# Wicked theorising: Theory building to address complex problems

## Abstract

As scholars, many of us aspire to use our research to help solve wicked societal challenges, and believe in the power of theory to do this. However there has long been criticism of the commonly used qualitative and quantitative research methods to make meaningful impact on solving complex problems. There have been a number of scholars spanning many generations of research who have been developing alternative methods, not to replace, but to expand the academic toolkit in situations where the mainstream methods reach their limits. We represent three generations of scholars who have found these methods, with some adaptations, are also well suited to help address complex or wicked problems. The aim of the paper is to outline the challenges in conducting research to address wicked problems, and outline a method we term "wicked theorising". The intent is to honour the legacy of the scholars who have preceded us, to outline the potential and limitations of wicked theorising, and share the techniques and strategies we have developed to address some of the practical challenges.

## Introduction

An expectation of industry and society is that publicly-funded research organisations should contribute to solving complex problems. However there are a number of challenges in conducting problem-solving research – epistemological, methodological, practical and efficacy. We explain each of these challenges to frame the purpose and outline of this paper.

## Epistemological challenges

*Problematising* is vaunted in the literature for developing interesting and influential theories (Sandberg and Alvesson, 2011). However, *problem-solving,* where research is used to solve industry problems, is more contentious. At one end of the spectrum are those who claim problem-solving develops theories that are interesting, influential and impactful (Strübing,

2007). At the other end of the spectrum, it is claimed to be merely a form of consulting (Hollenbeck, 2008). In the middle are those who acknowledge that it can lead to impactful research, but at the expense of theoretical contribution (McKelvey, 2006).

## Methodological challenges

The criticism associated with problem-solving research can in part be attributed to application of research methods. Across domains, action research and forms of engaged scholarship are used to engage with industry in problem-solving (Davison et al., 2004). The challenge is that although at least ten different forms of action research have been identified, the role of theory in these different forms is ambiguous (Mathiassen et al., 2012, Chiasson et al., 2009). Action research, for example, can build theory inductively (Westhues et al., 2008), use it deductively (Susman and Evered, 1978) or use a hybrid approach (Braun and Clarke, 2022). The method most commonly used, Canonical Action Research, infers a deductive approach where theory is selected after problem diagnosis (Susman and Evered, 1978). That is fine for solving an organizational problem, but runs the risk of applying known theories with little theoretical development or contribution. [Does anyone have McNiff book and able to comment? (McNiff, 2017)]

Another valid methodological argument is that if a problem is indeed wicked and complex, there is not a linear or clear-cut solution (Rittel and Webber, 1973). Wicked problems are described as ill-defined, malignant and unique (Crowley and Head, 2017). There is also a premise in research that to solve a problem you need to understand the root cause. This assumption is not unjustified. Research resources are scant. Funding is increasingly difficult to obtain. So efficient use of these resources in ensuring the right problem is solved appears logical, but it leads to a predominance of research on understanding the problem, rather than proposing a solution (Sankaran, 2017, Mingers and Rosenhead, 2001).

## Practical challenges

The research process of engaged scholarship for problem-solving is notoriously more complex and harder to control than traditional methods, engaging as it does with participants and involving large quantities of data (Van de Ven, 2007). In addition, problem-solving is inherently cross-disciplinary, typically involving systematic literature reviews at the outset and difficulty in pinpointing a journal for publication at the completion of research (Lawrence et al., 2022). Building theory to solve problems is what Glaser describes as a 'drugless trip', distilling and analysing vast quantities of data using grounded theory techniques (Glaser, 1978).

## Efficacy challenges

The final problem we present related to building theory to solve wicked problems is efficacy. Some scholars assert there is nothing as practical as good theory, that the best way to understand something is to try to change it, and that theory has power to guide practical business and individual decisions (Lewin, 1952, Christensen and Raynor, 2003). There is a counter-claim that "nothing is as dangerous as a bad theory" (Ghoshal, 2005). So how do we ensure that we are not creating bad theories? Published theories tend to be rigorously produced but are often not adequately validated (Colquitt and Zapata-Phelan, 2007).

## Motivation and purpose for this paper

We represent three generations of engaged scholars, with the third author supervising the PhD of the second author, who supervised the PhD of the first author. We all identify as pracademics, professionals with dual identities of practitioner and academic (Dickinson and Griffiths, 2023, Volpe and Chandler, 1999). The motivation for this paper was two-fold. First, the most junior of the scholars felt that other pracademics and scholars could benefit from the tacit and unpublished techniques she had learnt from her supervisor and his supervisor. [ (Polanyi, 2009) – does anyone have this or able to make comment? ] Second, we have all richly

benefited from the direct support and indirect counsel of action research and engaged scholars (e.g. Lewin, 1952, Argyris, 1982, Van de Ven, 2007, Lindhult and Axelsson, 2021). We think there could be no more fitting tribute to their legacy than to continue building on the principles they defined, and the methods they embraced, for conducting impactful research. We align with these scholars and others that have gone before us that: 1) mainstream and linear methods are limited in their ability to address the increasing complexity of our society, 2) that we don't necessarily need to have a root cause or a neat solution to provide helpful theories, and 3) that it is by engaging in a situation that we discover nuances that refine theories so that they better explain, predict or result in improved outcomes.

Our aim is to outline an approach to wicked theorising that helps address wicked problems, leveraging the learnings of those who have preceded us. We don't profess to have *the* answer to solving wicked problems, but we do outline *an* approach we have found to be helpful. There are 4 principles that underpin this approach: 1) *problem structuring*: starting with a wicked problem for which there is no adequate theoretical explanation, 2) *convergent questioning*: involving high use of comparison and abductive logic with three forms of data (experience, field data and literature) 3) an *iterative "trial-and-error" method*, leveraging understanding of complexity and systems thinking, and research that is broader not deeper, in order to reveal new pathways through complex domains (Cockburn and Highsmith, 2001, Checkland and Poulter, 2006, Snowden and Rancati, 2021, Zaitsev, 2018), and 4) *evaluation*: through action or other evaluative techniques.

