

Exploring the alchemy of qualitative management research: Seeking trustworthiness, credibility and rigor through crystallization

Abstract

In this paper we explore crystallization in terms of its contribution to qualitative management research. This exploration of crystallization is based on a postmodern view where we utilize triangulation as a point of departure. Currently, the use of crystallization is under developed in the management discipline. Qualitative literature and metaphors are utilized to develop a focus on moving qualitative management research away from positivist terms. To do this we crystallize crystallization with an emphasis on the embodiment of the qualitative researcher as the primary tool in addition to the development of rigor through credibility and trustworthiness. This conceptual approach can benefit qualitative management researchers by drawing upon development and advancement of other disciplines. It is the practice of theory rather than the presentation of theory. The alignment of qualitative management research through a multi-genre approach follows the evolution of qualitative research methods. We aim to stimulate the conversation and position crystallization within the field of qualitative management research as a method for obtaining deeper and richer understanding of phenomena whilst building rigor, allowing creativity and developing intuition for the interpretivist qualitative management researcher.

Keywords

Crystallization, triangulation, qualitative management research, embodying, interpretivist,

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Introduction

In its most simplistic and misunderstood context alchemy is seen, as turning 'lead into gold'. When deeply understood alchemy is finding the value within something that is presumed not to have such value (Kinchelov, 2011). Crystallization provides value for the qualitative management researcher yet if this explorative approach is not fully understood it can look simplistic and a justification to 'do as you please'. The alchemy of crystallization however, is a complex journey of enriched discovery. An alchemist understands the first step of the crystallization journey is the understanding of 'the self' before going out to understand the surrounding world. This alchemy is essential for the journey of the qualitative management researcher in seeking rigor. Crystallization centers on understanding the research and researcher position to intimately view the process with an openness that allows discoveries to unfold that would otherwise be lost. The call for this uptake of boundary spanning through crystallization moves through and along the qualitative continuum in the quest for deeper and richer understanding to advance social construction (Denzin & Lincoln, 2011; Ellingson, 2011, 2014). We open this conversation to qualitative management researchers and present the conceptual argument for crystallization as an approach to rigorous qualitative management research (QMR).

The alchemy of crystallization and its implications for richer insights with greater rigor begins with background literature to show the usage of crystallization through philosophical foundations and background that leads into aspects of implicit practice and ensuring rigor. Conceptually the idea of importing crystallization into mainstream QMR is developed through the significance of the researcher as the primary tool with the metaphor of the bricoluer or alchemist building a bricolage. To

provide authority and guidance to the development of rigor we stress the use of trustworthiness and credibility. By scanning the QMR literature, we position crystallization as an alchemic or transformational approach. The alchemic nature of crystallization needs time, effort, commitment and passion so it is not an ontological or epistemological means for the qualitative researcher wanting a quick method. It is the qualitative management researcher's alchemic abilities that need to be developed if a richer form of QMR is to emerge. Crystallization is not the practice of a 'fool and a wand' working the magic of illusion that is evidenced through discipline aligned literature. It is the perceptive seer delving deeply into the mysteries with a solid belief that discovery must be rich, credible and trustworthy. The lived experience of QMR can be taken to a deeper level through the exploration and adventure of searching whilst maintaining an awareness of answering the research questions posed. Crystallization is internalized and presented as a way to achieve this outcome.

Crystallization and the nature of reality

QMR is often defined by what it is not (Johnson, Buehring, Cassell, & Symon, 2007). Development of language, definitions and terminology underpins existing and emerging paradigms that can fortify the position of QMR. The nature of reality is not a flat ontological base with unification of consistencies, convergences and unions of phenomena. Denzin (2012, p.84) applauds and shows excitement at "the new third way of moving into and through methods" that crystallization advocates. The multi dimensionality of integrated and dendritic or branched crystallization brings a rethinking of boundaries and a new ontology to QMR and the researcher for the exploration of the messy realities that culminates into sense making through thick, rich, interesting and coherent representations. In developing this rich sense making the premise is not to dismiss or defend triangulation (Hoque, Covalleski, &

Gooneratne, 2015; Modell, 2009) but to use it as a springboard in the ontological shift to crystallization within QMR. Similarly, the conceptual ideas presented do not reject nomothetic (objective knowledge) approaches but embrace interpretive social science whilst touching on critical ideas in addition to drawing upon feminist and postmodern literature for a divergent approach to QMR through crystallization. Conceptually, we acknowledge all methodologies are ontologically and epistemologically underpinned by interpretation (Neuman, 2013). Crystallization is underpinned by the interpretive paradigm and therefore develops and builds social construction through abductive methods.

Shifting from the linear to the crystallized research design provides the interpretive researcher scope to raise consciousness (St Pierre, 2015). The interpretive paradigm in alignment with abductive reasoning (see Figure 1) brings alternative approaches into light (Spens & Kovacs, 2006). In contrast, inductive and deductive approaches are generally aligned with positivist research, with the former producing generalizations and the latter deducing hypotheses (Blaikie, 2007, 2010). Another option (not shown in Figure 1) is the retroductive approach that is “relatively undeveloped in the social sciences” and associated with mixed methods (Blaikie, 2000, p. 276). The retroductive and abductive strategy share the social reality in eschewing positivism yet differ in their methods and subsequent outcomes. The abductive approach supports interpretivist research with real-life situations, reflection and the co-construction of new meaning (Spens & Kovacs, 2006).

