

PHILOSOPHICAL FOUNDATIONS OF MIXED METHODS RESEARCH

Dialogues between Researchers
and Philosophers

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A PERFORMATIVE APPROACH TO MIXED METHODS RESEARCH

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Judith Schoonenboom

7.1 A Performative Approach to Mixed Methods Research

For a long time, mixed methods scholars have discussed how mixed methods research relates to “reality.” Does “the world” exist independent of our observations? It does in the critical realist perspective (Maxwell, 2012; Maxwell & Mittapalli, 2010), which assumes that researchers study various perspectives on this independent world. Or do different worlds exist, as assumed in dialectical perspectives on mixed methods research (Greene, 2007, 2015; Greene & Hall, 2010; Johnson, 2015, 2023)? In this discussion, a performative approach brings a new perspective. It extends the dialectical perspective by stating that worlds do not exist independent of our research but come into being through our research methods and concepts (Barad, 2007; Law, 2004; Pickering, 1995; Putnam, 1987). Through their methods and concepts, researchers bring a phenomenon and the world in which it exists into being.

Consequently, different methods create different worlds or, to use a technical term, “research assemblages” (Coleman & Ringrose, 2022; Deleuze & Guattari, 1988; Fox & Alldred, 2015, 2018; Law, 2004). Consider the following utterance by a first-year university student, which has been taken from a series of interviews: “I understand 80% of the lectures. Careful reading complements 20% of lack of understanding” (Lee & Greene, 2007). This utterance can be analysed in various ways, and each method of data analysis constitutes its own research world in which the utterance is embedded in a particular way. The research world of *discourse analysis* considers interviews as sequences of questions and answers. In this research world, the utterance is viewed as an answer to an interview question, and we can analyse how the utterance relates to the question it aims to answer and how it, in turn, is

followed by a follow-up question. The research world of *thematic analysis* considers interviews and other texts as containers of content, and we can analyse the themes that are present in the utterance. In a thematic analysis, we could code the utterance as describing a “compensation strategy.” We can compare it with other utterances that describe “compensation strategies” to see where they agree and differ. The research world of *narrative analysis* consists of stories. In a narrative analysis, we could view the utterance as the beginning of a story in which the student explains *how* careful reading worked for them as a compensation strategy.

These three research assemblages – discourse analysis, thematic analysis, and narrative analysis – are different worlds, because they contain different inhabitants and interactions. In each of these worlds, the utterance is embedded differently. Notably, the utterance in these three research worlds is not the same thing; we have three closely related yet different objects (Mol, 2002). In other words, these different methods bring different research worlds into being with different inhabitants and interactions.

This chapter explores the foundational idea of a performative approach that different research worlds come into being through our methods and concepts. It has two different objectives. The first is to show that a performative approach can form the foundation for all research. Throughout this chapter, readers will recognize forms of data collection and data analysis that have been classified as postpositivist (questionnaires) or constructivist (interviews). A performative approach recognizes these different types of research yet views them all as acts that bring research worlds into being. The second objective is to show how a performative approach can form a foundation for mixed methods research. Here, we argue that a performative approach recognizes the differences between different research worlds and builds on them in a “performative” way.

Section 7.2 describes an ontology of research worlds: their inhabitants, interactions, events, boundaries, fluidity, and how they come into being. One element is essential to research worlds: their end products, most notably verbal statements (theory). In research, worlds and their end products are coordinated (Mol, 2002), which is discussed in Section 7.3. Section 7.4 turns to mixed methods research, describing the consequences of a performative approach for mixed methods research and its coordinating research processes. Finally, Section 7.5 reflects on the contribution of a performative approach to mixed methods research.

7.2 An Ontology of Research Worlds

7.2.1 Introduction

This section describes an ontology of research worlds in a performative approach. What is a world? The simple answer is that a world has living and

nonliving inhabitants, and we can ask the following: What is happening in this world? What are its events? How do the inhabitants interact? This starting point does not differ from what we in everyday life would call a world. Let's look at some research worlds in the following example from Visser et al. (2018):

Example 1

A study conducted by Visser et al. (2018) examined academic procrastination (delaying study tasks) among first-year students in an elementary teacher education program in the Netherlands. A total of 186 students out of 215 completed the Academic Procrastination State Inventory (APSI), which assessed procrastination levels. In the following interview process, 22 students were interviewed: 8 with low procrastination, 8 with average procrastination, and 6 with high procrastination. The interviews revealed that students with low and average procrastination levels were highly motivated to become teachers. This strong motivation enabled students with an average procrastination level to continue studying, even when they disliked a task. Facing task aversion, students with high procrastination levels discontinued studying because they lacked this strong motivation.

Example 1 contains several worlds. One of them is the world of students with an average procrastination level. We do not know much about this world. Still, we do know that it is inhabited by students with an average procrastination level as living inhabitants and study tasks as nonliving inhabitants. The events in this world comprise the activity of studying, in which a student interacts with a study task. More specifically, we learn how students with an average procrastination level interact with study tasks they dislike: they continue studying, because their motivation to become a teacher is high.

The world of students with an average procrastination level differs distinctly from the world of students with high procrastination levels. A decisive distinction is in their interaction with tasks they dislike. Students with high procrastination levels discontinue studying and do not complete disliked tasks because they lack a strong motivation to become a teacher.

In addition to the different worlds of the students, Example 1 also contains different research *practices* (Mol, 2002) related to the object of "procrastination." Procrastination can be studied in many ways, and each way constitutes a different research practice with its own procedures and rules. The first practice in Example 1 is "diagnosing procrastination using the APSI questionnaire." This research world is inhabited by students and forms that interact in an event we could call "filling out the APSI questionnaire," which is followed by a diagnostic event. "Filling out the APSI questionnaire" differs from the subsequent research world, "interviewing," in which students tell the researcher about their procrastination experiences. Other possible practices

of studying procrastination are absent, such as observing procrastination when students attempt to study.

