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### A comparative study of ECKM Papers 2017-22

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**Abstract:** The purpose of this paper is to analyze and compare all the academic papers in the proceedings of ECKM in 2017 (Barcelona), 2018 (Padua), 2019 (Lisbon), and the digital conferences in 2020 and 2021. In 2022 the conference was arranged in Naples but was also a digital conference. The study classifies the papers according to methodology, analysis, discussion, and conclusion regarding their contribution to the four paradigmatic boxes. The approach uses the five philosophy of science framework and compares this to the content of the research papers. We will use the findings in four representations of Knowledge, two typologies of concepts, four paradigmatic classifications, and the concluding framework for knowledge management research. The five conferences heavily emphasize knowledge-itis and instrumental itis and much less on problem-itis. The papers are mostly centered around existing Knowledge and accepted methodology and are less related to new problems. The results indicate a conference based upon as-is Knowledge and less upon new and often unsolvable issues. The ECKM academic papers in 2017, 2018, and 2019 have relatively low complexity and are presented in an empirical and materialistic paradigmatic framework through definitive concepts representing a form of atomistic research. The papers in 2020, 2021, and especially 2022 are delivered within a more robust, clarified subjectivity and action research-based framework through definitive and sensitizing concepts. What would ECKM have been with more complexity in action and subjective paradigmatic framework through sensitizing concepts representing holistic research? A more creative, engaged, and relevant conference. It will also be a more scientific conference discussing what is acceptable or not acceptable and what is adequate. Studies concerning sustainability, digitalization, and globalization might require another research approach. The more critical and green papers in the 2020 and 2021 conferences are open to new perspectives on methodology, problems, and Knowledge. The 2021 and 2022 conferences represent a turning point for critical sustainability and digitalization papers that clarify subjectivity through action-based research. The 2021 and 2022 papers represent the turning point of ECKM into improved relevance through more critical and constructed studies based on the societal climate crisis and sustainable strategies and business models.

**Keywords:** Paradigms, Concepts, Perspectives, Knowledge creation, Knowledge accumulation, Sustainability

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### 1. Introduction

Tornebohm (1983) conceives social science as a sequence of partly cumulative and partly non-cumulative transformations of Knowledge (K), problems (P), and instruments(I). Tornebohm (1983) argued that if the sciences and social sciences progress, there must be a balance between K, P, and I. An overemphasis on any of them will hinder a free scientific discourse and the development of any scientific field. For instance, a central notion from the compound (K1, P1, I 1) to (K2, P1, I2) occurs when the problems P1 are solved to increase the stock of Knowledge from K1 to K2. In problem-solving, new instruments may be developed or borrowed from other disciplines, changing I1 to I2. If one of the three aspects dominates the other two, the domain becomes less relevant. Overemphasis on Knowledge ("knowledge-itis") may result in empirically empty structures irrelevant to the problems.

The initial KPI maps the aspect of interest (in this case, a feature of knowledge structures or processes). The KPI compound in this process filters through what is called the "researchers' orientation and worldview" or perspectives in Tornebohm's words (1983) or paradigms in Kuhn's words (1970) or research domains in Olaisen's words (1985). These authors are all referring to the fact that there are alternative ways of approaching the social sciences and, by that, also knowledge management research. The aspects studied are not given once and for all.

New Knowledge widens the boundaries, as might happen after broadening knowledge management research. Thornebohm believes that pluralism is needed in any discipline to accumulate Knowledge.

Galtung's (1972) idea was to identify four ways of approaching the social sciences in a triangle of theory, data, and values:

1. Empiricism – is what we are presenting true or false (if true consonance, if false dissonance)
2. Criticism – is what we are giving acceptable or not acceptable (if acceptable consonance, if not acceptable dissonance)
3. Constructivism – is what we are presenting as adequate or inadequate (if adequate consonance, if not adequate dissonance)
4. Pluralism – a triangulation of empiricism, criticism, and constructivism (if congruence consonance, if not congruence dissonance)

Galtung (1972) assumes that a common goal of all social sciences is to establish what are called sentences dichotomizing their "world space" by including some defining the empirical world by having some "world points" and excluding others. Hence, data sentences explain the empirical world by including what they observe and eliminating what they do not see or imagine. On the other hand, theory sentences (hypotheses or propositions) define the foreseen world, including aspects predicted by the underlying theory. Finally, value sentences refer to the preferred world, including what is accepted and excluding what is rejected. Galtung's proposed that all social sciences needed criticism, constructivism, and pluralism in addition to traditional empiricism. Constructivism might be constructing our data or practice to develop new alternatives. The constructed worldview is dependent upon our judgment and interpretation. The constructed story demands great imagination and creativity to tell an excellent relevance. Galtung believed all the social sciences could be analyzed according to this framework. Our research paper is the first time Galtung's and Tornebohm's approaches are used to analyze a research discipline.