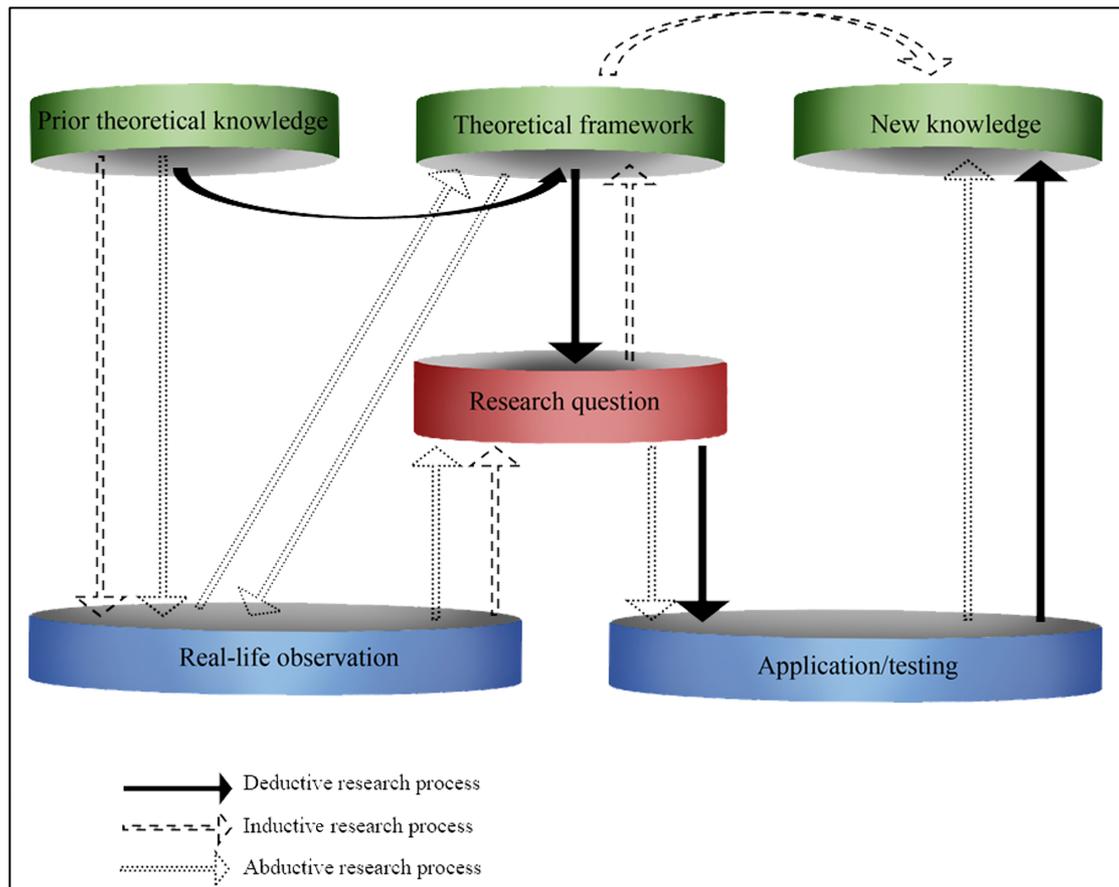


Figure 1: Pathways of deductive, inductive and abductive research approaches (Spens and Kovacs, 2006, p. 376).

The value of abductive reasoning is not about generalization, but building knowledge to inform practical reasoning in overlooked areas that can account for deeper social construction (Blaikie, 2007, 2010; Thomas, 2010). Discovering participants' everyday reality and motives as well as deriving meaning in a participatory environment of co-construction are achieved through an abductive path within the interpretive approach. From the interpretive view we can study the elucidations of context and how people act and behave in those contexts whilst acknowledging the limited view and proposing quality in the qualitative process (Neuman, 2013; Richardson, 2000b). Divorcing the ontological from the epistemological can be problematic and as researchers we generally maintain a

constant paradigmatic position – this is fundamentally who we are as individuals. A researcher’s methodology is rooted in their paradigm and as nominalists accepting the interpretive lens is a constant to explore and investigate phenomena (Neuman, 2013). Like the alchemist the deeper one takes this interpretive exploration and interaction the better situated we are to push understanding and sense making (Altheide & Johnson, 2011). Equated but not equal to pinpointing a position, crystallization builds thick and rich descriptions through multiple forms, genres and modes to embed the researcher in a reflexive process allowing them to apply their craft (Denzin & Lincoln, 2011; Janesick, 2000; Ellingson, 2009).

Crystallization is not a new concept to qualitative research, yet in the management discipline there is minimal understanding and application. Bryman (2008, p. 160) helps delineate methods from methodology as the study of appropriate applied methods, assumptions and practices whereas methods are founded in the “instruments of data collection” including interviews, observations and images. The inclusion of crystallization within appropriate methodological approaches supports the discovery and exploration of the social world and stretches traditional boundaries that can add value and depth to QMR. We present and encourage the boundary spanning of methods through crystallization (Ellingson, 2014) by building on the work of qualitative researchers predominantly outside the management discipline (see Crabtree & Miller, 1999; Richardson, 1999, 200b; Ellingson, 2009, 2015). By using these foundations in crystallization as a point of departure we aim to broaden and add depth to QMR. Like the alchemist, the qualitative management researcher sees that ‘all that glitters is not gold’. The gold is often found in deep and dark places that seem hidden under the obvious. Crystallization enables those management researchers

looking to embrace depth and richness with possibilities of gaining much greater returns.

Foundations to crystallization

It is evident that crystallization is utilized in the wider qualitative interpretive community (Crabtree & Miller, 1999; Denzin & Lincoln, 2011; Ellingson, 2009, 2015; Richardson, 2000b; Saldaña, 2016). In the medical field Miller and Crabtree (1994) presents crystallization as one of four stages in their work on family physicians. The crystallization phase co-exists and integrates with immersion as steps in the methods applied to the organization of data collection and analysis (Crabtree & Miller, 1999; Miller & Crabtree, 1994). This view is further developed in Crabtree and Miller's (1999) qualitative research through the synergy of immersion and crystallization likened to the pairing of 'bread and butter'. Borkan (1999) also integrates crystallization/immersion to emphasize the importance of self in the process. Coupling of Crabtree and Miller's (1999) immersion and crystallization can be seen through studies on pain management (Hsu et al., 2014; Krebs, 2014) and weight management (Chugh, Friedman, Clemow, & Ferrante, 2013). The crystallization/immersion premise encourages rigor through trustworthiness and credibility within qualitative research on patient and physician relations (Janes, Titchener, Pere, Pere, & Senior, 2013; Leverence, Williams, Sussman, & Crabtree, 2007; Woolhouse, Brown, & Thind, 2012).