Finally, Example 1 contains a *textual world*, a summary of Visser et al. (2018). A textual example has its own rhetorical and stylistic rules, which may differ from those of other textual worlds. These worlds are only a tiny fraction of the endless possibilities, and we will encounter more worlds later.

Worlds are characterized by boundaries. We can distinguish the worlds of students with high procrastination levels from those of students with middle procrastination levels, and we can distinguish the world of “diagnosing procrastination” from, for example, “experiencing procrastination while studying,” “diagnosing dyslexia,” or “exercising at the gym.” These boundaries are fuzzy and may change, as we will see later.

7.2.2 *Worlds Are Fluent and May Change*

In addition to being populated by inhabitants and events and having boundaries, worlds have another characteristic in a performative approach: they are fluid. Exploring the interviews in Example 1, we notice that these students’ worlds are not static. We learn that a “strong motivation to become a teacher” is fed by events, is strengthened by positive experiences in class, and becomes more elaborate as the student continues – or declines because of negative experiences. These worlds of motivational experiences are fluid and will most likely have changed the next time a student is interviewed.

It would be a mistake to think that worlds are organisms that would remain the same without forces from the outside causing them to change. In contrast, change is the natural state of worlds because of the way they exist. Worlds are maintained through a continuous chain of events consisting of their inhabitants’ internal and external interactions. In technical terms, worlds and their inhabitants are continuously “enacted” and “re-enacted” (Law, 2004). In Example 1, each student’s motivation to become a teacher is shaped and modified by ongoing experiences. Consequently, the ontology of worlds is a process ontology, in which everything is in constant flux (Rescher, 1996; Seibt, 2022). Therefore, at any point in time, the world we observe is nothing but a temporary snapshot.

The worlds of research practices are also fluid. Over time, items of the APSI questionnaire may be changed, replaced, or added as new triggers for procrastination enter student life (social media), while others disappear (broken feather pen). Furthermore, as the student population changes, a specific score on the APSI may mean something different in 2028 than it did in 2018. The APSI may even be replaced by a different instrument altogether, and the practice “diagnosing procrastination using the APSI” may cease to exist.

7.2.3 *How Worlds Come Into Being*

This description of worlds as fluid constellations that are enacted and re-enacted through the interactions between their living and nonliving inhabitants disregards one crucial moment in the life of a world: how it comes into being. Worlds can come into being in many ways. Most relevant to research worlds is when worlds are *created*, something we could call a “performative act.” Various types of performative acts of creating worlds have been described in the philosophical and scientific literature. One is to create a world through a *performative speech act* (Austin, 1962). For example, the world of a married couple used to be created by the words “I pronounce you man and wife,” uttered by an authorized person. As another example, the pandemic came into being when the WHO’s Director-General, Dr. Tedros Adhanom Ghebreyesus, declared it on March 11, 2020.

In bringing *research worlds* into being, our concepts and methods, especially our methods of data collection, play an important role. Thus, the world of students with high procrastination levels in Example 1 would not exist without the APSI, the interviewer, or the interview schedule. These human and nonhuman actors work together to create a world. Together, they constitute the world; none of these actors can be removed. In technical terms, their contributions are *entangled* (Barad, 2007), and the world cannot be “disentangled” into separate parts. For example, we can reflect on the role of the interviewer and interview guidelines in constituting high-level procrastination worlds, but we cannot remove them.

Our methods of data analysis create further research worlds. As we saw in the Introduction, different methods of data analysis – discourse analysis, thematic analysis, and narrative analysis – create three different research worlds in which one specific utterance has a different embedding and, accordingly, constitutes three different yet related objects.

More generally, we can say that specific worlds, whether research or non-research worlds, cannot exist without the appropriate means to create them. Thus, in pre-Cambrian times, living creatures lacked the ability to perform study tasks written on paper because they would not be able to see them. Only during the Cambrian period did several species acquire the ability to use light as a source of information by developing eyesight (Halliday, 2022). Without eyesight, study tasks written on paper could not exist.

7.2.4 *End Products of Research Worlds: An Ontology of Statements*

An essential characteristic of research worlds is that they are not created for their own sake but to produce some end result; they are “machines” (Deleuze & Guattari, 1988; Fox & Alldred, 2015). In Example 1’s practice of “diagnosing procrastination,” the APSI questionnaire is not filled out for its

own sake but rather to obtain a procrastination score. This distinguishes “diagnosing procrastination” from, for instance, filling out a sudoku or crossword puzzle. In technical terms, in the practice of “diagnosing procrastination,” filling out the APSI questionnaire is “territorialized” (Deleuze & Guattari, 1988), because it is used by someone to obtain a goal that lies outside filling out the questionnaire itself.

In research, one end product of research worlds occupies a central position: research statements. In Example 1, various interwoven statements play a role, including “students with average and high procrastination levels experienced task aversion,” “students with low and average procrastination levels had a strong intrinsic motivation to become a teacher,” and “students with high procrastination levels procrastinated on aversive tasks because they lacked a strong intrinsic motivation to become a teacher.” Research statements have different *statuses*. In Example 1, “high intrinsic motivation reduces academic procrastination” and “task aversion leads to procrastination” are *accepted statements*, which are mentioned as existing and apparently uncontroversial statements in the Introduction (Visser et al., 2018, p. 3). Accepted statements are the opposite of *controversial statements*, which are accepted by some researchers but not by others; we will discuss these later.