## Developing theory to address wicked problems

As a label, the word "theory" has some heavy lifting to do. Theories can be about reality, or about our methods for engaging with reality. Theories can range in scale from micro theories

about the relationship between two variables to the multi-variable summaries arising from larger, multi-level data sets (Abend, 2008). Theories have been categorised as being able to explain, predict, analyse and inform action (Gregor, 2006). The recurring literature on the theory-practice gap implies that practitioners often find academic theories less than helpful (Schön, 1995, Butler, 2008). The rationale has been that academics tend to be interested in relationships between measurable or controllable variables, whereas practitioners are more likely to want to know what to do to achieve particular outcomes in particular situations (Schneberger et al., 2009, Lynch et al., 2018, Schön, 1995). Practitioner theories, then, often take a "theory of action" form: "In situation S, if you intend consequence C, do A, given assumptions $a_1 \ldots a_n$ " (Argyris and Schön, 1974). It is assumed academics are generally more interested in patterns within and between cases whereas practitioners are typically more interested in what needs to be done or how to explain a particular situation or what leads to a particular outcome (Christensen and Dillon, 2020).

As pracademics, we have found it more helpful to focus on the characteristics of the situation, rather than the differences between academics and practitioners who approach the situation. A framework we have found particularly helpful in differentiating characteristics of a situation to determine the type of method and theory is the Cynefin framework (see Figure 1). This framework differentiates between situations that are clear, complicated, complex, chaotic or confused (Snowden and Boone, 2007, Snowden and Rancati, 2021).

[Insert Figure 1 near here]

Two types of situations, in particular, warrant deeper consideration here. Complicated situations may have many different elements with limited interactions between the elements whereas complex situations have many elements interacting richly (Snowden and Boone, 2007).

The uniqueness and unpredictability of complex situations render them less amenable to theory building, and methods such as the Soft Systems Methodology have been developed to inquire into 'complex, problematical, mysterious, characterised by clashes of worldview' (Checkland and Poulter, 2006).

A further complication arises from this. Different strategies are required to engage with problems of different complexity. Complicated problems can be understood by people with relevant and adequate expert knowledge. Complicated problems recur. This allows past experience (including from other people) to be used with some confidence. More than one area of knowledge may be relevant; multidisciplinary approaches may be useful. Complicated problems are understandable if the relevant experts can be assembled. When they understand the problem, solutions are then usually known or can easily be devised, with some confidence. The problem solvers are in known territory. Similarly, complicated situations are well-suited to process and variant theories (Van de Ven, 2007).

Complex problems, on the other hand, cannot be understood — at least, not enough for actionable solutions or parsimonious theories to be devised. Beyond a certain level of complexity, each complex problem is unique and multi-disciplinary (Crowley and Head, 2017). Some uncertainty in understanding is inherent because of the complexity. As Edward Lorenz explained in his "butterfly effect" conference paper in 1972, trivial changes in the values of the twelve variables in his weather model changed the eventual outcomes dramatically (Lorenz, 1972). In other words, a change of less than one thousandth of a unit in twelve interacting variables rendered the eventual outcome of his model completely unpredictable.

How, then, does a researcher intent on making impact manage the shift from complicated situations to complex situations? We can press into service here a metaphor from Don Schön

(1995). He talks of the complexity of professional problem-solving. To engage with complex reality is like working in the "swampy lowlands", forsaking the high ground where more apparent rigour may be achievable (Schön, 1995). To deepen the metaphor, imagine being lost in the swamp, in a fog. Only a step or two ahead can be seen. If there is a beacon on a distant hill, it may be visible as a glow. That can at least serve to guard against walking in circles. Imagine, then, taking a safe step in approximately a desired direction. From this new vantage point, a further step ahead can now be seen — and so on. Again quoting from Schön (1983), professionals who choose to engage with the reality of the swamp describe what they do as "experience, trial and error, intuition, and muddling through" (Schön, 1995). For such approaches, theories of how to muddle through are then needed (Lindblom, 1959, Allison and Saint-Martin, 2011).

## Defining Wicked Theorising

We have explained why, if a problem is indeed wicked and complex, there cannot be a linear or clear-cut theory or solution (Rittel and Webber, 1973). Our starting point for a methodological approach to complex problems is this notion of experience, trial and error and muddling through (Schön, 1995, Lindblom, 1959). We build on the learning, methods and experience of others to address the challenges we have outlined. Our inherited legacy includes collaborative research methods (Van de Ven, 2007), the distinction between espoused theories and theories-in-use (Argyris, 1980), instruction on grounded theory (Glaser and Strauss, 1967) and the symbiotic relationship between theory and practice (Checkland, 1985). We consequently define *wicked theorising* to be developing theories to explain, predict or inform wicked and complex problems as *a* method (not necessarily *the* method).

The intent of wicked theorising is not so much to solve a problem, as to work towards a better place. We limit this document to an exploration of the relationship between theory, broadly defined, and complex problems. The approach we outline is suited to complex situations where outcomes can't be predicted and where there may be a difference between *espoused theories*, that is, what people say, and *theories in use*, that is, what people do (Argyris, 1993). Our epistemology is that it is by engaging with a situation and the people immersed in it, engaging with diverse data sources and by trialling potential solutions, that the actual dynamics of the specific situation can be revealed, and the step to a better place navigated.