The immersion or cognizance of self in crystallization is a common thread with Richardson (1994, 2000a, 2000b) emphasizing the significance and Ellingson (2009, 2012; 2015) exploring the idea further with embodiment. From her ethnographic stance, Richardson (2000b, p. 959) challenges the qualitative researcher to extend and "encourage different voices" for "stronger and more interesting" approaches from the

qualitative community. She goes on to position the postmodern benefits where a multitude of research approaches are able to co-exist and question the claim to be 'right'. Examples of this co-existence and questioning the 'rightness' is evidenced in business and society with politicians in democratic societies making decisions without consultation (captain's call) or the juxtaposition of educational philosophies of teaching versus student centered practices. What is best, right, fair or reasonable is rarely a black and white choice. With crystallization, there is the invitation for the researcher to immerse themselves through exploration of competing ideas, perceptions and assumptions (Denzin & Lincoln, 2011). The crystal metaphor gives authors and their audiences a vision of the interwoven research processes with emphasis on investigation, discovery, reflection, interpretation and representation (Lincoln, Lynham, & Guba, 2011).

Richardson's view of crystallization has been presented as a postmodern elucidation of triangulation (Mehmetoglu, Dann, & Larsen, 2001), a deconstruction of validity (Forde, 2013) and as a geologically based metaphor (Frambaugh-Kritzer, 2012). Crystallization is this and so much more. Richardson's crystallization concept is a "post-modern reimagining of traditional, (post) positivist methodological triangulation" traversing the opposing art/science research continuum to embrace the messiness of qualitative research and the many truths (Ellingson, 2009). As a sociologist from the postmodern and post postmodern perspective, Richardson (1994, 2000a, 2000b) questions the triangulation approach as using an objective, two dimensional, rigid, and static lens. The crystal imagery offers asymmetry, substance and synergy with boundless opportunities and potential to gain rich accounts of social episodes whilst recognizing the complexities including the undetectable accounts (Richardson, 1994, 2000a).

Richardson (1994, 2000a) accentuates the multiple dimensions of interpretive research having more than three sides to view the world (triangulation). The imagery of crystals is appropriate in shifting the perspective from positivist terms founded in geometry to light theory (Richardson, 2000b). The crystal metaphor was offered by Richardson (2000b) as an alternative to the fixed dimensions of three points as seen in triangulation for rigor and validity (Ellingson, 2014). From an interpretivist perspective, there is no single or correct description of how one sees a crystal (Denzin & Lincoln, 2011). Crystallization accepts the multidimensionality of qualitative research to reflect external views and refract internal views whilst conceding the limitations of these same views (Richardson, 2000a, 2000b).

Founded in interpretivist, feminist and social constructivist paradigms, Ellingson (2014, p. 443) “champion(s) the postmodern-influenced approach to triangulation” known as crystallization. This approach broadens the conversation across genres and methodologies embracing a breadth and depth that travels back and forth across the paradigm continuum to draw upon all forms from performing arts, poetry, images, interviews, observations and surveys (Tracy, 2010). Ellingson (2009, 2014) denounces the dichotomy of polarizing views so as to explore, appraise and utilize what is in between.

Primarily in the communication discipline, Ellingson (2015) offers crystallization as a framework for relationship workers through the strengths of flexibility to enhance traditional research design, refuting the either/or dichotomy for rigor and improving the visual representation through more than one method. Ellingson (2014, p. 448) balances her proposal by cautioning researchers about the long-term commitment, inherent skill constraints as well as “time, energy and emotional labor” burdens. Recognizing the vulnerabilities of the researcher, the

researched, and the context, crystallization emphasizes the value of co-construction with the participant and researcher forming a “rich and openly partial account” (Ellingson, 2009, p. 4). Crystallization according to Ellingson challenges methodological constraints to utilize more productive and effective modes of data collection, analysis and representation (Ellingson, 2011; Ellingson & Ellis, 2013). In this conceptual paper we look to Ellingson (2009, 2011, 2012, 2014) who draws on authentic personal experiences and builds on Richardson’s (2000a, 2000b) work to dispute the “narrow conception of triangulation” (Denzin & Lincoln, 2011, p. 5) and progress the multiplicity of crystallization specifically to enhance QMR.

Integrated and dendritic crystallization

Physically it is not possible to encompass all views at all points in time, yet crystallization provides the methodology to genuinely follow the trails to gain the richest and deepest account possible. Ellingson (2015, p. 424) proposes that ‘playing’ with the “participants, data, and representation creates opportunities for humane, profound, and pragmatic research processes” that help reclaim academic legitimacy. To communicate crystallization as holistic Ellingson (2009, 2014) presents *integrated* and *dendritic* approaches. Integrated crystallization comprises multiple genres and spans the qualitative range to weave and piece together as one would do with piecing and stitching a quilt together. Denzin and Lincoln (2011) use the bricoleur analogy to relate this process to an interpretive quilt where the data collection is drawn together to connect the many parts to make the whole. Similarly, drawing on the metaphor of a puzzle provides a functional view of integrated crystallization. Many qualitative researchers do this by bringing together interviews, observations, archival documents, images and text (the patches) to quilt together broad and varied sources (Lambotte & Meunier, 2013). In higher education Babcock’s (2015) interpretive case study on

second year art students focuses on the research design with crystallization offering an epistemological approach that encapsulated multiple genres giving individual voices to the students. Interviews (talk to students), blogs (rich and interactive), focus groups (dialogue extension) and researcher reflections (limit bias and build narrative) are interwoven and reasoned to best answer the research questions posed (Babcock, 2015). The qualitative method of the interpretivist epistemologist employs crystallization to seek out appropriate and ethically ratified pieces of the puzzle or quilt with the ultimate aim of answering the research question/s.