Tentative statements are neither accepted nor contested by others. The outcomes of a study are often tentative statements, such as Example 1’s “Students with high procrastination levels procrastinated on aversive tasks because they lacked a strong intrinsic motivation to become a teacher.” In addition, this statement is an *inference* of the study, because it was developed by Visser et al. (2018). This distinguishes this tentative statement from the accepted statements mentioned earlier, which have been borrowed from other studies. In summary, research statements can be classified on at least two dimensions: status and origin, with their status being accepted, controversial, or tentative, and their origin being an inference developed in the study or a statement borrowed from elsewhere.

Furthermore, research statements have different *forms*. “High intrinsic motivation reduces academic procrastination” is a *simple* statement, because it contains one subject, “high intrinsic motivation,” and one predicate, “reduces academic procrastination.” It is also an *unconditional* statement because the reduction of academic procrastination is presented as generally occurring when high intrinsic motivation is present. Similarly, “Task aversion leads to procrastination” is a simple, unconditional statement because it contains one subject (task aversion) and one predicate (leads to procrastination), and academic procrastination is presented as generally occurring when task aversion is present.

Statements can also be *conditional*. An example is “Students with high procrastination levels procrastinated on aversive tasks because they lacked a strong intrinsic motivation to become a teacher,” which was developed by Visser

et al. (2018). Conditional statements are *complex*, because they contain more than one subject–predicate structure. They are *conditional* because they consist of a statement, in this case, “task aversion leads to procrastination,” and a condition under which this statement does (or does not) apply, namely, “when the student lacks a strong intrinsic motivation to become a teacher.”

In summary, Section 7.2 presents a performative ontology for research worlds. Research worlds have boundaries and inhabitants, some of whom are present, whereas others are absent. Worlds are fluid, because they are enacted and re-enacted through a continuous chain of events and interactions. A research world aims to produce an end product. One essential end product of research worlds is statements, which can have various statuses and forms.

7.3 Coordinating Research Worlds

7.3.1 Coordinating Worlds

Doing research is more than creating different worlds. These worlds must be related to each other; they must be “coordinated” (Mol, 2002). In this chapter, I define coordinating research worlds as using the end product of one or more research worlds to create a new research world. In this section, I discuss two types of research coordination: coordination of the research process (research design) and coordination of research outcomes (connecting inferences). Research design and connecting inferences are not automatic processes, because previous design decisions do not force later ones, and findings do not force conclusions. Each research process consists of a chain of decisions that are coordinated to work together. A research study is an “arrangement of machines” (Fox & Alldred, 2015).

7.3.2 Coordinating the Research Process

Research processes are coordinated through the end products that each research world produces. In Example 1, “filling out the APSI questionnaire” is coordinated with “sampling.” The former’s end product – the filled-out APSI questionnaires – is used to create new worlds of groups of students with low, intermediate, and high procrastination levels. These groups are subsequently used for sampling. This coordination process territorializes the APSI questionnaire in two ways: by using it to diagnose procrastination levels and by using it for sampling. A similar pattern is visible in the other research worlds of Example 1. “Developing an interview guide” results in an interview guide that is subsequently used in “interviewing.” “Interviewing” results in audio files that are used in “Transcription,” and “Transcription” results in a transcription that is used in data analysis.

This research coordination process has an important consequence: *Research worlds tend to disappear once they have delivered their end product* (Latour & Woolgar, 1986). Example 1 shows this in all its phases. Once the questionnaire has been selected, the considerations for selecting this questionnaire rather than another disappear. Once students have filled out the APSI questionnaire, how they interpreted the items and translated their experiences into one of the answer options is lost and inaccessible to the researcher. Once the students have been selected as representatives of one group, everything that contributed to bringing them to that position disappears. Once the audio files have been transcribed, any information not in the transcription has disappeared and will not play a role in the analysis. Once the three procrastination worlds and their differences have been described and explained, the interview transcripts disappear, except for a few illustrating quotations in Visser et al. (2018).

Thus, each research practice delivers a product to a subsequent practice, leaving out much of its context and much information about how it came into being, focusing on one aspect of the experience to the exclusion of others.

7.3.3 Coordinating Research Outcomes

The second major coordinating research task is coordinating research outcomes. In this subsection, I will focus on coordinating statements. Latour and Woolgar (1986) describe how research statements developed during the discovery of the thyrotropin-releasing factor (TRF) and its structure in the 1960s (see their Table 3.1 on p. 147). Before 1962, two mutually exclusive research worlds existed, each summarized in one statement: "There is a TRF" and "There is no TRF." Each individual research paper defended one of these statements. Thus, before 1962, "There is a TRF" was a controversial statement. In 1962, the two statements were coordinated when the conclusion "There is a TRF" was reached. As a result, "There is a TRF" acquired the status of an accepted statement. The statement "There is no TRF" disappeared, and with it, the world in which TRF does not exist also vanished.

Similar coordination processes took place in the following years. Between 1966 and 1969, a controversial statement existed, "TRF is a peptide," with some scholars arguing that TRF is a peptide and others arguing that it is not. This controversy ended in January 1969, when the conclusion "TRF is a peptide" was reached, and the world in which TRF is not a peptide disappeared. Similarly, the structure of this peptide was controversial between April and November 1969, when the worlds with different structures of the peptide TRF disappeared, except for the world with the structure Pyro-Glu-His-Pro-NH₂. Thus, in each phase, coordinating statements make the worlds of the now "false" statement disappear. One world remains in which the now

uncontroversial accepted statement is true: after 1962, there is one world in which TRF exists; after January 1969, there is one world in which TRF is a peptide; and after November 1969, there is one world in which TRF has the structure Pyro-Glu-His-Pro-NH₂.

These coordination processes show that the worlds of research statements are also fluid. Worlds with old statements disappear, while worlds with new statements come into being, either temporarily or permanently. Furthermore, as a typical process in research, successive worlds become ever more detailed. First, TRF exists (1962); next, it exists and is a peptide (January 1969); and finally, it exists, it is a peptide, and its structure is Pyro-Glu-His-Pro-NH₂ (November 1969). This development is intentional: Each TRF study is performed to confront a statement with a constructed research world, a process called the “mangle of practice” by Pickering (1995). Through repeated confrontations between a statement and research worlds, the statement is “mangled” and changes, becoming more sophisticated.