## Wicked Theorising Approach

There are five main distinguishing elements of the approach we outline for *wicked theorising*: 1) problem structuring, 2) theory building, 3) theory evaluation and refinement, 4) data collection, and 5) finishing the research process. This can be iterative, such as in Van de Ven's engaged scholarship and or multi-stranded and simultaneous, such as in Burn's Systemic Action Research (Van de Ven, 2007, Burns, 2007). The framework for wicked theorising is depicted in Figure 2, and then each component described in detail. For each component, we describe the characteristics that differentiates this method from others, and then explain techniques we have found to be useful.

[Insert Figure 2 near here]

### Problem structuring

We have found Van de Ven's explanation of *formulating a research problem* helpful (Van de Ven, 2007), and align with other scholars on the criticality of a well-designed research question (Alvesson and Sandberg, 2013, Weber, 2003). In a chapter dedicated to the topic, Van de Ven (2007) justifies the importance and criticality of problem formation. He describes the process of problem formation as four overlapping and interdependent activities: situating,

grounding, diagnosing and resolving. Similar to our intent, the focus is on problems that are not clearly structured, and instead, represent anomalies or breakdowns and a puzzle of "there's something else going on here" (Van de Ven, 2007). He describes a research problem as "any problematic situation, phenomenon, issue or topic that is chosen as the subject of an investigation". We affirm this approach helps ensure that the research question reflects a complex problem they need to solve. What this approach assumes or overlooks is that the problem has no known theoretical explanation or solution, or that the relevant theories are evidently ineffective.

An important part of the problem structuring, in our view, is *problematisation* to understand the strengths and limitations of existing theoretical explanations (Sandberg and Alvesson, 2011). This approach diverges with grounded theory methods because it starts with an analysis of the extant literature (Glaser and Strauss, 1967). In addition, this early analysis forms the basis for determining the theoretical contribution later in the research process. For example, <Name1> found that while collaborating on the research question, different perceptions of leadership between the clinicians and researchers emerged. Grappling with these differences flushed out nuances that would later ensure the relevance of the research to the industry partners.

Another important aspect of problem structuring is to *define the role of theory* in the research process. There are several roles theory can play in an action research approach to problem-solving. If there are no known theoretical explanations, or the explanations are conflicting, you will need to build theory to help solve the problem and an inductive method is appropriate (ref). If there are explanations, but they are for a different context or the explanations have limitations, hypothesising from an existing theory and deductive approach is appropriate (ref). Either way, it is important to ensure the research question supports the intended role of

theory. Being intentional on how theory is used is also important for countering a common criticism of action research: that theory is subordinate to problem-solving (Mathiassen et al., 2012). For the remainder of this article, we focus on an inductive method, as deductive methods are well addressed by Susman and Evered (1978).

The final consideration in problem structuring is engagement with the industry partner. There are two aspects to this: having a shared purpose and defining the level of engagement. Having a shared purpose between the researcher and participants and higher levels of participation than other methods has the advantage of empowering participants that might otherwise be marginalised. However, there are several risks. These include that it is harder to predict how the research will unfold, empowering some participants may disempower others, and rapport between the researcher and participants is required to enable an intervention [Ref?]. There may also be misalignment between research and practitioner goals and timelines. The skill and experience of the researcher in building rapport, managing the relationship and negotiating to achieve common goals is critical to the research outcomes.

The other aspect with engagement is *defining the level of participation or engagement* of the researcher and partner on a continuum in which we identify four main points. The first level is common to other research methods where there is minimal interaction with participants, such as when action and dialogue is observed. The second level is also common to other research methods, using interviews and surveys which require a level of interaction from the participant in the research topic. The third level of interaction is collaborative where participants discuss, debate and challenge the research process and findings. In the research by <Name1>, this took the form of a design team, a representative group of participants who met with the researchers on a regular basis to discuss findings, purposefully select participants and co-design interventions.

An additional purpose of this group is to manage the tensions between research and practice, and to negotiate and navigate entries and exits with the organisation (Mumford and Weir, 1979). The fourth level is where participants facilitate an intervention with the dual objective of ameliorating their wicked problem and to help validate the theory.

## Theory building

We mentioned earlier that the word "theory" has some heavy lifting to do, and that practitioners and academics can have different perspectives on the purpose and criteria for useful theories. We have presented a case that beyond a certain level of complexity, situations become inherently unpredictable. Detailed plans for research (and action) are unlikely to work. As with Schön's (1995) metaphor about the swampy lowlands, a trial-and-error approach, one step at a time, can be more appropriate. The aim is that each step will increase understanding, thus supporting a good choice for the next step. In other words, the research and the action are interwoven rather than one following the other. The process is iterative, consisting of cycles of action and reflection.

A technique we have found useful is to integrate data collection with analysis and interpretation, in an adaption of a technique called convergent interviewing (Dick, 2016, Driedger et al., 2006, Riege and Nair, 2004). We describe how this can be used in the researcher/participant collaboration and theory-building process as follows:

*1) Discern agreements and disagreements*

Within each interview or between interviews, notice agreements (compatible mentions of the same topics) and disagreements (incompatible mentions of the same topic).

*2) Probe for exceptions and explanations*

When an agreement is identified, in the same or subsequent interviews probe for exceptions to the agreement. Note that exceptions then constitute a disagreement.

When a disagreement is identified or elicited, in the same or subsequent interviews probe for explanations of the disagreement.

*3) Amend the emerging theory where necessary*

Amend the emerging theory, if appropriate, to incorporate the new explanation. If possible, phrase the theory so that it is actionable. This is easily done if the emerging theory is in the form of a theory of action. That is, it specifies which actions are likely to generate which outcomes in which situations. As appropriate, incorporate the new understanding in following cycles (steps). The process is summarised in the diagram (Figure 3).