Blumer (1969) argued that research concepts in any social sciences might be divided into definitive concepts and sensitizing concepts. Definitive concepts are the empirical concepts defining what is true or not true while sensitizing concepts look for new directions asking about what is adequate or inadequate. The concepts have an essential role in any scientific inquiry. They are usually the anchor point in the interpretation of findings.

The purpose of the definitive concept is to:

Describe-Explain-Predict and Control and Rule (A definitive and objective process). Bunge (1967) named this process "the process of all serious systematic research."

The sensitizing concepts have another purpose:

Describe-Explore-Reflect-Participate and Change (A subjective and relative process). Glaser and Strauss (1967) named this process "Grounded-theory-research."

Olaisen (1985) divided any Knowledge into four types of Knowledge:

1. What we know about defining
2. What we do not know implying
3. What we do not know that we know as a part of
4. What we do not know that we do not know

According to Olaisen, to get a scientific, intuitive, and creative movement between these four types of Knowledge to represent the essence of representable and non-representable knowing modes in any science and social science. The known directs us to the known unknown and further to the unknown known together with the unknown.

Olaisen (1985) divided the social sciences into four paradigms in a quadrate of harmony versus conflict and objectivity versus subjectivity:

1. The empirical paradigm
2. The materialistic political paradigm
3. The clarified subjective paradigm
4. The action paradigm

According to Olaisen, any social science paper could be placed within these four paradigms.

These are the five scientific philosophy frameworks used as analytical tools for analyzing academic papers.

## **2. Methodology**

This paper aims to analyze and compare all the academic papers in the proceedings of ECKM in 2017, 2018, 2019, 2020, 2021, and 2022. A total of 661 double-blind reviewed academic documents within a framework of 5000 words and ten pages each. The approach uses a philosophy of science framework and compares this to the content of the research papers.

We have used five philosophy of science frameworks to analyze all the papers:

1. Tornebohm's Knowledge, problem, and instrument description (1983)
2. Galtung's scientific perspective triangle (1972)
3. Olaisen's four kinds of knowledge identification (1985)
4. Blumer's two types of scientific concepts (1969)
5. Olaisen's four types of paradigms identification (1985)

This paper combines (4) and (5) as pluralistic proposals for future knowledge management research progress.

Each paper has been classified according to the following:

1. Problem
2. Methodology
3. Theoretical foundation
4. Propositions or hypotheses
5. Analyze
6. Discussion of results
7. Conclusions
8. Theoretical and practical implications

A decision has been made for each of the five frameworks according to which format the paper fits within each academic writing. The decision is based on the reading of the article. For two-thirds of the documents, placing them into a category was clear. We had to decide which type we set them within for one-third of the papers. The decision is based upon our notes from each piece; if in doubt, we reread the article.

The classification within each of the eight criteria is done after reading each section in the paper. When the session is missing, our decision is based on our classification. The subject classification is done according to the keywords in the documents, the abstract, and the introduction. The exactness of the category has continuously been approved. For that reason, we have reclassified 2017, 2018, and 2019 for our 2023 paper. The paper follows up on the analyses of the IFKAD papers (Jevnaker & Olaisen, 2022).

