the entire entanglement of the classroom’s physical architecture, the

curriculum's specific language and goals (discourse), the teacher's pedagogical philosophy, the students' embodied histories and prior experiences, the technologies present (e.g., smartboards, microscopes), and the researcher's own observation and recording methods. All these elements intra-act to produce the phenomenon of "student engagement." A different apparatus—for example, one using arts-based methods instead of verbal interviews—would enact a different version of this phenomenon.

This necessitates a methodological shift from *reflection* (seeking accurate representations of what is) to *diffraction* (attending to the interference patterns and effects produced when different elements—data, theories, perspectives—are read through one another) (Barad, 2007; Haraway, 1997; Jagodzinski, 2022; Jenkins et al., 2020; Mazzei, 2014; Sandle et al., 2024). Diffraction, as a methodology, emphasizes relationality and difference, asking how phenomena come to matter through specific intra-actions. Transparency involves detailing these specific theoretical lenses, methodological choices, and relational dynamics, allowing others to understand *how* specific knowledge effects ("eigenvalues" emerging from specific "eigenfunctions" inherent in the apparatus, in Vogd & Neher's analogous terms) were produced. This aligns with calls for *diffractive methodologies* (e.g., Gullion, 2018; Mazzei, 2014; Thorpe & Newman, 2023; Vogd & Neher, 2025) that attend to the generative potential of reading data, theory, and experience through one another, looking for the interference patterns—the differences that make a difference—rather than seeking a singular, unified representation.

Methodologically, this encourages approaches that can hold complexity, ambiguity, and multiplicity without premature closure. Triangulation shifts from converging on a single truth point to exploring the productive tensions and differences generated by juxtaposing multiple data sources, theories, or perspectives. The aim becomes not representation *of*, but engagement *with* the phenomenon in its multiplicity. Montage, as explored below, offers one powerful technique for enacting such a diffractive engagement. Similarly, performative approaches like performance ethnography (Denzin, 2003; Kincheloe, 2005) emphasize the embodied, enacted nature of knowledge, aligning with the intra-active perspective. The turn towards diffractive ethnography (Gullion, 2018) specifically seeks to account for the entanglement of human and nonhuman matter in ethnographic work. These approaches foreground the dynamic, emergent, and ethically charged nature of qualitative inquiry in a quantum-entangled world.

Entangled Narratives: Diffractive Analysis Through Montage

Drawing inspiration from these principles, montage emerges as a potent qualitative method. As a research practice, *montage*

is the purposeful juxtaposition of disparate data fragments—such as interview excerpts, field notes, photographs, historical documents, or theoretical concepts—within a single textual or visual field (Denzin & Lincoln, 2005). Its analytic power comes not from creating a seamless, linear story, but from the *interference patterns* and new meanings that emerge from the friction and resonance between the juxtaposed elements (Aston, 2010; Eryaman, 2012). Rather than seeking reflective representation, montage can function as a diffractive apparatus, reading different elements through each other to generate new patterns of understanding (Mann & Warr, 2016).

It is crucial to clarify our methodological stance in the analyses that follow. The studies by Aston (2010), Eryaman (2012), and Henriksen et al. (2011) were not originally designed with Barad's agential realism in mind. Rather than presenting them as exemplars of a Baradian approach, we are instead performing the very method this paper advocates for: a *diffractive reading* (Barad, 2007; Bozalek & Zembylas, 2017; Haraway, 1997). We read these rich examples of montage *through* the theoretical lens of agential realism. The purpose of this exercise is to demonstrate how a Baradian framework can generate new insights and reveal the untapped potential of montage as a diffractive apparatus. The following analyses, therefore, are not a review of what these authors *did*, but an enactment of what a diffractive reading *makes possible*.

Spatial Montage, Entangled Histories, and Fluid Interfaces

Aston's (2010) work explicitly uses *computer-based techniques of spatial montage* to visualize the complex dynamics of migration and social division experienced by Uduk speakers displaced by war over four decades. Her approach moves beyond traditional linear narratives by creating interactive, *fluid interfaces* where users can engage directly with a rich archive of photographs, audio, and video recordings. Crucially, this *spatial montage* allows for the simultaneous co-existence and comparison of recordings across time, place, and multiple points of view. Users become *actively engaged in the montage process*, able to crosscut between clips and find their own connections.