[Insert Figure 3 near here]

A vigorous search for disconfirmation is a central part of this process. It serves three purposes: 1) comparison of agreements and disagreement can lead to a deeper exploration of the situation; it contributes to a better theoretical understanding, 2) disconfirmation (that is, exceptions) can help to define where the agreement breaks down; exceptions help to define the scope of the agreement; and 3) if we are vigorous in seeking out disconfirmation, yet it does not challenge the essence of the agreement, we can claim that our explanation (our theory) has survived our attempts to falsify it.

There are several features of this approach that require further explanation. A maximum diversity sample is recommended, to increase the likelihood that all stakeholder views are taken into account. Each interview begins with a very open-ended question (such as “Tell me about this organization”). The contributed information is therefore chosen by the interviewee, not the researcher. The questions become more specific and detailed as the interview progresses, based on the responses to the earlier questions. The probe questions later in each interview, in seeking exceptions and explanations, involve the interviewees in interpreting the information collected.

That is, a level of analysis is integrated into the data collection process, which informs the direction of questioning and also future sampling. This is a more intentional and participative approach than traditional grounded theory approaches, and reflects the level of uncertainty and complexity. Analysis continues after the data collection.

Reflection and abductive logic are fundamental to this approach and are important in distilling what is surprising and what the reasons for that might be. Abduction is defined as the cognitive process through which an explanation for a surprising fact is hypothesised (Alvesson and Kärreman, 2007, Kennedy and Thornberg, 2018, Sætre and Van de Ven, 2021). It is less important in this approach, relative to traditional research methods, for the analysis to be right at the start. The iterative nature of the process, and the subsequent evaluation phase, help refine and validate the emergent theory. However, a challenge with integrating data collection and analysis is that it can be harder to demonstrate explicit links between the data and emergent theory, which is important in traditional journal article reviews. For this reason, we recommend intentional memo-ing and diarising using a template to prompt for reflection. It also increases the emphasis on the theory evaluation process, relative to other qualitative methods (e.g. Gioia et al., 2013, Gehman et al., 2017).

There is a complication. In a complex situation it is likely that more than one action will be required or is feasible. Often there may be several actions to be performed in sequence. The early steps may reveal more details about the nature of the situation. This may require later steps to be modified accordingly or a trial-and-error evaluation process to be applied.

## Theory evaluation

The theory evaluation phase is where our approach diverges from most qualitative research approaches. It makes explicit what is implied in Van de Ven's engaged scholarship method. It also addresses a limitation of a majority of theoretical contributions in high-ranked

journals: that they have not been empirically tested (Kacmar and Whitfield, 2000, Edwards et al., 2014).

We outline two approaches to theory evaluation: Action Research and Iterative Evaluation. The first is what distinguishes action research, that is, an *action* or *intervention*. This is our preferred method as our experience affirms Lewin's claim that the best way to understand something is to try to change it (Lewin, 1952). However, we have encountered situations where an action is not possible, so have used *iterative evaluation* and while it might not be as strong in testing validity, is stronger at evaluating transferability and novelty.

**Action Research**

Using action research for theory evaluation involves co-designing an intervention with decision makers with relevant experience and skill to assess the likely nature of the situation and what might be a promising response. From Gary Klein's work on naturalistic decision making, we know this can be done relatively quickly (Klein, 2008, Klein, 2016). Measurement criteria should be built into evaluate the action and adequacy of the planned response (Piggot-Irvine and Zornes, 2016).

**Iterative Evaluation:**

An alternative approach for evaluation is to re-engage with participants and the literature to assess the novelty, validity, sufficiency and parsimony of the theory. An important part of this process is to seek disconfirming evidence – what is it ***not*** a case of, based on a priori assumptions. For this form of evaluation, data collection methods we have used include facilitating workshops with the participating organisation, re-engaging with original participants, sampling new participants and conducting surveys (using a write-up of the research findings). Example questions are provided in Table 1:

| Theory evaluation criteria | Example questions for evaluation |
|---|---|
| *Validity* | Rate how the theory/model helps explain your experiences |
| *Parsimony* | What might the theory be missing or need to improve to better explain your experiences? Could any of the components be removed and the theory/model still work? |
| *Novelty* | Are you aware of other models of theories that are similar to this or better explain your experience? |
| *Usefulness* | Rate the theory's usefulness to your context. How could applying the theory help this context? |
| *Applicability* | What would prevent your organisation from applying this theory? |

Table 1 - Example of theory evaluation assessment

## Reflection

Unlike other forms of social science research where the researcher is isolated, to some extent, from the context in which field work and experiments are conducted, this approach inherits the attributes of action research where researchers are 'immersing himself or herself in a human situation and following along whatever path it takes as it unfolds through time' (Checkland and Holwell, 1998). Consequently, while other forms of research can follow a pre-determined process or plan, these methods require a different approach.

The next important element of this research is one of reflection, not only to analyse the results of the evaluation and refine the emergent theory, but to determine the subsequent steps in the research journey. To determine the remaining research journey, a "framework of ideas" is needed rather than having a solution in mind, such that the process is *recoverable* or understandable, rather than repeatable (Checkland and Holwell, 1998, Holwell, 2004).

There are four components we have found useful for contributing a rigorous and recoverable theoretical response to a complex problem, all of which are mentioned to some degree in the fourth phase of Van de Ven's (year?) engaged scholarship (*Problem Solving* and *Communicating and Using the Research Knowledge*) and Champion and Stowell's treatise on validating action research (Van de Ven, 2007, Champion and Stowell, 2003). For wicked

theorising, these components need to occur continually throughout the research process: grounding the research in the research question, ensuring the authenticity and credibility of the research, documenting research choices and determining if the findings are sufficiently complete. These four components are now explained in turn.