To summarize, research worlds are coordinated in that the end product of one or more search worlds is used to create a new research world. The coordination of research process elements, also known as research design, uses the end product of one research practice to create and explore another research world. The coordination of statements leads to their further development, with new worlds coming into being and old worlds disappearing. Because this coordination involves end products, the world that produces this end product tends to become lost, a process we will discuss later.

7.4 Consequences for Mixed Methods Research

This section discusses a performative approach to mixed methods research. In the previous sections, we have seen that a performative approach can form the basis of all research. It recognizes different types of research yet views them all as acts that bring research worlds into being. A performative approach, though, has a special meaning for mixed methods research because it also recognizes the differences between different research worlds and builds on them in a “performative” way.

There is unanimous agreement among mixed methods scholars that the aim of mixed methods research is *to bring together multiple perspectives to obtain a deeper and more inclusive understanding of a phenomenon than would be possible using one method alone*. The question is how this definition translates into a performative approach for mixed methods research and how such research differs from other types of research that, as we have seen, can also be described in a performative approach. Whatever the approach, this aim of mixed methods research translates into at least three different research actions: to “take” the perspective (e.g. through the definition of concepts and

data collection); to explore the perspective (e.g. through data analysis), which generates findings for each perspective separately (e.g. statements); and to bring the results of exploring the perspectives together (e.g. by connecting the statements).

What are “multiple perspectives,” and how are they brought together? In a critical realist approach (Maxwell, 2012), *multiple perspectives* refers to multiple perspectives that exist on one world, which is assumed to exist independently from those perspectives. These perspectives can be explored using different methods, which results in findings for each perspective. These findings can be contradictory because different perspectives on this one world are possible. From a dialectical perspective, several worlds exist, one for each perspective. Here, the research metaphor is to develop and bring perspectives together in a “dialogue” between these worlds.

In a performative approach, the word “perspective” is unfortunate, because it suggests a perspective on something already existing. Conversely, in a performative approach, the aim of mixed methods research involves *bringing multiple research worlds into being through different methods*, more specifically *through the use of both quantitative and qualitative methods*. Next, these different worlds are explored by asking: What is happening here? What are its inhabitants and its events? The final step of bringing together involves the coordination of the products that these worlds have delivered. Thus, from a performative approach, the aim of mixed methods research is to *bring multiple research worlds into being through different methods*, more specifically *through using both quantitative and qualitative methods, exploring these worlds, and coordinating the products of these worlds to obtain a deeper and more inclusive understanding of a phenomenon than would be possible using one method alone*.

In Section 7.4.1, I describe how, in a performative approach, mixed methods research creates and explores different worlds. Section 7.4.2 describes how worlds and statements are coordinated in mixed methods research. This coordination is compared with the coordination in the TRF studies in Section 7.4.3.

7.4.1 Mixed Methods Research Creates and Explores Different Worlds

Given that different methods create different worlds, mixed methods research aims to explore and coordinate different worlds. A performative approach recognizes many types of worlds and, thus, many ways in which different worlds can be included in a study. One type is the different worlds of people with different roles in a practice, which are explored in Example 2 (Schoonenboom, 2022, p. 59):

Example 2

A study by Clark and Moss (Clark, 2005; Clark & Moss, 2005) accompanied the redevelopment of the outdoor environment of a preschool in the United Kingdom. Their study involved 28 three- to four-year-olds, their parents, and preschool practitioners and managers. It answered two interrelated research questions: Which places do children see as important in this outdoor space? How do the children use these places? The children were involved in data collection and took photographs of important objects. One of the objects was the playhouse. According to Clark (2005):

Observing the children revealed the house to be a key resource for them. The children confirmed this through their photographs, the tour and their interviews. Parents also mentioned the house as an important space in the preschool. However, the interviews with practitioners showed that the house was a source of tension. They felt it was too small. The review with children, practitioners and Learning through Landscapes recognised these opposing views and raised some possible solutions. The preschool has now turfed a new area for children to use to build their own temporary structures.

(p. 34)

Clark's (2005) study included groups of people with different roles in the practice "redeveloping the outdoor environment of a UK preschool": children, parents, practitioners, and staff from the organization Learning through Landscapes. This inclusion enabled a more comprehensive view of the outdoor environment, which we will consider later in more detail.

In addition to including worlds that are different from the outset, researchers can create different worlds by splitting a presumed whole world. Splitting worlds allows researchers to take a closer look at the phenomenon in different contexts. An especially fruitful technique in mixed methods research is splitting what was assumed to be one population. In Example 1, for instance, the research world started with one population: the population of first-year students in a teacher education programme. Based on their APSI scores, this population was subsequently split into three different populations of students with low, middle, and high procrastination levels. Whereas previous qualitative studies investigated convenience samples of students with high procrastination levels, Visser et al. (2018) were the first to study the overall population of first-year students. By splitting this overall population into three different populations with different procrastination levels, Visser et al. (2018) demonstrated the different roles of task aversiveness and motivation to become a teacher in each population.

Splitting populations can occur at various stages of the mixed methods research process. In Example 1, the population was split at the beginning of the study. The quantitative APSI questionnaire was used to create three populations whose worlds were investigated through the use of interviews. Splitting populations can also be done at a later stage, as demonstrated by Example 3 (Schoonenboom, 2022, p. 61).