From a Baradian perspective, Aston's multimedia platform functions as a research *apparatus* that enacts the phenomenon of displacement not as a sequence of events, but as an ongoing *entanglement* of past memories and present realities, individual experiences and socio-political forces. The interface facilitates a *diffractive reading*—users (and Aston herself) read different data points (visuals of work rhythms, spoken memories, recordings of traumatic events) *through* one another, revealing patterns of continuity, change, and social division that might be obscured by linear analysis. The emphasis on user interaction also resonates with the concept of *intra-action*, where meaning emerges *through* the engagement between the user and the material archive, highlighting the co-

constitution of knowledge rather than objective representation. Aston's method aims to create *multimedia experiences* that address the senses directly, acknowledging the *discourse of risk and indeterminacy* inherent in visual media and offering tools to enhance understanding beyond text alone.

Performative Montage, Paradox, and Hikmah

Eryaman (2012) explicitly employs montage as a *performative script* and an *editing technique* to explore the *performative inquiries* of whirling and trembling dervishes in Sufism. He juxtaposes cinematic images (from Peter Brook's *Meetings With Remarkable Men*) with textual narratives (*menkibe*) and theoretical interpretation. This method, aiming for a *composite picture* that brings *slices of reality together*, directly performs the central theme: the dialectical interplay between the ordered, conventional movements of whirling dervishes (representing *sharia*, tradition, reason) and the formless, chaotic, deconstructive movements of the trembling dervish (representing subjectivity, love, madness, the challenge to reason). Through this juxtaposition, the montage *apparatus* (combining cinematic images, textual narratives, and theory) *enacts* the Sufi understanding of *haqiqat* (truth) not as a fixed entity graspable by reason alone, but as an emergent, paradoxical process involving the interplay of opposites.

This performative enactment of paradox resonates deeply with the quantum concept of *superposition*, where seemingly contradictory states co-exist. The analysis highlights how the *master dervish* embodies *hikmah*—practical, ethical wisdom arising from navigating this tension. Eryaman uses montage not just to describe, but to *perform* an inquiry that challenges objectivism and highlights the subjective, interpretive, and embodied nature of knowing, where truth ("seeing") is inseparable from the procedure (the performance/montage).

Visual-Verbal Montage, the Third Meaning, and Counter-narratives

Henriksen and colleagues (2011) analyze Sara Bro's *Diary*—a book montage combining photographic images and texts documenting her breast cancer experience. Their focus is on the aesthetic effect arising from the juxtaposition of images and texts, particularly how dissimilarities and contradictions between the visual and verbal generate layered meanings. They utilize Barthes' concept of the *third meaning* (or *sens obtus*)—an excessive, emotional, non-coded meaning arising from the interplay and *representational friction* between media. This *third meaning* emerges through aesthetic strategies of *disguise* and *carnival*, where, for instance, images connoting illness and death (feet on a radiotherapy stretcher) are juxtaposed with texts about carefree everyday life (sitting

in a café), or where Bro performs identity play through costume during chemotherapy.

From a Baradian perspective, this analytic focus on the effects produced by the montage itself aligns with a diffractive reading—analyzing the interference patterns generated by reading image through text and vice versa. The montage, functioning as the research *apparatus* in this case (Bro's book combining image and text), produces meanings (the "third meaning") not reducible to either medium alone. This process highlights the entanglement of disparate experiences (illness/everyday life, vulnerability/agency, past/present) and subjectivities. Furthermore, Henriksen et al. frame Bro's montage as a *counter-narrative* that subtly *poaches* on and subverts the dominant medical discourse, demonstrating agency through aesthetic practice. Here, the montage apparatus *does* the work of producing a counter-narrative; it does not simply *represent* an experience but actively subverts a dominant discourse. This resonates with the ethical dimension of agential realism, where specific apparatuses (like Bro's book montage) enact specific realities and contest others.

These analyses show how montage, in diverse qualitative contexts, functions as more than an illustrative technique. Whether through interactive spatial arrangements, performative juxtapositions of reason and subjectivity, or the visual-verbal generation of elusive "third meanings," montage can serve as a diffractive apparatus. It allows researchers and audiences to engage with the entangled, multiple, and paradoxical nature of phenomena, enacting ways of knowing that move beyond simple representation and embrace the complexities highlighted by quantum-inspired frameworks.

A Practical Guide to Diffractive Montage

While post-qualitative inquiry resists methodological "recipes" (St. Pierre, 2021), providing practical guidance is essential for researchers interested in experimenting with these ideas. The following offers a more detailed direction on employing a diffractive montage approach, moving from the abstract to the concrete and foregrounding the ontological shift from representation to enactment.

Suitable Research Questions

A diffractive montage approach is particularly well-suited for questions that move beyond representation to explore how phenomena are enacted. The focus is on complexity, contradiction, and emergence. Examples include: How are multiple, competing discourses about wellness enacted in a specific clinical setting? How do past and present socio-political forces intra-act to shape a community's identity? How is agency negotiated at the intersection of material bodies and institutional structures?