*1) Continually ground activity in the research question*

With a complex problem, large volumes of data and emergent process, it is even easier than it might be with other methods to get side-tracked or suffocated by data (Pettigrew, 1990). To mitigate this risk, we have found continually grounding research decisions, findings and activity in the research question is necessary. For example, in <Name1's> research, there were many factors that could contribute to project success, but the research question was specific on the role of organisational leadership. Consequently, findings were continually evaluated on the significance and priority to organisational leadership.

*2) Continually refine and assess for authenticity and credibility*

As the research progresses, continually looking for ways to ensure the authenticity and credibility is important. While it is important to consider the choice of participants up front (Champion and Stowell, 2003), we advocate that these are not just matters that are considered in advance, but get re-assessed as the inquiry proceeds. A question we continually ask ourselves is "do you have sufficient evidence to support your claim on the contributions to theory and practice from your research?" For example, <Name1> included leaders of different transformation types to help determine the boundaries of validity for the emergent theory. Other decisions that were made during the research process were including parliamentary transcripts as a data source to validate participant accounts, and conducting a survey to test for bias in interview findings.

Another consideration in improving authenticity is ‘reflecting upon who authorized or supported which elements of the inquiry and for what purpose’ (Champion and Stowell, 2003). For example, in doctoral research intellectual guidelines may be set by the supervisor or access guidelines may be controlled by the research setting at the start of a project. In <Name1’s> research, for example, participations and interventions were approved and later declined by the host organisation, the reasons for which informed the research findings (<reference to journal article authored by Name1>).

Another area for continual assessment is in the ‘developing and planned relationships during any inquiry process’ (Champion and Stowell, 2003). Evaluation of relationships are deemed useful for “questioning any undeclared worldviews held by participants…such reflection may provide insight into how the issues of individual power and control have been dealt with by participants during the inquiry‘ (p.31). In addition, in addressing wicked problems, analysis of how relationships manifest can inform the viability of a solution. For example, in <Name1>’s research, the change in relationships wrought by a rapid response to COVID-19 revealed possibilities (and findings) that had not been possible (or evident) in the planned transformational change.

A final consideration for improving validity is involving participants in the learning and evaluation process (Champion and Stowell, 2003). Questions that <Name1> asked of participants included whether there is anything that could be removed from the theory and it still be valid, whether they are aware of better or more plausible theoretical solutions, and whether there is anything missing from the theory that would better explain their experience.

## Data collection

There are several important characteristics and considerations for sampling in this approach relative to other research approaches. The first is that the goal of sampling is to

*optimise diversity for comparison*. The reason for this is three-fold. The first reason is that diversity of sample is needed to reflect the inherent complexity of the problem to be solved. The second reason is that comparison between diverse perspectives provides the basis for analysis and theory building. The third reason is to mitigate the risk of data suffocation – a risk associated with the high volumes of data associated with inductive approaches to action research. Consequently, the method is more likely to involve multiples cases, or multiple roles within a single case.

A second characteristic of this approach is that *sampling is iterative and evolutionary*, that is, each round of data collection will inform the next. An evolutionary approach to sampling can be problematic for ethics approvals, but we have mitigated this by catering for as much diversity as possible in the ethics application, requesting approval in phases, or flagging that there will be a series of variations as more details are known. We depict these characteristics of data collection in Figure 4.

[Insert Figure 4 near here]

A consideration when designing the sampling approach is *triangulation of data sources* to improve research rigour (Creswell and Miller, 2000). In this approach, sourcing different sample types for the same case or account helps triangulate a participant's account, for example, using organisational artefacts or public domain records. A second consideration is the difference between the theory building and theory evaluation phase. Whereas the theory building phase might consider first person accounts, the theory evaluation phase can revisit original participants to test the findings are captured as recounted, and include participants who can help validate the theory across a larger number of cases. Sampling in the theory evaluation stage should be purposeful in testing the boundaries of validity for the theory, as well as purposeful questions to

assess novelty, usefulness, and that the theory is minimally sufficient. A third consideration is having a mix of data collection techniques, such as surveys that deliberately separate the researcher from the participant to mitigate the risk of bias associated with higher levels of participation.

To manage these characteristics and considerations, we use a three-phased process of pre-planning, engaging and ongoing engagement, which are outlined in Table 1.

[Insert Table 1 near here]

## Finishing the research process

### Discerning when enough is enough

How and when to finish a wicked theorising project is much less clear cut than for traditional forms of research. Firstly, as the approach is iterative, learnings and findings from each cycle inform and develop subsequent cycles, so when should the researcher stop iterating and start publishing? Similarly, a question often asked by doctoral researchers is how to align research timing with an organisation's timing? <Name2> faced this dilemma when the long, drawn-out change management process in an organization extended beyond the normal time expected to complete doctoral research (3 to 4 years). This dilemma is exacerbated when the aim of the research is to help solve a complex problem. Expecting a neat, tied-up-in-a-bow solution is unrealistic, and a different approach is required. Instead, questions to inform when the researcher can stop are "do you have a convincing story to tell in that the research helped the organization to change from where it was and it was well on its way to where it needs to be?". The decision on when to publish should be guided by assessing whether the research process is recoverable by interested outsiders (Holwell, 2004). A question <Name3> has often been asked is "will I have enough for a thesis?". His reply is that "it is more likely you will have 12 theses and the

challenge will be to choose which one". The original research question guides that decision, as can a principle used in agile development and entrepreneurial business startups, that of considering a *minimum viable product* that can be further refined later (Lee and Geum, 2021).