## **3. Knowledge-itis, instrument-itis, and problem-itis**

The papers are suffering from "instrument-itis" and to some extent from "knowledge-itis," but they are indeed not suffering from "problem-itis." Problem-oriented research demands systematic and logical argumentation (Lawrence, 1992). Problem-orientated research might need to be improved for knowledge management researchers. The researchers do the statistical tests well, presenting the data in "nice" total packages as a form of scholarly truth. However, only some results conflict with existing marks. 2 of 3 hypotheses are correct, and 1 of 3 needs to be corrected. There are many similar hypotheses/propositions (54%) in papers dealing with knowledge sharing and knowledge management, while 61% reach the same result and 39% reach a different outcome for similar propositions and hypotheses. The Popperian falsification process (1973) is used for both explicit and tacit knowledge processes even if 82% in 2017, 84% in 2018, 83% in 2019, 68% in 2020, 57% in 2021, and 52% of the papers in 2022 do not make any distinction between tacit and explicit knowledge processes. The un-ability to distinguish between tacit and explicit Knowledge might represent a lack of theoretical sophistication. Two-thirds of the papers need a definition of Knowledge, information, management, leadership, or the situations included in these concepts. The lack of definitions presents a kind of storytelling where a story exemplified by statistics is told. The scholarly and scientific storytelling is what Kuhn (1970) defined as a pre-scientific situation where anything might be equal in importance or what Popper (1973) described as the situation for psychology as a field. Kuhn (1970) called this "something less than research." The lack of problem-

itis makes it challenging to make progress and accumulate Knowledge; as Nonaka (2018) noted, there had yet to be any progress in understanding and performing tacit Knowledge. There is, however, a greater degree of sophistication in the 2021 and 2022 papers regarding problem formulations and the knowledge content making the papers more relevant at a business and societal level. The sustainability and green leadership questions have increased the imagination and creativity of solving several problems that have yet to be solved or even pure speculation.

More than 60% of the papers write about the need for new ways of green and knowledge leadership, management, and organizing. The documents, however, are centered around traditional leadership, management, and organizational issues. The paper's label and marketing propose new leadership, management, and organizing ways. However, they neither define today as the situation nor how we will take us tomorrow. The papers are promising the "promised land," but in the end, tomorrow's management is the same as today's management. The papers' problems are centered around solvable matters and seldom relate to unsolvable problems. In knowledge management research, we define "instrument-itis" and "knowledge-itis" as a misdirecting striving for respectability. Sixty-three of 661 papers (10%) discuss our ecological systems' problems and what we need to do to solve the climate crisis through sustainable businesses. These green ecological papers ask several questions they cannot answer and are thus speculative and are all conceptual papers without any empirical basis. The 2020 and 2021 conferences doubled the number of such papers and increased the conference's relevance for our actual and future business situation. The bearing, creativity, and scientific quality are enormously improved from our earlier analyses of these aspects (Jevnaker & Olaisen, 2021). The 2022 papers confirmed the trend toward critical papers discussing sustainability, the climate crisis, and moral issues of what is morally adequate and morally inadequate for businesses. Artificial standard intelligence is addressed from the angle of what is good for our civilization versus what is suitable for AI businesses. Human control is compared to machine control according to consequences. The 2022 papers are more pluralistic in their problem formulation, choice of methodology, and discussion of findings.

**4. The aspects of the world studied.**

We are making a distinction between four areas of Knowledge in management research: "What we know" (1), "What we know that we do not know" (2), and "What we do not know that we know (3) and What we do not know that we do not know" (4). Area (1) will define area (2), while there will be a misinterpretation and bias towards area (3) and area (4).

(1) WHAT WE KNOW	(4)WHAT WE DON'T KNOW THAT WE DON'T KNOW
(2) WHAT WE DON'T KNOW	
(3)WHAT WE DON' T KNOW THAT WE KNOW	

**Figure 1:** Knowledge representations (Olaisen, 1985).

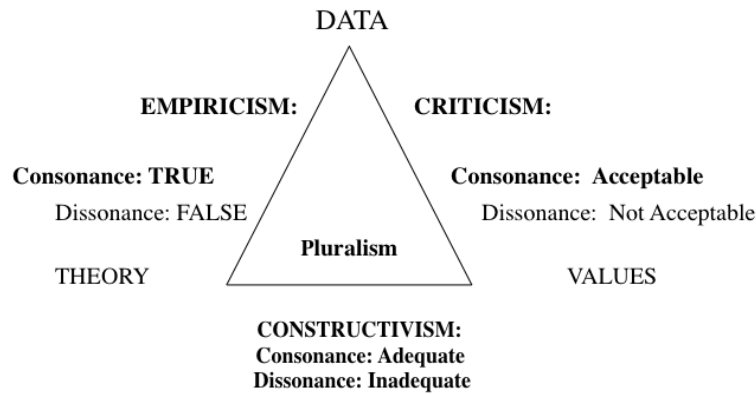
For areas (3) and areas (4), will imagination and intuition be necessary for the creativity needed to make a scientific movement in knowledge management in zone 3 and 4? If we expand only into area two, it will be limited knowledge research emphasizing instruments and Knowledge while the problems will be defined by what we know. We distinguish between the known, the known unknown, the unknown known, and the unknown. The exciting part is the dynamics between the known and unknown and how we make a part of the unknown known in our research process. The papers have progressed from 2016 to 2022 in defining what is unknown and discussing why tacit Knowledge remains unknown in most situations. There is also a beginning discussion of the need to approach the unexplored areas and the challenges looming in the unknown domains.