Iterative processes are not exclusive to *integrated* crystallization (Ellingson, 2009). Characterized by “conscious engagement with an ongoing (re)creative process, responsiveness to the research context(s), and development of distinct, often asymmetrical branches” *dendritic* crystallization is a layered and ongoing process incorporating many forms of analysis through various genres of representation (Ellingson, 2009, p. 99). The grounded theory approach is positioned to come to a single reality through saturation of categories (Corbin & Strauss, 2008). Although crystallization is referred to as part of the interpretivist – constructivist paradigm for grounded theory when integrating narrative and images (Jennings, Kensbock, Junek, Radel, & Kachel, 2010), research shows that when another form of analysis is applied to the same data the narrowing to a single theme is not always possible (Harwood, Gapp, & Stewart, 2015). The integrated use of data analysis in this risk management research highlighted the issue of linear limitations (Lambotte & Meunier, 2013) and one technique yet when a lexical analysis was applied as a novel approach to crosscheck two themes showed equal strength (Harwood et al., 2015). Grounded theory is blended with ethnography and other social science applications by Ellingson

(2009) to provide multi dimensionality, create rich narratives of life experiences and increase the credibility of findings through abductive research.

To build and develop rigor in QMR the choice and utilization of integrated and dendritic crystallization are dependent on how to best answer the research question through perceptive choices that challenge thinking, develop sense making and the extension of knowledge. To make these choices, the significance of the researcher as the alchemist and primary tool is highlighted through immersion and embodiment.

Embodying and embedding the bricoluer

Analogous to the bricoluer, who is an artisan bringing diverse and numerous pieces together to make sense, the qualitative researcher uses a multitude of views to develop and integrate the pieces together to form a bricolage (Denzin & Lincoln, 2011; Kinchelow, McLaren & Steinberg, 2011). Unlike quantitative research where the emphasis is on external measurement that is value free, the qualitative researcher is the value-laden instrument that focuses on answering the research question. In terms of embodiment that is argued to be “the path to true knowledge” (Fourcade, 2010, p. 570) the research and researcher is an intertwined process full of change as the context, situation and relationships evolve (Butcher, 2013). Be it grounded theory, ethnography, case study or the many other methods available, the interpretivist approach is aimed at social construction and highlights the interconnection and co-construction that cannot be separated. In phenomenological research Butcher (2013, p. 254) argues for a “hybrid disposition” with the hope of being authentic whilst Tomkins and Eatough (2013) discuss the suspension of organizational attitude as it obscures the management researcher’s embodied experience. Conceptualizing embodiment in QMR requires a cognitive sensitivity, awareness and modifications for the researcher and their interaction of self, context and the research (Butcher, 2013;

Tomkins & Eatough, 2013). Going beyond the sanitized use of 'I', the qualitative researcher is encouraged to give representation to their identity, as this is critical to the richness in interpretive social science (Ellingson, 2008, 2012; Lambotte & Meunier, 2013) that is sought in well-grounded QMR and alchemical outcomes.

As sense makers or storytellers, the use of metaphors in qualitative research is a tool often used to help communicate an idea (Markham, 2015). The mixing of genres eschews the positivist deduction of objectivity to move across, around and through the qualitative continuum (Denzin, 2012). Crystallization brings about the methodological bricoluer, as the artisan creating alchemy and the bricolage the output (Denzin & Lincoln, 2011). In this metaphor the bricolage is a quilt analogous to research findings and the shared narrative co-constructed by the researchers and the participants (Butcher, 2013) and in terms of interpretive crystallization in QMR this results in improved understanding, meaning and knowledge with conceivable transformation and alchemy (Kinchelow, et al., 2011).

Decisions on appropriate research practices relies upon the research question as well as the social and ethical contexts. Planning becomes a crucial aspect of crystallization in its extension of QMR and establishes what the researcher can do within the implications of their settings. Patton (2002) substantiates the risks of fieldwork and the need to plan with the story of Francis Bacon (1561- 1626) is exploration of low temperatures on the delaying of the putrefaction of meat. On a snowy day in farmland north of London, Francis Bacon buys a chicken, immediately kills it then stuffs it with snow. The coolness of the snow delayed the rotting of the dead bird, but Francis Bacon died one month later from bronchial disease caused by the extreme cold experienced during his spontaneous fieldwork. This fatal situation highlights the need for the researcher to embody their research from the initial phases

so as to best capture the subject matter in their natural setting but to also diminish risk and to apply ethical foundations (Denzin & Lincoln, 2008).

Crystallization begins in the planning and emerges in data collection with the focus on building trustworthiness and credibility. We suggest that triangulation provides a departure point for crystallization with immersion, intuition and creativity the qualitative researcher's tools for presenting "a more complete, holistic and authentic study of our own role as storytellers and artist-scientists" (Janesick, 2001, p. 539). In crystallization, there is an inherent need for the qualitative management researcher to apply both intuition and creativity through reflection, consideration, thought and reflexivity. QMR is not a matter of mastery of the existing but a continual quest, somewhat like chasing the end of the rainbow. The intertwining of writing, method, and analysis in interpreting qualitative research means the researcher is absorbed in thought, reflection and self-awareness (Ellingson, 2009). Although dynamic by nature, through reflection on actions, behaviors and deliberations of the research, the researched and the researcher there is justification for intuition and creativity in the qualitative researcher's direction toward the activity of discovery (Watt, 2007).