**Writing up**

We have mentioned there can be challenges publishing this type of research in mainstream academic journals. As with any qualitative research process, being transparent on the justification and explaining the research journey is important for research credibility (Checkland and Holwell, 1998). This is even more important when the process and action evolve over the inquiry period. To make evident the *authenticity* and *credibility* of any knowledge created through the inquiry process, Champion and Stowell advise 'reflecting upon, and if necessary making a record of, certain crucial elements of the inquiry as it unfolds' (Champion and Stowell, 2003). If these details are recorded, then interested individuals not involved in the inquiry process can gain an appreciation of, for example, why certain individuals participated and others did not. Documenting these decisions and justifications also provides the means for *boundary critique,* the capacity to reflect on different possible boundaries in systemic interventions (Midgley, 2000).

Another recommendation we have found useful is making evident 'the methods and tools employed to engage people in the learning process' as it is important for communicating the constraints under which the research was conducted (for example, timing, how observations took place and the level of interaction involved) so that interested individuals can reflect upon the environment in which the learning took place' (Champion and Stowell, 2003).

Ison (2017) further elaborates on the notion of recoverability proposed by Checkland and Holwell (year?), and provides some guidelines on how it can be achieved in practice. While the

most common form of doing this is to write an account of what happened the writing is a 'reflection on action and not the same as doing' (Ison, 2017). Recoverability can also be achieved in other ways such as participating or thorough narratives. The key 'aspiration of recoverability is to create circumstances where an explanation is accepted' (Ison, 2017).

## Discussion

It is the persistence of problems in research and practice that motivated us to revisit what some may consider is a well-trodden path, as well as connecting this path with Gioia's recent claim that academia is "on the road to hell" of irrelevance to practicing managers (Gioia, 2022). Representing three generations of action research scholars, we believe there is unutilised potential in using theory-based action research and engaged scholarship to help address wicked problems. Although the need to address these complex societal challenges is not new, the urgency to address what is likely a need for societal paradigm shift is high (Arbib and Seba, 2020; Glenn et al., 2017). With such lofty aspirations, it is no surprise there are challenges. We don't lay claim to this method for wicked theorising being the only approach to these circumstances, nor a perfect approach. What we can attest is that we have found this approach to be helpful for us and the organisations we have worked with in getting better insight into how to improve the performance of transformational projects. We believe this approach can avoid potholes on Gioia's road to hell (Gioia, 2022).

Although none of the elements in isolation are unique to this approach, we claim novelty through a combination of factors. Our starting point for *wicked theorising* is a particular set of circumstances – a complex situation, a lack of theory to explain or predict and a research purpose that aims to empower or enrich a community or society. It is the combination of elements, and

the iterative, trial-and-error nature of the approach that differentiates this from mainstream methods. What characterises the outputs is that it produces a theory that is validated, at least to some extent, within industry. Claims to validity are substantiated by triangulation, iteration and evaluation. The approach makes no claim to generalisability, but intentional sampling in theory building and evaluation enhances the potential for transferability.

This approach is inherently multi-disciplinary and typically involves mixed sampling methods. The iterative nature caters for complex situations which, by definition, do not have predictable outcomes and need to consider perspectives from multiple actors and stakeholders. Leveraging the wisdom accumulated over decades of research with the contemporary practical experience in industry in a trial-and-error process is not novel. That we can transport significant weight over long distances by air is one example of a significant and novel development that was the consequence of collaboration over decades between practitioners and people who developed theories around aeronautics, aerodynamics and heavier-than-air objects (Gardner, 2003). Had it not been for approaches such as these, practitioners might still be trying to stick feathers to frames and researchers would still be investigating the causality between the attributes of birds and flying.

## Conclusion

Documenting this approach, and the strategies we have used to overcome some of the inherent challenges, provides the practical guidance we had not been able to find ourselves. This approach enhances the extraordinary legacy of Van de Ven (2007) and others, for example, by clarifying the process of problem definition, and providing strategies for dealing with high volumes of data. In short, wicked theorising is differentiated from other methods with the combination of intentionally designing the research question to address wicked problems in

research and practice, pluralistic sampling to optimise comparison, convergent questioning to sift through vast amounts of data, iterative approaches to triangulate findings and an evaluation phase to refine the theory.

## Limitations and future research

There are caveats we need to explain. We have found that although it is desirable to establish root causes of problems, it is not always necessary. A second caveat is not every problem has a, or indeed any, solution. In the first author's case, the method revealed paradoxes that needed to be navigated and the levers for doing that, rather than a neat tick-a-box solution. There are also implications for publishing academic journal articles. Claims to rigour are less about demonstrating the link between data and theory, and instead, emphasise the results of theory evaluation.

The United Nations Secretary General claims that "we are at an inflection point in history" – with pandemics, geopolitical conflict, climate change heightening issues around poverty, discrimination and violence (Secretary-General, 2021). If so -- dramatic changes are likely in future decades – and research that addresses wicked problems, the theory-practice gap and the nature of theory become more salient. Our aspiration is that this approach, or derivations of it, will continue the tradition of engaged scholarship and action research in giving voice to the voiceless and hope for addressing societies' most wicked problems.