If we want to move between areas one and two, logical, empirical studies ("secure and clean studies") will be ideal. However, the source of bias and misinterpretations start as soon as we move into what we do not know anything experienced. We will here begin to involve imagination and intuition. Experience-based intuition is the starting point of any essential research effort. Simultaneously, the movement from area one to area two is only instrumental puzzle-solving, often without knowledge accumulation (Minzberg, 1979; Morgan, 1980). "The way to improve our technique is not to attempt to analyze things into their elements, reduce them to measure and determine functional relations but to educate and train our intuitive powers to make the unimaginative and the unknown known" (Knight, 1936, p. 103). Suppose our role is only to produce some publishable or travelable research. In that case, we are reduced to mechanical puzzle-solving, demonstrating that we can master the techniques we learned in our Ph. D's. Between 60 and 70% of the research papers at ECKM represent this kind of mechanic puzzle-solving (Morgan, 1980). The empirical ECKM researchers are sending out a questionnaire to a large sample getting a 5-20% response rate. Applying statistics and getting a research classification results in nice tables, diagrams, and figures, getting more of the same trivial already known Knowledge. The 2020 and 2021 papers are based on qualitative in-depth interviews, constructed datasets from several studies, and theoretical foundations. Primarily the 2021 and 2022 papers represent an improvement with more problem-oriented papers and more speculative papers, including imagination and speculation as a part of the research process. The unknown and unknown areas have gotten more interest, including a few papers (5) in 2021 based upon a constructed empirical basis where the authors discuss unexplored areas to see solutions for sustainability for discussing what green leadership and a green organization represent. The ECKM academic papers at their best in 2021 represent the societal issues addressed later at the Cop 26 conference in Glasgow (Olaisen, 2022). The papers of 2022 follow up on these critical issues wondering if knowledge management represents the problem or the solution.

## **5. Scientific orientations**

Galtung (1972) assumes that a common goal of all social sciences is to establish what are called sentences dichotomizing their "world space" by including some defining the empirical world by having some "world points" and excluding others. Hence, data sentences explain the empirical world by including what is observed and excluding what is non-observed. On the other hand, theory sentences (hypotheses or propositions) define the foreseen world, including aspects predicted by the underlying theory. Finally, value sentences refer to the preferred world, including what is accepted and excluding what is rejected. Most of the papers (65%) in 2017, 63% in 2018, 61% in 2019, 52% in 2020, 46% in 2021, and 41% in 2022 do not develop hypotheses but only describe the theory's findings without concluding them into hypotheses for testing (Bunge, 1967). However, the research compares data sentences with theory sentences without using Popper's falsification principle (Popper, 1972). The increasing number of papers using hypotheses or propositions increases the discussion of verifying and falsifying the findings. The testing of hypotheses and propositions is making the ECKM conferences more scientific. Dissonance does not produce new theory sentences, while consonance notes that the research results align with mainstream knowledge management research. Criticism is a scientific activity where data sentences are confronted with value sentences. By the tenets of this orientation, consonance is created by producing new data sentences by changing reality into an acceptable condition. Criticism is a creating part of the ECKM 2017, 2018, 2019, 2020, 2021, and 2022 papers (15% versus 16% versus 18% versus 23% versus 26% versus 28%). The trend is towards more criticism-based pieces. Criticism is needed through values, speculations, and ad hoc methods to advance a field, even if the validity and reliability are lower.