Implicit practice of the bricoluer for alchemy

The methodological bricoluer is diverse in skills, adept at carrying out many tasks whilst being sensitive and intuitive to the co-construction of knowledge and understanding (Denzin & Lincoln, 2011; Kinchelov, et al., 2011). Reflection enables learning from experience, the questioning of assumptions, where values and beliefs provide strategies or frameworks (Bolton, 2014; Schön, 1983). Reflective practice creates a relative safe environment enabling reflexivity to take due course through self-inquiry (Bolton, 1999; Johns, 2013). Consciously separating the self from the

data is not possible when applying skill and craft in active qualitative inquiry (Gabriel, 2015). The reflective practitioner uses the theory-in-use that is an implicit practice of “a conversation with the situation” in alignment with the conscious actions and behaviors that are espoused (Schön, 1983, p. 76). Bolton (2014) refers to A. A. Milne’s character, x the Pooh who when looking for Piglet discovered the more he looked the harder it was to find his ever present friend. Taking the time to think and having the courage to trust and contemplate gives opportunity for reflection and reflexivity where intuition comes into play through insight and inevitable change (Bolton, 2014; Janesick, 2015). The “more attuned the researcher is to the spoken and unspoken subtleties” (Slotnick & Janesick, 2011, p. 1359) the more the qualitative researcher or bricoluer is transformed into a skilled artisan. In management terms and as a consequence, the bricolage brings about intimate knowledge for problem solving and meaning (Lambotte & Meunier, 2013; Weick, 2007).

The tacit approach of theory-in-use emphasizes the need to develop the most important qualitative tool: the researcher or oneself (Ellingson, 2009; Janesick, 2000; Slotnick & Janesick, 2011). The espoused qualitative philosophies innately uses best practice but has the ability and confidence to highlight new and emerging practice that the researcher embodies from the perspective of alchemy allowing the veil of the everyday to be lifted. Janesick (1994, 2000, 2001) uses the metaphor of dance and the improvisation needed relative to the qualitative researcher’s practice when making research design decisions throughout the process. The dance image symbolizes the crystallization of the light as it reflects and refracts in response to tempo, intensity, rhythm, and context of the researcher and the researched (Janesick, 2000). As the primary tool of the research, the qualitative researcher uses sensitivity, insight, awareness, instinct and intuition to guide the direction and decision making to

develop trustworthiness and credibility. This reflective process relies on the researcher's absorption in the qualitative process that Janesick (2015) also relates to the practice of Zen where creativity and intuition is part of the qualitative researcher's responsibility and harmonization.

As in the dance and Zen parallels, intuition and creativity is developed with foundations of trust, rapport, and relationship building through the co-construction of the research from the researcher and the researched. This means the time spent in the field can be considerable and takes on an organic progression (Ellingson, 2009). Although the qualitative researcher needs an open mind, it is not an empty mind as the research goes beyond simply observing and interviewing (Janesick, 2000). The prisms that take shape change, alter, grow and transition the qualitative researcher away from the geometry of triangulation to the crystallization concept leading to alchemy. As a method, crystallization morphs into a philosophy that allows a holistic and substantial view that embraces abductive reasoning and multiplicity without losing structure (Ellingson, 2011; Richardson, 2000b).

Too often, simple decisions are based on what is easiest, or on limited information, or from one view (Janesick, 2000) lacking alchemy in the context. To prevent missing the possibilities that might be right in front of them as did Winnie the Pooh or to quote Goethe "The hardest thing to see is what is in front of your eyes" (Goldman & McDermott, 2007), crystallization offers rigor through trustworthiness and credibility. Crystallization underpins the qualitative management researcher's scope and justification for intuition and creativity that allows application of the most important asset – themselves (Janesick, 2000). To provide this underpinning of crystallization we turn to trustworthiness and credibility to develop rigor.

Trustworthiness and credibility

Yin (2011) presents multiple sources of evidence as a basis for trustworthiness and credibility. Corbin and Strauss (2008) dismiss terms of validity and reliability, and prefer credibility. Indicated by credibility, the trustworthiness of findings is reflected in the crystallization with many feasible perceptions reconstructed from the data. Creating trustworthiness and credibility through multiple views is not about validation but about creating an alternative that encompasses the depth, complexities and rigor sought for qualitative research (Flick, 2009). Trustworthiness stems from the co-construction and interpersonal contact with participants and the subsequent data (Guercini, Raich, Müller, & Abfalter, 2014). Often trustworthiness is presented as authenticity, dependability, conformability, and relative to credibility (Corbin & Strauss, 2008; Elo et al., 2014; Yin, 2003).

Parallel to trustworthiness, truthfulness is advocated by Polsa (2013a, 2013b) when using crystallization as an approach to inductive and emic research. Like truthfulness, trustworthiness seeks authenticity not as an absolute truth but as a quality in the crystallizing approach (Polosa, 2013b). Ongoing absorption, reflection, and interaction by the qualitative researcher with the data collection, analysis and interpretation processes are part of constructing trustworthiness that constant comparison and chain of evidence establishes (Stewart & Gapp, 2013). Trustworthiness is linked to credibility as an alternative to validity (Guba & Lincoln, 1985; Tobin & Begley, 2004). Whilst it is the aim of researchers to be trusted so as to produce the most reliable representation, unlike their quantitative counterparts that create repeatable generalizations, the qualitative researcher needs to demonstrate trustworthiness and credibility in their research (Denzin & Lincoln, 2009).