Example 3

Glewwe et al. (2009) studied the effects of providing textbooks to school-children in rural Kenya, in schools where textbooks had not been used before. They compared test scores of children in the 50 intervention schools with those of a control group, which showed no effect. In addition, the researchers went to each school and asked a child with a median score from each class to read their textbook aloud and answer a few questions. Further subgroup analysis of the test scores was used to determine the differential effect for children with different pretest scores. According to their abstract:

A randomized evaluation in rural Kenya finds, contrary to the previous literature, that providing textbooks did not raise average test scores. Textbooks did increase the scores of the best students (those with high pretest scores) but had little effect on other students. Textbooks are written in English, most students' third language, and many students could not use them effectively.

(p. 112)

In Example 3, the researchers first assumed one world of children in the intervention schools, for which they drew the simple inference that “providing textbooks does not have an effect.” After that, they split the population into two subpopulations: students with high pretest scores and students with middle and low pretest scores. Next, they developed two new simple inferences for each world: “providing textbooks does not have an effect” for the world of students with middle and low pretest scores, and “providing textbooks has an effect” for the world of students with high pretest scores.

Finally, splitting populations can also be done in a reanalysis of an existing study, as shown in Example 4 (Schoonenboom, 2023a, p. 368):

Example 4

Schoonenboom and Johnson (2021) used quantitative and qualitative data published in Lee and Greene (2007), a study on the relationships between the language problems of international students and their grade point average (GPA) in their first semester at one university in the US. Schoonenboom

and Johnson (2021) created a simple table containing one record for each student, along with their language score, GPA, and a quote from their interview, which could then be sorted and resorted to uncover patterns. One specific group of four students emerged. Despite their language problems, members of this group still obtained the highest GPA. The quotes show that three of the four students in this group referred to compensation strategies, while none of the students with language problems and less than the highest possible GPA did so. In this way, Schoonenboom and Johnson (2021) were able to formulate a hypothesis for further research: Language problems affect international students' GPA unless they deliberately use compensation strategies.

In their reanalysis, Schoonenboom and Johnson (2021) split the population of students in Lee and Greene (2007) into four subpopulations: (1) students with maximum academic achievement despite language problems; (2) students with less than a maximum academic achievement because of language problems; (3) students without language problems with a maximum academic achievement; and (4) students without language problems with a less than maximum academic achievement. The outcomes of their reanalysis are discussed in the following.

In summary, mixed methods research creates and explores different worlds. These worlds are either different from the outset or created by splitting a presumed whole world into several worlds.

7.4.2 *Coordinating Research Statements in Mixed Methods Research*

7.4.2.1 *Establishing Differences*

Unlike the TRF studies, the outcomes of mixed methods research must be coordinated not only between studies, but also within studies because each mixed methods study explores different research worlds. A first type of coordination in mixed methods research is to determine whether differences exist between statements in the explored worlds. The following are seven coordinating statements from Examples 1–4:

1. Observing the children revealed the house to be a key resource for them. The children *confirmed* [emphasis added] this through their photographs, the tour and their interviews. Parents *also* mentioned the house as an important space in the preschool (Clark, 2005, p. 34).
2. A randomized evaluation in rural Kenya finds, *contrary to* [emphasis added] the previous literature, that providing textbooks did not raise average test scores (Glewwe et al., 2009, p. 112).

3. *Although* [emphasis added] nonsignificant correlations were found between test scores and GPA, qualitative findings indicated that English skills are an important factor affecting students' course performance (Lee & Greene, 2007, p. 366)
4. Parents also mentioned the house as an important space in the preschool. *However* [emphasis added], the interviews with practitioners showed that the house was a source of tension. They felt it was too small (Clark, 2005, p. 34).
5. The results showed that students with average and high procrastination levels experienced task aversion (*as opposed to* students with low procrastination).
6. Textbooks did increase the scores of the best students (those with high pretest scores) *but* had little effect on other students (Glewwe et al., 2009, p. 112).
7. The quotes show that three of the four students [with the highest GPA despite language problems] referred to compensation strategies, *while* none of the students with language problems and less than the highest possible GPA did so (Schoonenboom, 2023a, p. 368).

A first possible outcome of coordinating different worlds is that their resulting statements are identical. Thus, Statement (1) states that the playhouse is a key resource in the different worlds of different methods (observations, photographs, tours, and interviews) and different stakeholder groups (children and parents), as indicated by *confirmed* and *also*. In contrast, Statements (2)–(7) express differences between worlds, as indicated by *contrary*, *although*, *however*, *opposed*, *but*, and *while*. Differences are observed between studies (“contrary to the previous literature” in Statement 2); qualitative and quantitative methods (Statement 3); different stakeholder groups (parents and practitioners in Statement 4); different populations – students with low versus average and high procrastination levels in (Statement 5); students with high versus intermediate and low pretest scores in (Statement 6); and students with versus without compensation strategies in (Statement 7).

7.4.2.2 Resolving Differences

Another form of coordinating statement that plays a vital role in mixed methods research is resolving differences between worlds that had been established in an earlier step. Differences between worlds can be resolved in different ways. The following are five resolving statements from Examples 1–4:

8. Unlike students with high and intermediate procrastination levels, those with high procrastination levels were unable to overcome their task

- aversion *because* they lacked a strong motivation to become a teacher, which the other groups had.
9. Unlike other students with language problems, some students were able to overcome their language problems *because* they deliberately used compensation strategies.
 10. Textbooks did not have an effect in primary schools in rural Kenya *because* most children could not read their textbooks because the textbooks were written in English, which is not their native language.
 11. Unlike students with high pretest scores, the textbooks did not have an effect on students with low and intermediate pretest scores *because* these children could not read their textbooks, which the students with high pretest scores could.
 12. The review with children, practitioners and Learning through Landscapes *recognised these opposing views and raised some possible solutions*. The preschool has now turfed a new area for children to use to build their own temporary structures (Clark, 2005, p. 34).