Constructivism implies comparing theory sentences with value sentences to see to what extent the foreseen world is preferred. Consonance refers to what is adequate, and dissonance to what is inadequate. In dissonance, theory and value sentences are prioritized equally, and both might be changed in knowledge management research. Constructivism represents 31% of the papers, increasing from 15% in 2017 to 31% in 2022. The business reality is today complex and global. A combination of understanding wholisms and atomisms is needed in a good research strategy (Minzberg, 1979) and actionable puzzle solving (Morgan, 1980). Imagination and intuition are required for this process (Bunge, 1967; Alvesson & Skjoldberg, 2009). The intuitive powers are less trained among the ECKM researchers even if the number of papers, including a constructed empirical basis through speculations and intuition, increases to meet a higher degree of complexity, like the solutions of future sustainability problems.



**Figure 2:** Empiricism, criticism, and Constructivism

## 6. The Rise and Fall of Paradigms

Kuhn's position (1970) is that paradigms serve a normative and conserving function. When a standard prevails in a discipline, "normal" science practice evolves as a puzzle-solving activity. During normal science, the scientific community works under the assumption that "it knows what the world is like" and is prepared to defend this assumption "at any cost." (Kuhn, 1970, p. 5). Normal science often suppresses "major novelties, conceptual or phenomenal" (Kuhn, 1970, p. 36). Thus, scientists are only preoccupied with solving problems/puzzles according to accepted rules according to traditional viewpoints or preconceptions. With such anomalies built up and scientists losing faith, the field enters the crisis stage.

Kuhn writes that "there can be a sort of scientific research without paradigms, schools, perspectives"... (1970:11); in such research, "... though the field's practitioners were scientists, the new findings of their activity were something less than science or social science" (1970:13). He further notes that "... every individual researcher starts over again from the beginning" (1970: 13), "... that some competing schools are directing their publications where they may be published. A continued discussion over the same fundamentals and no scientific progress is made at all" (1970: 159). In the KM papers at ECKM, we have not found any schools of KM or any clearly defined KM research domain. There are no competing schools or paradigms, but mainly papers repeating more or less the same findings. There are new perspectives but not an accumulation of Knowledge or defined scientific progress.

We may sum up Kuhn (1970) in this way:

1. Only readily available facts are collected.
2. At this stage, all points seem equally relevant.
3. To get "false" respect, the instruments are overemphasized and often presented in "quasi-fanciful" ways to get "false" respect.

Looking at knowledge management research at ECKM, we conclude that this is the situation for more than 65% of the papers. The 2020, 2021, and 2022 papers were more scientific than the 2017, 2018, and 2019 papers – 65% versus 83%. In 2020-2022, progress was made in making knowledge management more scientific and robust. We found that Kuhn's description fit the situation in knowledge management research well. Every researcher starts over again from the beginning with was easily collected survey, and case data are assembled and presented in fancy scientific ways. The papers in 2020, 2021, and 2022 (24%) focused on sustainable businesses, greener businesses and societies, and the future of knowledge work, representing a positive change. The 2021 and 2022 conferences might illustrate a turning point for making knowledge management research more relevant and scientific.

## 7. Alternative concepts

The concepts have an essential role in any scientific inquiry. They are usually the anchor point in interpreting findings (Blumer 1969 and Baugh 1990). The concepts are the glasses we have used since our Ph.D. We discuss two different worlds of ideas. The definitive concept is based on empirical data or "evidence" and often searches

for causal relationships. Blumer(1969:52) wrote, "... to do robust research is defining and handling your concepts ... research without concepts is not researching, but something else....".

In knowledge management studies, the definitive concepts are taking over the ground of the sensitizing concepts. Taking all the papers and dividing them into one of these ideas, around 65% of the studies rely on definitive deductive theories, while 35% rely on inductive sensitizing concepts. In the ECKM 2020, about 55% depend upon definitive concepts, while 45% rely upon inductive sensitizing concepts compared to 50/50 in 2021. The induction process described as "directions along which to look and use intuition and curiosity" instead of facts or data is less used. Intellectual curiosity might be the path to choose for creative scholars. The papers are becoming more inductive and sensitizing in the 2020,2021 and 2022 conferences than in 2017, 2018, and 2019. The papers regarding sustainability and green leadership have a higher complexity focusing upon internal business models as drivers for an external greener and more innovative market and a sustainable societal environment.

