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The Paradigmatic Nature of Social and Human Research

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Abstract
This article of reflection, theoretical and methodological, of an epistemological nature, presents relationships of commitment between universities and the productive sector through research. Society in general, unions and the state have understood that more and more professionals require scientific research processes. Therefore, advanced education must be supported by inquiry processes that transform these sectors. In general, investigative issues that generate epistemological contradictions are addressed due to the misuse of investigative techniques and procedures. Both the first and the second are more specific and inseparable from the investigative action. Techniques are the DNA of research: they condense the theoretical and methodological history of whoever has developed them and whoever chooses them. That history can be deconstructed from a technique. A strong presence of an orthodox positivism persists, anchored from the analytical empirical that invades the limits of qualitative research that requires an exhaustive review. On the other hand, according to the so-called mixed investigations, mixtures are made that are not coherent with the proposed paradigmatic models. This dispersion of the sciences, paradigms and types of research are limiting to understand, interpret or transform the contexts involved in the investigative processes. For this reason, for the researcher, the techniques are presented, in their pedagogical dimension, as the access door to the research experience, which enriches it, broadens it, and makes it more fruitful the more and better the instruments are handled articulated between the parts. and these integrated with the whole, highlighting that we are immersed in a productive process in which the researcher must make decisions at each step, which must be marked by the social conditions in which said process is carried out. The opposite produces paradigmatic blindness or obstacles.

Keywords: Research, Paradigmatic, Social Research, Human Research

1. Introduction

Research is action and is product. Action of the subjects, who build knowledge with varying degrees of autonomy. Product that is formalized in institutional discourses, which in turn are a condition and opportunity for action by researchers. The role that methodology plays depends on the epistemological position of the researcher and the scientific method that he intends to use. The logic and its foundation derive from the different conceptions about knowledge and about the possibility that the researcher has to access it, as well as the current controversies about the nature of physical reality and social reality, that is, the subject-object relationship.

The idea is that both the practice of research and its products objectified in scientific discourses are always traversed by the ontological, axiological, epistemological, theoretical, and technical-methodological assumptions with which each scientist deploys his work. Within this framework, the methodology offers, on the one hand, its

theoretical principles, operations, and internal control rules that researchers use to generate new knowledge in the area to which they belong; on the other hand, the external control norms that institutionalized science demands from each discipline and how it relates to the others.

But this scaffolding that conditions and determines each specific investigation does not exhaust the set of forces that operate on the products of science. The researcher, as a subject who investigates, also has his voice and his desire among all these voices. He is not a mere mechanical reproducer of already established paths, but in a continuous moment of going back and forth, he himself makes decisions at each step, creatively exploring and interweaving those determinants with his own ideas and intentions and with the demands imposed on him by the empirical world and the complex and emerging social world.

Until the 20th century, there were three types of research designs, which guided the investigative processes: the positivist paradigm or analytical empirical paradigm, the rationalist hermeneutic paradigm, the socio-critical paradigm. The design is a type of plan to arrive at a product. What is distinctive about the design is that it is a plan that allows the researcher to get out of speculation and make the model work in reality; but also, be consistent in the use of research procedures, methods and techniques.

In this context of academic and investigative reflections, the 21st century made evident the adoption of another paradigm called emerging and in which the transdisciplinary and complex approach is privileged; that is, the dialectically qualitative spiral situates the approach to new topics from another conception that favors the interconnection of knowledge and knowledge, overcoming simplistic views and advancing towards horizons that reconnect, that unite the dispersed, that bet on strategic thoughts and complexes.

In a previous article, we discussed three paradigms together; what a research paradigm consists of, but then we cannot point out that the research paradigm is a model of thought or a set of theories, methods, techniques, procedures, norms, principles, shared by a scientific community to focus on certain problems and give them answer and solution. In this case, when it comes to research paradigms, reference is made to a multiplicity of scientific perspectives on the problem of research in general. As indicated at the beginning we are going to see in this case the positivist paradigm or analytical empirical paradigm, the rationalist hermeneutic paradigm, the socio-critical paradigm, and we will address the paradigm of complexity, also called emergent.