In mixed methods research, differences between worlds are often resolved by explaining why these differences exist, which is indicated by *because* in the example statements. In Statement (8), lacking a strong motivation to become a teacher is presented as an explanation for the difference between students with intermediate and high procrastination levels. In Statement (9), the compensation strategies explain why one group of students with language problems still obtained the highest GPA possible. Explanations can build on each other within one study. In Example 3, the nonoccurrence of an effect was first explained by referring to most children's inability to read their textbooks (Statement 10). Later, the effect on the subpopulation of students with high pretest scores was explained by their ability to read their textbooks (Statement 11).

A different resolution can be found in Statement (12). Statement (12) expresses a difference between the practitioners, who considered the playhouse to be a source of tension, and the parents and children, who only had positive remarks about the playhouse. This difference is not resolved in an explanation. Instead, a solution in practice is developed that accommodates both views: The preschool has turfed a new area for children to build their own structures.

Resolving a difference is never final. Each explanation raises new, unresolved questions, such as: Why did the students with low procrastination not experience task aversion? Why were some children able to read their textbooks, whereas others were not? Answering such questions may generate new differences. This idea fits well with the idea expressed by Uprichard and Dawney (2019) that the value of a mixed methods study may not

be resolving a difference but instead revealing a difference. Depending on the context, establishing differences as in Statements (2)–(7) can be as valuable as, or sometimes more valuable than, resolving differences as in Statements (8)–(12).

7.4.3 *Differences Between Mixed Methods Research and the TRF Studies*

Mixed methods studies share with the TRF studies the fluidity of their research worlds: Statements are developed further and change correspondingly. However, there are also fundamental differences between the TRF studies and mixed methods research, to which we now turn. As a first difference, each TRF study explored only one world, and the statements and their worlds developed throughout many studies. Conversely, each mixed methods study explores various worlds. Consequently, statements also develop *within* one mixed methods study.

This development is visible in the examples. Example 1 starts with the existing accepted statements, “high intrinsic motivation reduces academic procrastination” and “task aversion leads to procrastination.” These statements are combined and developed into “students with high procrastination levels procrastinated on aversive tasks because they lacked a strong intrinsic motivation to become a teacher.” In Example 2, the inference “the playhouse is an important object” is developed into “the playhouse is an important object, but it is also a source of tension because it is too small.” In Example 3, the inference “providing textbooks does not have an effect in primary schools in rural Kenya” is specified. It is developed into “providing textbooks has an effect on students with high pretest scores but not on others because the former but not the latter were able to read their textbooks.” In Example 4, the inferences “language problems do not affect GPA” (quantitative) and “language problems do affect GPA” (qualitative) are combined and developed into “language problems affect international students’ GPA unless they deliberately use compensation strategies.”

Second, and more important, the TRF studies and mixed methods research have different statement development processes. In the TRF studies, the development results from competition between mutually exclusive – hence controversial – statements: Either TRF exists, or it does not exist; it is or is not a peptide; it has this or that structure. In each case, one of the alternative statements ultimately wins, whereas the other statement disappears.

Conversely, many simple statements with which a mixed methods study starts remain. They are not falsified but connected. The result of a mixed methods study is not one simple statement but a complex statement that commonly includes the initial statements and clarifies their relationship. For example, Statement (8) “Students with high procrastination levels procrastinated

on aversive tasks because they lacked a strong intrinsic motivation to become a teacher” includes the initial simple statements “high intrinsic motivation reduces academic procrastination” and “task aversion leads to procrastination,” and it states that one is a condition for the other. Statement (3) is a special case – it suggests that the qualitative findings win and that language problems affect course performance. However, unlike the TRF studies, in which the winning statement concludes the discussion, this is not the case in (3), a statement in a mixed methods study. Thus, following Statement (3), Lee and Greene (2007) showed how individual differences in how language problems affected GPA could explain the nonoccurrence of an effect in the quantitative findings. In their reanalysis, Schoonenboom and Johnson (2021) were able to identify different groups. Thus, in all the examples, the end result of a mixed methods study is not one winning simple statement but a complex statement that incorporates previous simple statements.

One final difference is that, in the TRF studies, solving the competition between statements also implies that the world of the “losing” statements disappears and that only the world containing the “winning” statement remains: After 1962, there is one world in which TRF exists, after January 1969, there is one world in which TRF is a peptide, and after November 1969, there is one world in which TRF has the structure Pyro-Glu-His-Pro-NH₂. Conversely, in mixed methods research, statements are integrated while the different worlds of different groups remain. Thus, in Example 1, the different experiences of students with low, intermediate, and high procrastination levels remain after the statements they produced have been integrated into an explanation for their differences. Similarly, in Example 2, the different worlds of children, parents, practitioners, and Learning through Landscapes remain after one solution has been developed based on the statements they produced. To summarize, in contrast to the TRF studies, mixed methods research is not about competing statements, one of which ultimately wins, and its aim is not to arrive at one coherent world; instead, the goal is to explore different worlds that remain.

7.5 Reflections on Mixed Methods Research in a Performative Approach

7.5.1 *Mixed Methods Research and Different Worlds*

We have argued that the aim of mixed methods research is to explore and coordinate different worlds. The idea that mixed methods research interacts with differences is not new: It is the foundation of the dialectic stance (Greene, 2007, 2015; Greene & Hall, 2010) and dialectical pluralism (Johnson, 2015, 2023). It also plays an essential role in the transformative paradigm (Mertens, 2007, 2010). These scholars have emphasized that social science research

should include various perspectives, dialogue with them, and treat them as being of equal value.

A performative approach extends this view. We not only *include* worlds of different perspectives but also *create* different worlds. Splitting a whole world into different worlds is a powerful technique in which methods play an essential role. In the examples, splitting populations was performed using questionnaire scores (Example 1), subgroup analysis (Example 3), and case comparison analysis (Example 4).