Credibility is established through several strategies (Tobin & Begley, 2004). The aim for alchemy is discovery and transformation that culminates in telling the story of the participants through rich, thick and truthful accounts whilst recognizing this is the creating of sense in this phenomena at this point in time and context (Johnson et al., 2007; Lambotte & Meunier, 2013). Using constant comparison methods and building a chain of evidence reinforces trustworthiness and credibility whilst boundary spanning the continuums crystallization positions. Constant comparison is presented in terms of building trails that a chain of evidence demonstrates (Yin, 2011). Through various processes of logic such as note taking, memorandums, member checks, peer debriefing, prolonged engagement, persistent observation, frameworks and typologies a chain is created in the research. This articulated trail or audit develops trustworthiness and credibility to build rigor through a clear chain of evidence (Gibbert, Ruigrok & Wicki, 2008).

Conceptually, the chain of evidence is based on medical and forensic sciences where the collection of evidence requires a systematic approach from collection to interpretation thereby a link between the steps (Tellis, 1997). Preserving and recording the links in the evidence as each step is made explicitly pieces the research together hence following the analogy of a chain (Yin, 1981, 2011) or thread that flows through the study. Creating a clear chain of evidence allows the reader to follow a logical path from the research question through to the conclusion (Gibbert et al., 2008). During the process of collecting data, developing a chain of evidence is important as an iterative and reflective process in qualitative research (Patton, 2002) and to document the crystallization perspectives as they evolve.

Three areas are offered by Yin (2011) to define and build trustworthiness and credibility: 1) transparency, 2) methodical-ness and 3) adherence to evidence. Yin's

(2011) three objectives provide an example of how the qualitative management researcher can generate rigor through trustworthiness and credibility in the crystallization process and ensuing alchemy. Firstly, *trustworthiness* is emphasized with detailed and thick description of accounts completed from the planning stages through to the reassembling of interviews and observations. In addition, continual review and revisiting of the research questions ensures a focus is maintained. *Methodical-ness*, the second objective in Yin's (2011) framework, is supported by the need for discovery whilst maintaining an orderly approach. One such approach is following stages such as compiling, disassembling, and reassembling of the data collection and analysis. Having a structured and outlined guide that aids discovery can be complemented by constant comparison to give completeness (Yin, 2011). Lastly, the crystallization processes of method in association with creating a chain of evidence through the step-by-step documentation of the data collection, compiling, disassembling and reassembling demonstrates *adherence to evidence*. Methods guide but do not rule the qualitative researcher. There is the need to be mindful and contemplative for the qualitative researcher to apply intuition and creativity as part of the qualitative exploration of including, omitting or going further (Janesick, 2015). Creating trustworthiness and credibility in qualitative research therefore relies upon transparency, methodical-ness and adherence to evidence (Yin, 2011).

Scanning the environment

Fundamental to applying good practice in management is the need to scan the environment. This is the practical side of management in applying due diligence so that a manager can understand and detect the general activities of the operating context which, amounts to information gathering that optimizes the business decision and subsequent position. This requires looking further than the immediate industry or

geopolitical surrounds. As good practice, scanning the environment is analogous to research where we need to go beyond our discipline and review what other disciplines are using and exploring so as to advance and benefit our own management discipline. In this section a scan of other disciplines aligns the notion of crystallization engagement relative to QMR.

Scanning the management borders

As a qualitative term for the multiple views of reality, crystallization has been gaining relevance in management related disciplines including organizational communication (Tracy, Eger, Huffman, Redden, & Scarduzio, 2014; Tracy & Redden, 2015), tourism (Jennings et al., 2010; Jennings, 2005), organisational behaviour (Tallberg, Jordan, & Boyle, 2014), marketing and international business (Eckhardt, 2013; Polska, 2013a, 2013b) in addition to sustainability in small business (Stewart & Gapp, In press). In this section, the evidence that crystallization is used in aligned management disciplines begs the business case for crystallization to be included in the QMR methodological tool kit.

Tracy et al. (2014) brings together five essays in organizational communications that synthesize the turbulent episodes that can be experienced in the subjectivity of QMR. There is a call for imagination and collaboration in QMR to help “educate each other, become conversant in a variety of methods, and build ideas together, even crystallizing a varied spectrum of methods” (Ellingson, 2008; Gabriel, 2015; Tracy et al., 2014, p. 426). The balance of craft, art and acceptance of the researcher as the instrument (bricoluer) with inherent idiosyncrasies, eccentricities and weaknesses is highlighted yet yields the opportunity for developing insight (Gabriel, 2015; Tracy et al., 2014). Increasing insight in QMR needs to be presented coherently. Tracy and Redden (2015) discovered the anomaly in QMR with multiple methods advocated yet

few (15%) used more than one source. Even when there was a claim to use multiple sources often (31%) it is not represented in the findings (Tracy & Redden, 2015). Word and time constraints can be an obstacle for the qualitative researcher especially when up against the objective presentation of positivist research versus the thick, rich and coherent accounts of QMR.

Jennings (2005) ethnographic study of lived experience with female ocean cruising women was underpinned by Richardson's (1994) multiple views and angles in the construction, investigation, discovery, interpretation and representation of the research approach. Using a feminist methodology, autobiographical accounts, interviews, surveys and participant observations to crystallize the process and deconstruct the idea of a single truth to represent multiple truths through thick descriptions from many angles (Denzin, 2012; Jennings, 2005). The findings in this study extended the interpretive research through crystallization and advanced understanding with visibility and idiosyncrasies of females' long-term ocean cruising life choices, which adds value to the tourism industry (Jennings, 2005). Extending her research of the lived experience Jennings et al., (2010) crystalized methods of integrated and iterative processes in moving across and between narratives and diagrams. This research explored and reflected on three early career researchers as they learned and practiced grounded theory in the tourism and hospitality discipline. In this phenomenological research the reflections and reflexivity accentuated the collaborative support of the nascent researchers as they went from uncertainty to discovery (Jennings et al., 2010). The lived experiences through the crystallization process provides insight into theory-in-practice.