### **8. Alternative research paradigms**

It is here proposed to analyze knowledge management research from four main perspectives. These alternative realities are different meta-theoretical assumptions about the nature of social science. The empirical paradigm, where its explanatory power establishes causal variables between variables. The knowledge systems and the knowledge technology relations have a concrete, actual existence and systematic character producing quantitative and qualitative findings according to the need of the societies and businesses. The business world is considered primarily conflict-free and harmonious at a higher level of aggregation. 50% of the studies in 2018 versus 45% of the 2019 papers belong here, compared to 38% in 2020, 36% in 2021, and 31% in 2022. The trend is towards fewer traditional empirical papers and more subjective and exploring papers. We explain the change towards more articles about green sustainable business models and a new class of younger European researchers and consultants. Today's green reality is a higher external complexity met by clarified subjective and action-based business models. The modus is explorative versus explaining business models. ECKM is in 2021 and 2022, starting to complete this change in the content of their academic papers.

In the materialistic political paradigm, physical events and behavior are the surface manifestations of underlying mechanisms. The materialistic paradigm relies on the assumption of predictable uniformities in the knowledge systems. The world of knowledge systems exchanges is defined by concrete, measurable, ontologically fundamental structures and interdependencies in knowledge systems. 20 % of the studies in 2018 are here versus 21% in the 2019 conference, 16% in 2020, 15% in 2021, and 13% in 2022.

The clarified subjectivity paradigm holds that social reality does not exist in any concrete sense but is the product of individuals' and organizations' subjective and inter-subjective experiences. According to this paradigm, knowledge behavior must be understood from the employee and organization's viewpoint rather than the outside observer. We can only get such understanding by direct, give-and-take interaction with the employees and organizations. We can get in surveys as questionnaires, but then we define the questions and the business situation. 25% of the studies in 2018 are here versus 27% of 2019, 32% of 2020, 35% of 2021, and 36% of 2022. The action paradigm (5% of the studies in 2018 and 7% of the studies in 2019 compared to 14% in 2020,15% in 2021, and 20% of the 2022 studies) also assumes that what passes for reality is socially determined. The move towards clarifying subjective and action-based paradigms in 2020, 2021, and 2022 is significant. Most ECKM studies are now found within the clarified subjectivity and action paradigm. The change is impressive over a concise period. The change represents a movement from explaining to exploring and exploiting studies. Most studies are empirical, but the findings are discussed through open-sensitizing glasses rather than definitive glasses. The implications and interpretations are drawn much further, representing complex issues like sustainability, digitalizing, globalization, robotics, and AI. In some studies within the clarified paradigm, the empirical part is constructed to grasp future implications.

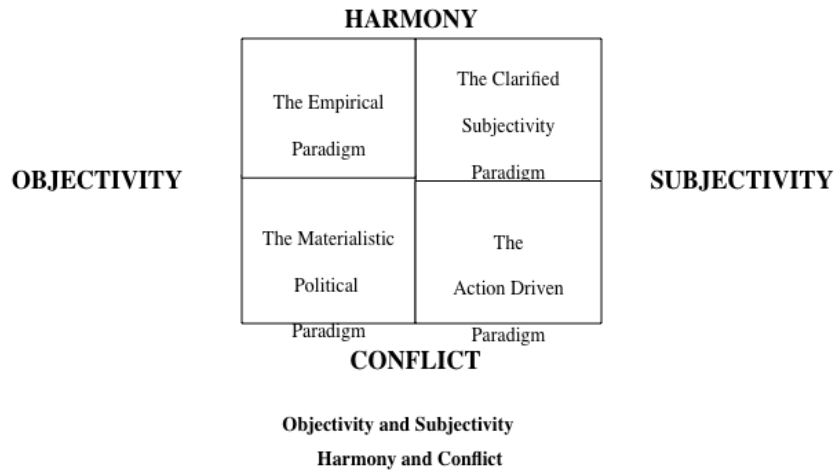


Figure 3: Research paradigms

### 9. The fall of knowledge management as objective research?

The action-driven and the clarified subjectivity paradigms represent a different degree of complexity and subjectivity. They represent both harmony and conflict. Various levels of complexity require different research paradigms; Pluralism is demanded to catch other aspects of reality. Subjectivism is necessary to capture complexity. The greener and more sustainable business models, the higher complexity and internal focus to get green action-driven business models. Traditional business models reduce complexity and uncertainty through a higher external market focus. The reality offers inductive exploring versus deductive explaining business models. The driving force for the explorative models is to be ahead of the market, offering new sustainable solutions.