When considering an investigation at any level or modality, it is part of the organization of a design that may or may not be made explicit in writing. An investigation involves answering a question or several questions, whether of a purely bibliographical type or in reflective research (what is said or debated around a certain topic), how certain concepts or certain dimensions are related (economic, political, religious, social, etc.), or what happens to a group of people: what they think, what they do, how they proceed with respect to X issue, and basic or applied research

In the Social Sciences, scientific research is usually associated with the achievement of a tentative answer to said question, what we call "hypothesis" and which is made up of relationships between variables to be investigated in the empirical world, but which is also our tentative answer to the problem. emerged. Now, the hypothesis has managed to insert itself into the qualitative world, coming to quantify the unquantifiable, warning of course that there is no prevention against the data, which is essential, but it must be resignified now of entering the territories of interpretation, understanding, transformation, emancipation, liberation and religation.

Lately, the possibility of working in the qualitative field with premises, conjectures and uncertainties has been considered more. A premise is the result of reasoning that must be supported with arguments and that allows a conclusion to be established. The premise is a proposition or reasoning process that supports the arguments to develop a synthesis. This view as a complex framework that results from bringing together different elements that were dispersed or separated, organizing, and relating them. The conjecture is a judgment or opinion formed from evidence or incomplete data or assumptions. And uncertainty is the lack of security, confidence, or certainty about something, especially when it creates concern.

However, not all questions or all hypotheses or premises require field work. Not all investigations should have a question. In the first case, when it comes to research in specific knowledge, for example, linguistics, literature, semiotics if it is a Bachelor's Degree in Languages, Biology, Zoology, Physiology, Chemistry; if it is a Bachelor of Natural Sciences, etc. And in the second option if it is an applied or intervention research, in the case that we already know what to do.

The narrative orients its purposes towards the interest of examining the epistemological assumptions that affect the selection of the research method in Social Sciences, procedures and techniques. We call this selection "methodological option": every researcher adopts a "methodological option", which guides his project and bases, from epistemology, his hypothesis and his object of study. The methodological option contributes to define a research work for various reasons:
a) Frames the criteria from where scientific knowledge is produced and
b) Gives said knowledge the value and guarantee of being “science.”
c) There would be another reason: when doing research, not only a technical decision is made based on the objective and scientific obtaining of relevant data to investigate; When investigating, reality is understood (and the real at stake) in a certain way.

Fundamental and traversing the method are the “epistemological assumptions.” By knowing in a certain way, based on the purposes or epistemic claims that build the research, an object of knowledge is also built, traversed by a vision of what can be known and also by a guarantee of greater or lesser "scientificity" of the subject. obtained result. This means that sometimes it is possible to know without implying producing science, but also, and on the other hand, that in scientific production within the field of Social Sciences, what is not science does not always cease to have the value of knowledge. The relationship between knowledge and science presupposes a certain type of knowledge that is often problematic and, in the age of science and technology, of control and efficiency, even more so. Epistemological approaches are ways of accessing knowledge and ways of producing knowledge. Outside of them we cannot access science or produce it. Let's review each of these approaches.

2. The relationship between knowledge and interest

The first dimension that is dealt with in this article about epistemological paradigms or approaches is what is their interest in knowledge, what is their anthology or what is the conception that these paradigms have about what reality is. What is the relationship between the subject and object of research and the purpose of each research paradigm?

Philosophical reflection with the social sciences since the beginning of its research activity has tried to connect the theory of knowledge with praxis in various ways. Habermas reflects on our ways of knowing, criticizes Husserl and positivism. According to Habermas (2001) he maintains that in all communicative utterance the speaker raises validity claims, against which the receiver can take a position with a yes or a no. If the listener recognizes the validity claims implicit in the act, the understanding or agreement will have been achieved. only the study of philosophical theory is what enlightens us with ideas and only them. “Can give relevance and ethical meaning to the action”. (Valencia López, 2007: 37). The true orientation for action can only be given by knowledge, previously freed from interests.

The study of the sphere of morality brings to light the structure of human action, and in this structure the process of the will for action is inserted. Subjectivity is firstly analyzed in its unilaterality and then in relation to other subjectivities, which enriches the thought to think about contemporary ethics because for Hegel according to Heidegger (1994), the elements that allow the individual and the citizen to be articulated. The theoretical treatment of human action deserves such space and situation, for being the necessary link between the individual will and the political will. This sphere exposes the complex constitution of man, in which the individual objective and subjective come together, charged with a permanently manifest historicity as a product, and which, at the same time, contributes as a means that is always renewed and, in turn, renews itself. what is in it. The sphere of morality, in short, indicates how to live or, the process of the individual will for the political will. On the other hand, for Habermas according to Boladeras Cucurella, (2001), the private is opposed to the common and the state; The

opposition between common interest and private or particular interest confers authority on the absolute state as guarantor of that interest.