The goal is not to find a single answer but to map the entangled forces at play and analyze the world-making effects of their intra-action.

Data and Analysis Process: an Onto-Epistemological Practice

The montage thrives on heterogeneity. Data can include anything that can be fragmented and juxtaposed: transcripts, images, audio clips, researcher memos, public media, theoretical quotes, and material artifacts. The crucial shift is to see the “analysis” not as a separate procedural step, but as the very *ontological act* of constructing the montage-apparatus itself. The process involves:

Fragmentation. Breaking down data sources into meaningful, resonant material-discursive fragments. These are not viewed as inert pieces of information but as agential elements that will participate in the research apparatus.

Juxtaposition as Apparatus-Building. Arranging these fragments on a page or screen. This is not merely a creative arrangement but the deliberate construction of a research apparatus. The iterative process of experimenting with different combinations is an act of world-making. The key question is not just “What happens when a policy document is placed next to a memory?” but “What phenomenon is *enacted* by an apparatus that entangles this policy document with this memory?”

Attending to Interference and Enactment. The researcher then analyzes the “diffraction pattern”—the effects produced by the apparatus. This involves a fundamental shift in the analytical question from “What does this montage *mean*?” to “*What does this montage-apparatus do?*” The focus is on the dissonances, unexpected connections, and affective responses as evidence of the reality being enacted through the intra-action of the montage’s components.

The Outcome

The outcome of a diffractive montage analysis is not a linear report representing findings. It is the montage itself—a multi-perspectival, layered apparatus that *performs* the complexity of the phenomenon (Denzin & Lincoln, 2005). The accompanying writing guides the reader through the key interference patterns and world-making effects, but it does not explain them away. It invites the reader to become an active participant in the intra-action, embracing the uncertainty and resisting the pull of a single, authoritative claim (Aston, 2010; Eryaman, 2012).

Limitations and Critical Considerations

Despite its generative potential, a post-qualitative approach informed by quantum physics is not without significant limitations and risks that demand critical attention.

First is the danger of what Koponen (2024) calls “metaphor-as-method,” where complex scientific concepts are applied superficially to social phenomena. Koponen argues that without clear, testable links, such borrowings risk becoming a “motivational metaphysics” at best, and at worst, “fashionable nonsense” that uses “verbal smoke and mirrors to suggest depth and insight where none exists” (p. 54). Our approach attempts to mitigate this by using Barad’s framework as a coherent philosophical heuristic rather than a direct scientific model, but the risk of misapplication remains a central concern for any researcher working at this intersection.

Second, from a postcolonial perspective, critics have argued that post-qualitative inquiry, in its focus on ontology and decentering the human, can risk political quietism by failing to adequately theorize history and power (Gerrard et al., 2017; Wolgemuth et al., 2021). Gerrard et al. warn that without explicit attention to the “global politics of knowledge production,” post-qualitative approaches can inadvertently create “processes of closure and erasure” (p. 1), where the focus on the researcher’s own affective and theoretical process sidelines the very people and histories being researched. This raises a crucial ethical question: does the turn toward the nonhuman obscure the urgent political struggles of marginalized human subjects?

Third, the practice of diffractive analysis itself presents challenges, particularly for applied or policy-oriented research. As Fox and Alldred (2021) argue, because diffractive readings are generated by reading data through a researcher’s own experiences, theories, or memories, the method can become one of the most “researcher-centric” approaches yet devised. This poses a significant challenge to the transferability of findings and raises questions about researcher bias. Fox and Alldred suggest that to be useful for practice, researchers must also analyze the “research-assemblage” itself—the micropolitics of how specific methods and researcher positions affect the data—to understand the extent to which findings are a product of the event studied versus the apparatus of study.

Finally, the translation of these complex ideas into accessible research practices and representations remains a significant challenge. The very methods that resist narrative closure, like montage, can be difficult for some audiences to interpret. Researchers must find a balance between methodological innovation and clear communication of their insights, while remaining accountable to the ethical and political contexts of their work.

Conclusion

The entanglement of quantum physics insights and post-humanist social theory, particularly through the onto-epistemology of Karen Barad, offers fertile ground for reimagining qualitative inquiry. Moving beyond metaphorical borrowing, this convergence prompts a fundamental rethinking of objectivity, subjectivity, and the ethics of knowledge production. By operationalizing Barad's onto-epistemology into the practical method of diffractive montage, this paper offers a vital bridge between abstract post-qualitative theory and the concrete demands of research practice.