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**Tables**

| Stage | Description | References |
|---|---|---|
| **Pre-planning** | The pre-planning stage negotiates access to an organisation or group of participants. It is important at this stage to establish rapport by careful and attentive listening to understand participant needs, and to demonstrate you have their genuine interest at heart. This will require an appropriate level of self-disclosure to gain trust. Getting a sense of the issues at hand may not be self-evident, and may require informal conversations, observations at site or semi-structured interviews. | **(Dick, 2002, Robinson, 1996, Emery, 1989) (Argyris, 2004)** |
| **Engaging** | Expectations of the client need to be established. This may involve both short- and longer-term goals. The short-term goal could be to attend to immediate concerns, but longer-term goals are also important so that the issues being faced do not arise again. It is also important to gauge who the stakeholders in the situation are and establish how much the client knows about these stakeholders.<br>Useful questions to ask are:<br>1. Who will be involved in the research?<br>2. What is their level of involvement?<br>3. What are the constraints on the research such as time, budget, and access?<br>**4.** What level of flexibility exists in proposing suitable interventions?<br><br>A contract is helpful to agree the common ground, provide role clarity, to agree the approach and outcomes, and to align timeframes.<br><br>A possible tool to use is from Peter Checkland's Soft Systems Methodology called CATWOE. (Customer-Actor-Transformarion-Weltanschauung-Owner-Environment).<br><br>While initial contracting will help determine the relationship between the researcher and the client, it needs to be monitored and will likely need to be renegotiated as the project evolves. | **(Dick, 2002, Checkland and Poulter, 2006, Checkland and Tsouvalis, 1997)** |

| | | |
|---|---|---|
| **Ongoing engagement** | Skills that will be required to establish and maintain an effective contract are good communication, relationship building, political savvy, influencing skills and an ability to be a good radar to sense change is coming and being prepared for it. | (Bourne and Walker, 2005, Bourne and Walker, 2008) |

Table 1: Data collection phases

## Figures

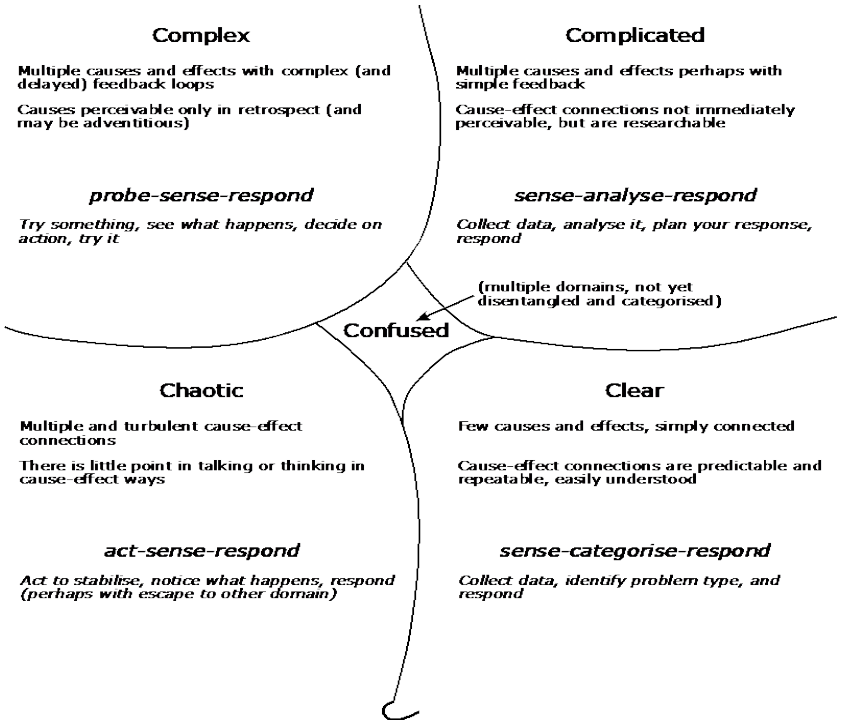


Figure 1 – Adapted from the Cynefin framework categorising situations by their complexity (Snowden and Boone, 2007)