In organizational behavior research, Tallberg, the lead researcher spent 10 months in an animal shelter experiencing and studying the emotional impact of

animal euthanasia on workers (Tallberg et al., 2014). The coalescing of auto ethnography and ethnography crystallized personal and participant experiences, interviews, poetry and narratives to create meaning and advance social reform. In this context, crystallization offered the spanning of traditional organizational boundaries to deepen the understanding of employee experience in this highly sensitive context (Tallberg et al., 2014). In alignment with others, this study calls for qualitative researchers to have a sense of self and immerse themselves in the process of crystallization through alternative and appropriate methodologies that best communicate and transform the ‘messy’ realities of QMR (Ellingson, 2015; Johnson et al., 2007; Lambotte & Meunier, 2013; Tallberg et al., 2014).

The combination of integrated and dendritic crystallization is evident in Polsa’s (2013a) analysis of methodological approaches in the international business context with culturally diverse settings. The continuums of research design and cultural perspectives are positioned through advantages and disadvantages with crystallization emerging into a crossover-dialog approach (Polisa, 2013a). Ontologically crystallization facilitated depth and richness by moving past mixed or multiple methods in this culturally sensitive research whilst engaging with established concepts and paradigms to advance understanding. Polsa (2013a) employed several methods drawing upon abductive reasoning to capture the nature of reality as a perception of the spirit or essence that does not claim truth but truthfulness. Polsa (2013b) demonstrates the embodiment of the researcher and research through crystallization by melding the body, spirit and mind (and their indigenous equivalents) in providing alternative insights. The intimate narratives from China and India foster emic understanding and emphasize the significance of the researcher as the bricoluer who can comprehend the social context and interact appropriately

(Denzin, 2012; Polsa, 2013b). The embodiment of the researcher engages and interacts with the mind, body and spirit as needed in the subjective process to enrich crystallization by adding oriental synergies, consumer theory and indigenous psychology (Polsa, 2013b). Although the complexities of culture are recognized in Polsa's (2013b) study, the use of crystallization suggests the research design facilitates the boundary spanning of culture, theory and methods giving a richer and alternative understanding to the phenomena.

Stewart and Gapp (In press) take the integrated and dendritic approach into their interpretive case study of organizational development in small businesses that aim at embedding sustainable management. The sense making of how and why a continual learning approach to sustainable best practices evolved through dendritic trails of data collection with interviews, observations and images. An integrated data analysis proceeded with several distillations; iterations and layers presented visually through a eco-system. This crystallized approach (Ellingson, 2009) was strengthened by Yin's (2011) five phases of compiling, disassembling, reassembling, interpreting, and conclusions. The momentum to move into and through methods predicated the shift toward the qualitative term of crystallization for achieving credibility as demonstrated by the works of Tracy (2010), Ellingson (2009; 2011; 2014), and Denzin and Lincoln (2011) with limited application in the field of QMR. In the dynamic environment of management research the traction for crystallization is well placed to add value to the qualitative domain through the breadth and depth to explore and investigate the many views of reality. Polsa (2013a; 2013b), Tallberg et al., (2014), Tracy (2010) as well as Stewart and Gapp (In press) are examples of those extending crystallization into allied management areas. This extension supports that by taking this approach of

crystallization provides the qualitative management researcher a strength and opportunity to cease defending the interpretive position.

Enhancing QMR through crystallization: Practical potential and limitations

Figure 2 brings together the conceptual ideas presented. The initial emphasis on planning is the formulating of the ideas on how to proceed. Prior to this stage the research questions and paradigm are positioned. Through this part of the research justifications are fashioned. A direction for the methods is underpinned by the philosophical ideologies of the interpretivist methodology whether case study, grounded theory, ethnography, phenomenology or one of the many approaches or combinations. During the planning, the ethical and logistical constraints are considered with options viewed and reviewed. Ensuring all imaginable possibilities and situations are explored optimizes the data collection and subsequent analysis. Although the crystallization process is at times creative, keeping cognizant and focused on answering the research question is the aim of QMR in bringing the bricolage together. Highlighted in this conceptual visualization of crystallization is the iterative processes and immersion as seen by the cyclical arrows.