7.5.2 *Research as a Coordination Process*

In a performative approach, research is perceived as a coordination process of both the research process and its outcomes. Because mixed methods research creates and explores different worlds, its coordination processes are numerous, diverse, and complex. Because worlds are coordinated using their end products rather than directly, a performative approach draws attention to how research worlds are made invisible; they disappear once they have delivered their end product. Thus, one task of mixed methods research could be to make those worlds visible by trying to rebuild them. Because worlds come into being and are maintained through interactions between human and nonhuman actors, it should be possible to rebuild such a world by re-enacting the interactions that gave birth to it. Making disappeared worlds visible is an important aim of performative research – not necessarily mixed methods research – in the tradition of new materialism (Fox & Alldred, 2015, 2018; Schadler, 2019).

Furthermore, the concept of coordination of different worlds supports Uprichard and Dawney's (2019) idea that mixed methods research can result not only in a closure – that is, in bringing together worlds through an explanation or agreement – but also in difference. We have seen that differences that result from coordination statements (Statements 2–7) are often resolved through an explanation (Statements 8–11). Explanation, though, is only one possible form of coordination. In Statement (12), the different worlds of children and practitioners are brought together in practice by changing the outdoor environment so that it accommodates both perspectives – their difference is not explained. Even more, as clarified by Uprichard and Dawney (2019), the outcome of a mixed methods study can also be a difference between two different worlds that is not resolved. Thus, statements such as Statements (2) and (7), in which coordination results in a difference, could also be the outcome of a mixed methods study. If such revealed differences between different worlds had not been known before, such a study could provide a valuable contribution.

One task of mixed methods research is coordinating statements from qualitative and quantitative worlds. An example of such “mixing” is (3), in which

the qualitative findings showed that language problems affect course performance, whereas this effect was not found in the quantitative findings. However, after exploring different forms of coordination, we can now draw the following conclusion: *Although each mixed methods study coordinates statements from quantitative and qualitative worlds, a lot of statement coordination in a mixed methods study does not involve mixing.* Statements (2)–(12) all stem from a mixed methods study, but several of these coordinating statements do not result from mixing. In Statement (2), the first outcome of the study is coordinated with statements from previous studies (“contrary to the previous literature”). In Statements (4) and (5), statements stemming from the same method – interviewing – are coordinated: Statement (4) coordinates statements from different stakeholder groups, whereas Statement (5) coordinates statements of students with different procrastination levels. In Statement (6), statements about students with and without high pretest scores that resulted from one quantitative analysis are coordinated. In Statement (11), the statement that “students with high pretest scores could read their textbooks” was not obtained through empirical study but through reasoning; thus, connecting this statement to other statements is not a case of mixing. In summary, a performative approach shows that mixing occurs in a study among other forms of coordination, including coordinating statements not based on empirical research (Hammersley, 2011).

7.5.3 *The Distinction Between Worlds and Statements*

A performative approach emphasizes a distinction between worlds and statements as the end products of research worlds. Distinguishing between “theory” and “practice” is not new, and various research approaches have emphasized the research process as an interaction (Ragin, 1992) or dance (Pickering, 1995) between theory and practice. Distinguishing between worlds and statements, however, has one crucial advantage: it enables us to discuss what happens with worlds as statements develop. As we saw earlier, what distinguishes mixed methods research from the TRF studies is that different worlds remain after their statements have been integrated. In Statement (1), the researchers, children, and parents agreed that the playhouse was an important resource for the children. Unlike in the TRF studies, this does not imply that their different perspectives vanished, and only one perspective remained. In Example 1, students with low, intermediate, and high procrastination levels still had different experiences after the differences between their worlds had been explained in the complex statement (Statement 8).

These remaining worlds have important implications for the concept of integration. Common approaches to integration in mixed methods research implicitly assume that integration means integrating different realities into one reality. However, the examples show that, in mixed methods research,

linguistic statements are integrated, while the different worlds remain and are not integrated. Thus, when Uprichard and Dawney (2019) stated that, in mixed methods research, realities are sometimes integrated and sometimes not, in my view, the authors misrepresented the mixed methods research process. I have tried to show that, contrary to the TRF studies, worlds in mixed methods research are not integrated. The problem that Uprichard and Dawney (2019) discussed should be reformulated. The real question is whether mixed methods researchers should always attempt to explain differences between statements from different worlds (as in Statements 8–11) or whether we could also let differences between statements stay as they are.

7.5.4 The Role of Controversial Statements in Mixed Methods Research

A performative approach includes an ontology of accepted, controversial, and tentative statements. Until now, we have discussed controversial statements as part of a competitive process that results in one world, a process that applies to the TRF studies but not to mixed methods research. But is there perhaps another role for controversial statements in mixed methods research? At first sight, controversial statements appear to play an important role in mixed methods research as well; Statements (2)–(7) all contain connectors indicating contradiction. Statement (2) contains a controversial statement, “providing textbooks raises average test scores,” which applies to studies elsewhere but not in Kenya; and in Statement (3), a controversial statement, “English skills affect students’ course performance,” applies to the qualitative findings but not to the quantitative findings. I have contributed to this view in various publications by marking such statements as “contradictions” (Schoonenboom, 2019, 2022, 2023b).

But are they controversial statements? A moment of reflection shows that perhaps they are not. Could the outcomes of these studies really be – as in the TFT studies – that textbooks do not affect test scores (Example 3) or that language problems do not affect academic performance (Example 4)? This is highly unlikely. Thus, in a performative ontology, “controversial” statements (2) and (3) are accepted statements. Rather than trying to resolve a controversial statement, an attempt is made in Examples 3 and 4 *to identify the circumstances under which an accepted statement does not apply*. The result of these attempts is that the accepted statements do not apply when children cannot read their textbooks or when students with language problems use compensation strategies. Thus, instead of establishing one world in which only one competing statement applies, mixed methods research often identifies different worlds: worlds in which an accepted statement materializes and worlds in which it does not.