As the analyses demonstrate, montage, when approached diffractively, provides a powerful tool for enacting such an inquiry. By juxtaposing diverse fragments, it allows researchers to explore the interference patterns of entanglement, generating nuanced understandings without resorting to singular narratives. In distinguishing this approach from established arts-based methods like collage inquiry, we have highlighted a fundamental ontological shift—from representation to enactment—that lies at the heart of the posthumanist turn. This approach acknowledges the researcher's inseparability from the research apparatus and foregrounds the ethical responsibility inherent in these world-making practices.

While acknowledging the limitations of any single framework—including the valid critiques of post-qualitative inquiry and the contested nature of the physics that inspires it—and recognizing that navigating these challenges requires the very ethical attunement a diffractive approach demands, we propose that quantum-inspired diffractive approaches enrich qualitative inquiry's potential. They invite us into a more dynamic, ethically attuned, and ultimately more responsive engagement with the entangled realities we seek to understand. Ultimately, we argue that a quantum-inspired, diffractive approach does not just offer a new way of seeing, but a new way of being-in-the-world as ethical, response-able researchers.

Acknowledgements

We thank the reviewers for a thought-provoking and rigorous review process. Their critical feedback was instrumental in sharpening the focus and clarity of this paper.

ORCID iDs

Martina Riedler  <https://orcid.org/0000-0001-5207-9644>

Mustafa Yunus Eryaman  <https://orcid.org/0000-0002-4214-1202>

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Generative AI Usage Statement

The authors declare that Generative AI tools were used to assist with refining language, generating alternative phrasing, ensuring grammatical accuracy, and improving overall readability. The authors have reviewed and edited the generated content to ensure its accuracy and alignment with their intended meaning. The authors take full responsibility for the content of the publication.

References

- Ananthaswamy, A. (2019). *Through two doors at once: The elegant experiment that captures the enigma of our quantum reality*. Penguin Random House.
- Aston, J. (2010). Spatial montage and multimedia ethnography: Using computers to visualise aspects of migration and social division among a displaced community. *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research*, 11(2), 36. <https://doi.org/10.17169/fqs-11.2.1479>
- Barad, K. (2007). *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. Duke University Press.
- Bohr, N. (1934). *Atomic theory and the description of nature*. Cambridge University Press.
- Bozalek, V., & Zembylas, M. (2017). Diffraction or reflection? Sketching the contours of two methodologies in educational research. *International Journal of Qualitative Studies in Education*, 30(2), 111–127. <https://doi.org/10.1080/09518398.2016.1201166>
- de Freitas, E. (2017). Karen Barad's quantum ontology and post-human ethics: Rethinking the concept of relationality. *Qualitative Inquiry*, 23(9), 741–748. <https://doi.org/10.1177/1077800417725359>
- Deleuze, G. (1988). *Foucault (S. Hand, Trans.)*. University of Minnesota Press.
- Denzin, N. K. (2003). *Performance ethnography: Critical pedagogy and the politics of culture*. Sage Publications.
- Denzin, N. K., & Lincoln, Y. S. (2005). Introduction: The discipline and practice of qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *The sage handbook of qualitative research* (3rd ed., pp. 1–32). Sage Publications.
- Eryaman, M. Y. (2012). From whirling to trembling: A montage of dervishes' performative inquiries. *Qualitative Inquiry*, 18(1), 55–62. <https://doi.org/10.1177/1077800411427846>
- Feynman, R. P. (1965). *The character of physical law*. MIT Press.
- Fox, N. J., & Alldred, P. (2021). Applied research, diffractive methodology, and the research-assemblage: Challenges and opportunities. *Sociological Research Online*, 28(1), 93–109. <https://doi.org/10.1177/13607804211029978>
- Gerrard, J., Rudolph, S., & Sriprakash, A. (2017). The politics of post-qualitative inquiry: History and power. *Qualitative Inquiry*, 23(5), 384–394. <https://doi.org/10.1177/1077800416672694>
- Gualandi, A. (2017). The dance of the mind: Physique et métaphysique chez Gilles Deleuze et David Bohm. *Veritas*, 62(2), 279–307. <https://doi.org/10.15448/1984-6746.2017.2.28508>