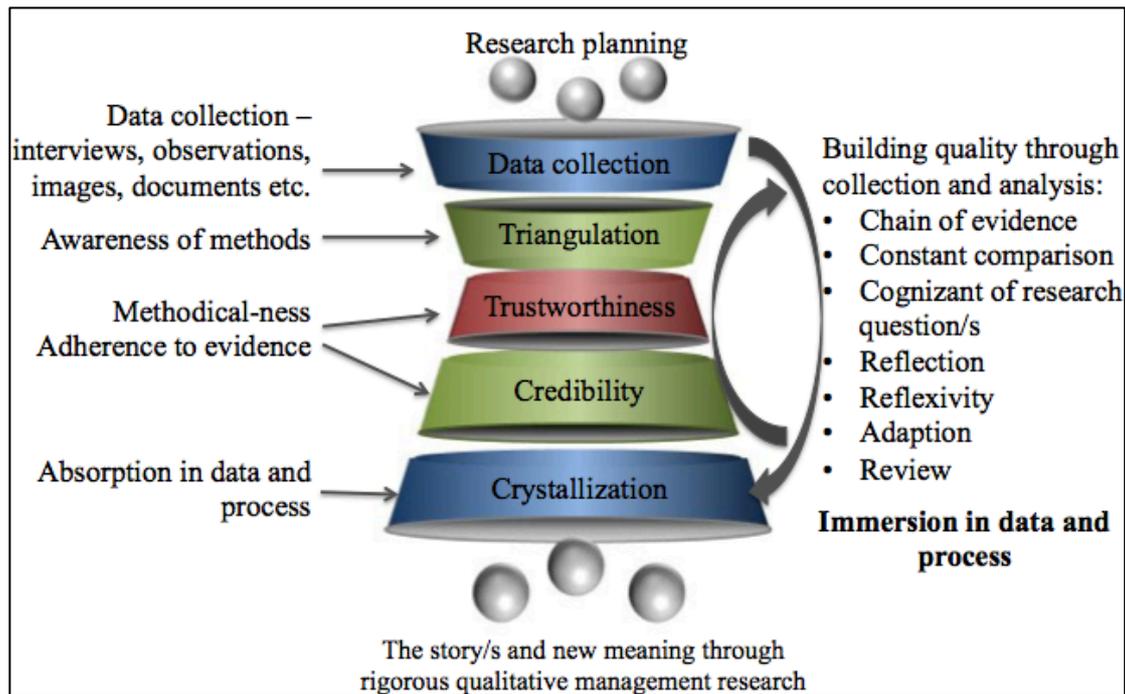


Figure 2: Conceptual understanding of crystallization

With the aim of transforming and building alchemy, the bricoluer requires patience and zen-like contemplation to imbed quality and completeness. The methods of building a chain of evidence and constant comparison develop and support the framing of trustworthiness and credibility to transition past triangulation and into crystallization. These iterations of reflection, exploration, discovery, interpretation and representation (Lincoln et al., 2011) draw upon integrated and dendritic approaches. During the absorption and immersion into the research process the researcher as the bricoluer adapts, reviews and remains cognizant of the research questions.

The opportunities for crystallization to extend and advance QMR can only be limited by the lack of imagination and immersion in the process with the aim of creating alchemy. As qualitative researchers, embracing the divergent thinking and understanding of our paradigm increases the potential to learn from one another (Johnson et al., 2007). Acknowledging there is no one truth but nuanced

representations is summed up with Ellingson's (2014, p.442) use of Emily Dickinson's quotes that the "truth must dazzle gradually." The complexities, choices and imperfections of qualitative research mean that as qualitative management researchers we need to be transparent, adaptable and look for what is appropriate and fitting in creating rigorous research.

Crystallization pushes the envelope, keeps us thinking and can potentially liberate the paradigm dichotomy through boundary spanning methods and methodologies in the quest for fulfilling and engaging research (Ellingson, 2009; 2014). The embodiment needed to become the bricoluer and to justify crystallization requires capability and ability to utilize multiple genres or layered and dispersed facets of data collection and analysis. The practical and time challenges in developing and practicing a range of skills is challenging when balanced with the pursuit of breadth and depth (when do you stop) for crystallization. In the case of QMR, many business schools are conflicted by the less conventional approach of crystallization for several reasons. Primarily, qualitative journals remain elusive in business rankings hence issues of meeting performance standards and subsequent funding or promotion are apparent. This leads to issues of motivation for the qualitative management researcher and the need to be passionate in applying integrated and dendritic methods. Despite these constraints the continuum of choices crystallization incites is exciting for the qualitative management researcher. Being able to embody and immerse in the research can lead to fruitful and effective methods. Going across, through and back over the continuum in fieldwork, working with the data, producing new knowledge and gaining deeper and more meaningful social construction sanctions creative thinking about methods within methodological frames.

Immersion in the process is key to considering the multiple views of reality and dealing with the messiness of contrasting and conflicting understandings (Janesick, 2001; Lambotte & Meunier, 2013; Lincoln et al., 2011). When presenting written findings, the qualitative researcher develops their credibility through their methods section and it is this section that is cross-examined and judged by those often not familiar with the qualitative paradigms (Bryman, 2008; Richardson, 2000a). By being mindful, embodying and engaging themselves in the methods, the qualitative researcher studies the stories of others in order to find meaning and which is then conveyed to a wider audience (Janesick, 2015). Research itself can only be enhanced when the exploration of the phenomenon is included in the determining of the most appropriate methods (Neuman, 2013; Yin, 2011), which is essential to advancing the quality and rigor of QMR.

Conclusion

As management research and the role of the qualitative researcher has evolved so to have the positions with the move to managing and working with people. It is this move to engaging with people and the complexity of understanding the sociological and psychological implications of the human being where the black and white of positivism is less effective in gaining a depth of understanding. The shift to a more dynamic world is also associated with a move from the constriction of positivism and the need to construct new understanding as seen in the richer questioning provided by qualitative research. In this transition QMR finds support and links to the dominant research community of positivism through triangulation. We see triangulation as a starting point because it is a process that is acceptable to most positivists yet crystallization transitions past triangulation as the postmodern interpretation to gain access to the integration of multiple genres and the ability to follow dendritic paths.

In presenting crystallization as a way forward for QMR, the distance, direction and nature of the qualitative researcher will be free to delve deeper into the sociological and psychological world of the people that are the true dynamics of any organizational work environment. The dimensionality of crystallization positions the progress of QMR to align with other fields of qualitative research. In endeavoring to present the conceptual interpretation and implications of crystallization we offer the qualitative management researcher breadth and depth to explore and investigate those that exist in the management world. We embrace the importance of rigor through credibility and trustworthiness; and the role of the researcher in developing the knowledge of alchemy in order to craft the unique bricolage. This places a great responsibility into the hands of the researcher but with this responsible comes the empowerment to achieve great things. This power provides greater benefits and the ability to increase insights therefore the wisdom that research guided in this manner can obtain. In this paper we have aimed to free the qualitative management researcher in their journey of discovery whilst maintaining integrity and rigor in their pursuit. It is important is to give these discoveries meaning and insight. To feed the interpretive qualitative management researcher while respecting the rigor, credibility and trustworthiness of the science of the qualitative artist and crystallization is one way of achieving this goal.

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