In contrast, they explain that business models are already existing market needs in the traditional industrial way. Disruption, efficiency, and connectivity versus scale economics and effectiveness. Explorative inductive models versus deductive explaining models. Kuhn(1971) will describe it as different paradigms fighting as the standard business science paradigm is under attack, not explaining a new business reality. More and more academic papers at ECKM explore the sustainable and new green reality using more subjective and action-based business models, criticizing existing models and constructing new models. The times are 'changing, and the research methodology with new problems demands other instruments to be helpful in another reality ( Jevnaker & Olaisen, 2022).

Consequently, we will have to define this discipline as a subjective multidiscipline, and we will have to explore, innovate, and simulate an experiment to a much higher degree. We need more subjectivity conflicts and minor harmony and objectivity in our research. Leadership and organizational methodology movement toward phenomenon research takes research out of the iron jacket into a flexible and soft jacket opening up for alternative realities (Doh, 2015; Schwartz & Stensaker, 2014; von Krogh et al., 2012). The driving force for the future might be green business models giving KM research new possibilities for understanding the green-creating corporation. A green vision, strategy, and business models were nonexistent in the 2017,2018, and 2019 conferences but appeared as fashion in the 2022 studies.

### 10. Synthesis and conclusion

Figure 4 presents a form of synthesis of our reflections. One of the axes represents the degree of complexity, and the other the level of subjectivity. The definitive concepts represent a small degree of subjectivity (i.e., a high degree of objectivity, if possible), while the sensitizing concepts express a high degree of subjectivity. The four paradigms might be subjective or objective. The problematic question is: if we choose one model, will it be possible to move on from a low degree of complexity to a higher level of complexity (i.e., can we generalize from a tiny part of reality to a more substantial portion) of the reality)? Corporations with green business models, management, and organizational systems will drive societal and market changes. Societies and needs are changing too slowly, and the green knowledge-creating corporation is changing faster and might be the driving



force for societal changes. The question is: How does KM's research contribute to green business models and green public strategies and alterations? There may be a new era for KM research.

Are the models interchangeable? It might be impossible or desperate to move up the line from origo to a higher degree of complexity and from the top to Origo (Alvesson & Skjolberg, 2009; Bunge, 1967). The knowledge research reality in both sustainability and climate conflicts offers global complexity. To understand this, we must apply subjective paradigms combined with empirical investigations for theory building (Eisenhardt & Grabner, 2007). We have to use sensitizing concepts coupled with actionable definitive ideas. We have a field like knowledge research to understand whether applying it is subjective, but it is systematic and logically rigid. Future green business models will move from high complexity and subjectivity (i.e., more explorative and exploiting internal models) to more definitive and objective ones. Today, politics demand green models, superior solutions, promises, and concrete green business deliveries.

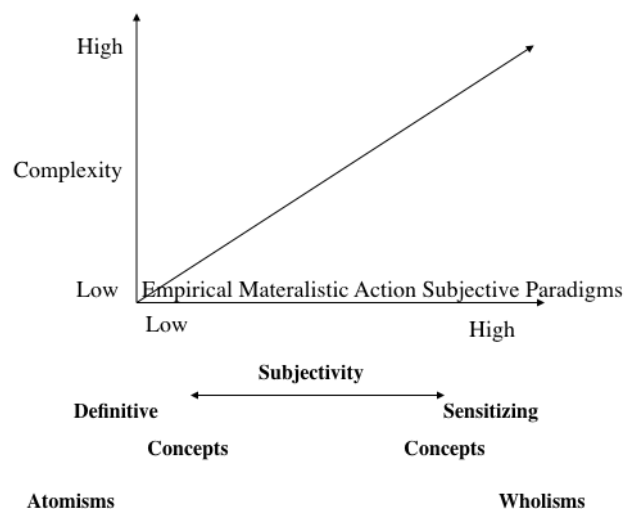


Figure 4: Complexity versus paradigms and concepts for green business models

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