- Gullion, J. S. (2018). *Diffraction ethnography: Social sciences and the ontological turn*. Routledge.
- Haraway, D. J. (1997). *Modest_Witness@Second_Millennium.FemaleMan©Meets_OncoMouse™: Feminism and technoscience*. Routledge.
- Heisenberg, W. (1927). Über den anschaulichen Inhalt der quantentheoretischen Kinematik und Mechanik. *Zeitschrift für Physik*, 43(3–4), 172–198. <https://doi.org/10.1007/bf01397280>
- Heisenberg, W. (1958). *Physics and philosophy: The revolution in modern science*. Harper & Row.
- Henriksen, N., Tjørnhøj-Thomsen, T., & Hansen, H. P. (2011). Illness, everyday life and narrative montage: The visual aesthetics of cancer in “Sara Bro’s Diary.”. *Health*, 15(3), 277–297. <https://doi.org/10.1177/1363459310397977>
- Hossenfelder, S. (2020). *Lost in math: How beauty leads physics astray*. Basic Books.
- Jagodzinski, J. (2022). Quantum creativity: A fracturing new materialism in the anthropocene. *Qualitative Inquiry*, 28(1), 89–101. <https://doi.org/10.1177/10778004211066633>
- Jenkins, L., Jones, V., Bryder, L., & Signal, T. (2020). From reflection to diffraction: Exploring the use of vignettes within post-humanist and multi-species research. *Qualitative Research*, 22(2), 281–296.
- Kincheloe, J. L. (2005). On to the next level: Continuing the conceptualization of the bricolage. *Qualitative Inquiry*, 11(3), 323–350. <https://doi.org/10.1177/1077800405275056>
- Koponen, I. (2024). Quantum physical insights of agential realism within new materialism in science education: A basis for new conceptualizations or merely inspiring metaphors? *Nordic Studies in Science Education*, 20(1), 44–56. <https://doi.org/10.5617/nordina.9776>
- Liang, T.-P., & Weber, R. (2024). A beginner’s guide to agential realism. *Communications of the Association for Information Systems*, 55(1), 978–1003. <https://doi.org/10.17705/1CAIS.05537>
- Mann, R., & Warr, D. (2016). Using metaphor and montage to analyse and synthesise diverse qualitative data: Exploring the local worlds of ‘early school leavers’. *International Journal of Social Research Methodology*, 20(6), 547–558. <https://doi.org/10.1080/13645579.2016.1242316>
- Mazzei, L. A. (2014). Beyond an easy sense: A diffractive analysis. *Qualitative Inquiry*, 20(6), 742–746. <https://doi.org/10.1177/1077800414530257>
- Murphy, T. S. (1998). Quantum ontology: A virtual mechanics of becoming. In E. Kaufman & K. J. Heller (Eds.), *Deleuze and guattari: New mappings in politics, philosophy, and culture* (pp. 211–229). University of Minnesota Press.
- Petersen, A. (1963). The philosophy of niels bohr. *Bulletin of the Atomic Scientists*, 19(7), 8–14. <https://doi.org/10.1080/00963402.1963.11454520>
- Sandle, R., Gough, B., Day, K., & Muskett, T. (2024). Making the universe together: Baradian inspirations for the future of qualitative psychology. *Qualitative Research in Psychology*, 22(3), 680–707. <https://doi.org/10.1080/14780887.2024.2390930>
- Schrödinger, E. (1935). Die gegenwärtige Situation in der Quantenmechanik. *Naturwissenschaften*, 23(48), 807–812. <https://doi.org/10.1007/bf01491891>
- Schwandt, T. A. (1994). Constructivist, interpretivist approaches to human inquiry. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 118–137). Sage Publications.
- St Pierre, E. A. (2013). The posts continue: Becoming. *International Journal of Qualitative Studies in Education*, 26(6), 646–657. <https://doi.org/10.1080/09518398.2013.788754>
- St Pierre, E. A. (2021). Post qualitative inquiry, the refusal of method, and the risk of the new. *Qualitative Inquiry*, 27(1), 3–9. <https://doi.org/10.1177/1077800419863005>
- Thorpe, H., & Newman, J. I. (2023). Diffracting the special issue: The co-emergence of response-able collaboration. *Cultural Studies ↔ Critical Methodologies*, 23(2), 103–110. <https://doi.org/10.1177/15327086221147727>
- Vogd, W., & Neher, K. (2025). From quantum physics to social science research: An attempt at a systematic approach to karen Barad’s diffractive methodology. *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research*, 26(1), 10. <https://doi.org/10.17169/fqs-26.1.4237>
- Wolgemuth, J. R., Marn, T. M., Barko, T., & Weaver-Hightower, M. B. (2021). Radical uncertainty is not enough: (In)justice matters of post-qualitative research. *International Review of Qualitative Research*, 14(4), 575–593. <https://doi.org/10.1177/19408447211012658>
- Zeilinger, A. (1999). Experiment and the foundations of quantum physics. *Reviews of Modern Physics*, 71(2), 288–297. <https://doi.org/10.1103/revmodphys.71.s288>