Thus, our ontology of statements has implications for how we view the contribution of a mixed methods study. Looking closely at the examples, we

can see that the “controversial” statements are actually accepted statements. Many “explaining” statements are also accepted. In Example 1, both task aversion and intrinsic motivation were known to influence procrastination. Similarly, the fact that textbooks cannot affect children’s test scores when children cannot read them is not something we did not know or could not guess (Example 3). Furthermore, the fact that students can compensate for their language problems may have been known beforehand (Example 4).

The value of these mixed methods studies is not in developing new statements. Instead, their contribution is that one or two of the many possible factors that could have prevented the accepted statement from materializing are decisive in distinguishing the different populations. Thus, of all the factors that could have played a role, the examples reveal the critical role of intrinsic motivation in situations of task aversion; of being able to read in a primary school intervention in rural Kenya; and of compensation strategies in dealing with language problems. In other words, statements may acquire the status of a priori knowledge, thereby changing the role of empirical research (Hammersley, 2011).

A performative approach sheds new light on the role of whole-group effect testing in mixed methods research. In a performative approach to mixed methods research, different worlds and populations exist, and many “controversial” statements are actually accepted statements that fail to materialize in some worlds. Unlike the TRF studies, the aim of a mixed methods study is not to choose between two overall statements; consequently, the outcome of a whole-group effect test may not be that important. Therefore, *we may as well not investigate the overall effect at all but, right from the beginning, explore the differences between groups*, as was done in Example 1. Many interventions can be expected to have different effects on different groups of people. Thus, we could start by exploring the differences between children with and without high pretest scores (Example 3) and between students with different combinations of language skills and GPA (Example 4) without calculating the overall effect.

This strategy aligns well with two traditions in the methodological literature. One is the realistic evaluation, in which, according to Pawson and Tilley (1997), we should find out “what works for whom under which circumstances.” The other tradition is represented by Turner (1948), who emphasized that quantitative researchers should first try to find groups that are homogeneous enough for a group effect to make sense. Performing quantitative analyses on a group that most likely consists of different populations does not make sense because the overall effect will hide the different effects that would emerge for different groups. Mixed methods research should directly engage with these different worlds, and a performative approach that recognizes these different worlds and their coming into being through methods provides a solid basis.

7.6 Conclusion

If different methods create different worlds, mixed methods research is about exploring different worlds. Following dialectical pluralism, mixed methods research interacts with differences. In addition to the different worlds created by methods, mixed methods research explores the different perspectives from, for instance, different stakeholders and populations. In dialectical pluralism and the transformative approach, the emphasis has been on including different perspectives, especially those that have been excluded – for instance, perspectives from vulnerable groups. With its emphasis on the creation rather than the inclusion of different perspectives, a performative approach draws attention to the task of mixed methods research to split what had until then been considered one world into several different worlds and explore these separately to determine and assess their differences.

A performative approach recognizes that coordination between research worlds is done using coordinating objects and not between worlds directly. Instruments are commonly used to coordinate the research process, and statements are commonly used to coordinate research outcomes. This recognition has two effects. First, it draws attention to what is lost when a research world is used to create an instrument or statement. Second, it opens up the possibility of rebuilding these lost worlds and exploring everything involved in creating the coordinating objects.

Research worlds are fluid because statements develop. In mixed methods research, the *researched* worlds are fluid, multiple, and different as well. These characteristics of researched worlds have a significant impact on how statements develop. In the TRF studies, statements developed through competition between controversial statements. This competition results in one winner and the establishment of one world. Mixed methods research is different. Developing theory in mixed methods research is about integrating those statements resulting from the different worlds that remain. Thus, integration is not, contrary to a common view, combining different realities into one. Furthermore, controversial statements hardly play a role in mixed methods research. Because worlds are different, a final important implication is that mixed methods research *should* often start by splitting worlds instead of calculating effects in a world that consists of different populations.

The performative approach is a monistic (Shan, 2022) position. The approach applies to all research. All research is assumed to create worlds that are all bounded, fluent, enacted, and re-enacted, and the task of all research is to coordinate these worlds. A performative approach recognizes that we can sensibly distinguish many different practices, experienced worlds, views of different stakeholder groups, different populations, and other types of worlds. This raises the question of which circumstances may justify ignoring these differences and conducting studies in which controversial statements compete

and one statement, and hence one world, wins. The research world in which one can rightly conduct TRF-like studies may be smaller than we think.

Working with differences can be construed in terms of including, developing, creating, and rebuilding. Most other approaches to mixed methods research have emphasized inclusion. Thus, from a critical realist perspective, mixed methods research includes various perspectives on one independently existing world (Maxwell, 2012; Maxwell & Mittapalli, 2010). The transformative paradigm emphasizes the inclusion of perspectives of vulnerable groups (Mertens, 2007, 2010). The dialectical approaches emphasize inclusion and interaction with (presumedly existing) differences. Only the pragmatic approach emphasizes development: Previous ideas are updated based on interaction with reality (Morgan, 2007).

A performative approach extends these approaches by emphasizing that research creates different worlds and that research worlds can be recreated or rebuilt. Worlds may be created by including assumedly different perspectives, but also by splitting a presumedly whole world – for instance, by splitting a population. We can also rebuild worlds that have become invisible after they delivered their end product. In this sense, a performative approach provides “strong” philosophical foundations that “justify a normative thesis that mixed methods research should be encouraged in (at least some) social scientific research” (Shan, 2022, p. 7). Mixed methods research is the standard, and we should define the circumstances under which we may rightly conduct studies that test controversial statements to arrive at one world.

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