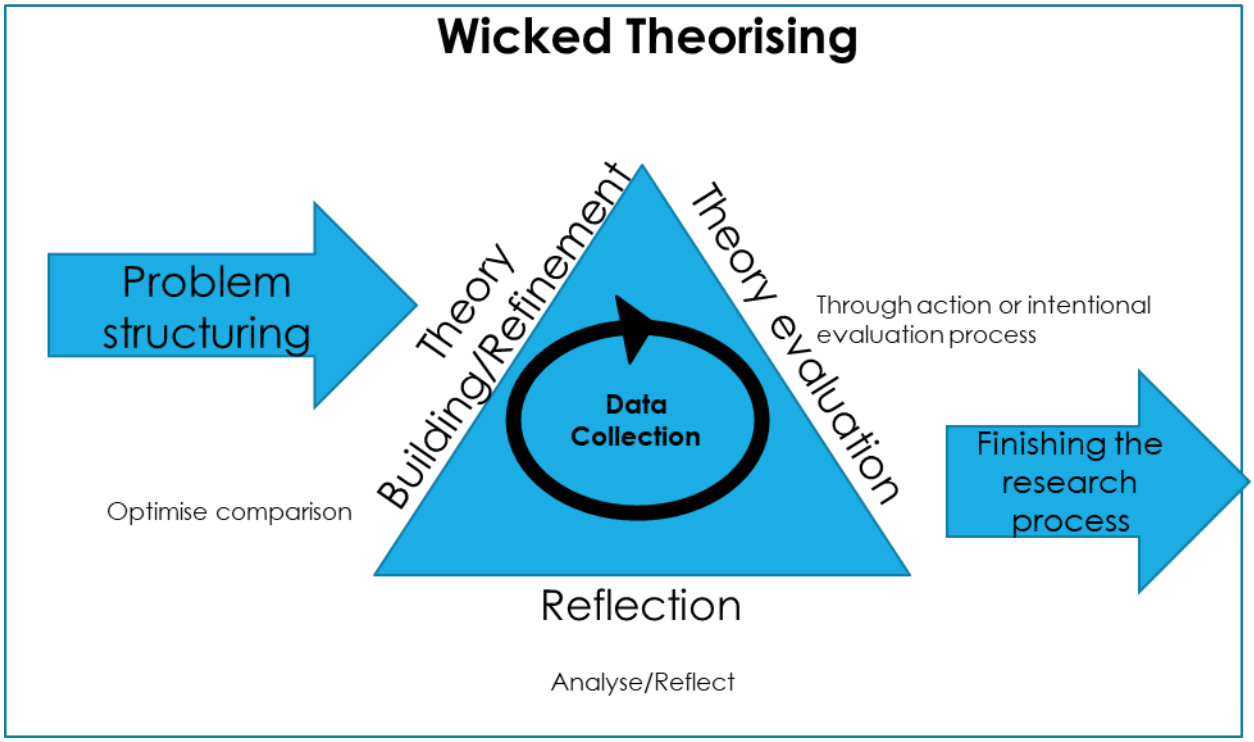


Figure 2: Iterative Approach to Wicked Theorising

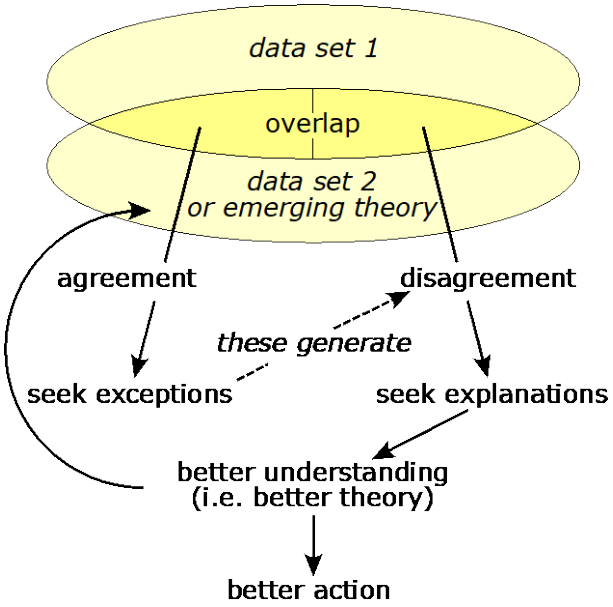


Figure 3 – Data analysis for theory building (Dick, 2016)

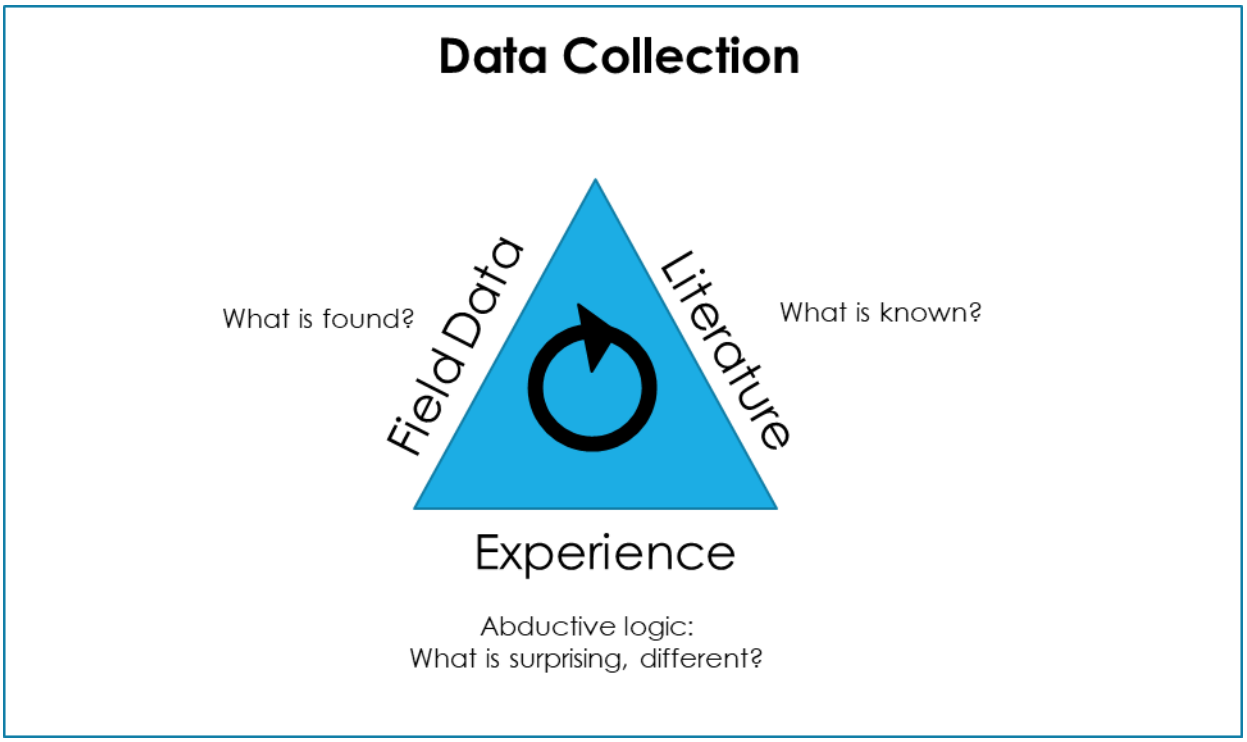


Figure 4: Data Collection – an iterative process of what is found, known and surprising or different

DICK, B. 2016. Convergent interviewing essentials. Available: http://www.aral.com.au/resources/coin.pdf.

SNOWDEN, D. & BOONE, M. 2007. A leader's framework for decision making. *Harvard business review,* 85**,** 68.