The rigorous study of a philosophical theory is what most imminently relates us to ideas most closely, and "only ideas can give relevance and ethical meaning to action" (Habermas, J. (2003:27). A true orientation for acting can only be given by a knowledge that has been freed from mere interests and has been directed towards ideas that a theoretical attitude has been adopted towards that knowledge. Now, the emerging praxis, surpasses the traditional practice and intertwines the triad of thinking, feeling, and acting, a scenario that challenges subjectivity with objectivity.

In the context of the emerging, the term complexity was introduced by the French thinker Edgar Morin in his work "Introduction to Complex Thought," to indicate that it is not possible to define social facts in a simple way, nor to investigate reality through a recipe that simplistically reveals the study problem. It raises the question of how to assume the complexity of the contemporary world in which we live. A different way of approaching social research, its historicity, to get rid of the illusions inherited from positivist thinking, which is to eliminate simplicity through complexity, since this type of thinking unites, integrates, and connects social phenomena and rejects reductionism in an exemplary way. which sought to break the whole into unconnected and totally isolated parts. (Salazar, 2004). For him, social phenomena work from a systemic perspective. Complex and systemic thinking offers an option to comprehensively analyze the processes in intercultural encounters focused on people in their cultural particularities and act on that difference through respect. These reflections point towards a transformation into a new social system, which is experienced in times of globalization. (Soto-Molina, 2019).

The relationship between knowledge and science as a particular type of knowledge is often problematic and, in the age of science and technology, of control and efficiency, even more so. Epistemological approaches are ways of accessing knowledge and ways of producing another knowledge. Outside of them we cannot access science or produce it. Let's review each of these approaches.

For positivism or the empirical analytical approach, the interest in generating knowledge is to be able to explain reality through the construction of cause and effect relationships, that is, of causal relationships, which will allow it to predict the behavior of reality, and, therefore, from the prediction, the possibility of controlling. For the hermeneutic historical paradigm, what really matters is something contrary to what positivism proposes. From hermeneutics, the most important thing is to understand reality through interpretation and obviously it will not focus so much on reality as an object. Otherwise, it will focus on reality more as a subject, as a construction of senses, of meanings that are in people.

While for the socio-critical paradigm, the positivist idea of the need to explain social phenomena to unravel the causal relationships is going to be shared in a certain way, but also to have some predictive capacity, but from the socio-critical paradigm. What is critical is to achieve the transformation, emancipation or liberation of communities from immersion processes where everyone becomes researchers and transformers of their own reality, this paradigm does not admit predetermined rules, nor pre-established formats, it is precisely its the community itself that elaborates and approves the inquiry instruments, even more, the systematic return becomes part of the agenda of the collectives or reflection groups for the final validation of the information. Soto 2021 States that:

> “The confluence of subjectivities that promote intercultural dialogue is required to weave emancipations that defragment contemporary sociopolitical hegemonies. The libertarian processes use education as a favorite tool that articulates the knowledge that promotes democratic societies, since these are more just and equitable, in harmony with the inherent dignity of life”. Pag. 295

The paradigm of complexity, which is a very recent model, currently being discussed by Edgar Morin in the academic field. He argues that the interest in knowledge is no longer so much fragmented, as had happened before, but that the interest in knowledge now seeks the relational integration of knowledge to explain the complex phenomena of reality. For the complexity paradigm, all the previous paradigms, mainly positivism, are part of a

dominant scientific tradition in the sciences, which he calls the simplifying paradigm and the complexity paradigm would be the answer to the current crisis of science. . from the approach of Edgar Morin. (Morin, 1992).

Current times reveal the emergence of another emerging paradigm that adopts two important approaches: complexity and trans disciplinarity. For E. Morin, the structural problems that the current planetary crisis warns of, put the preservation and existence of all forms of life at risk, he points out that the disciplinary dispersion has promoted the knowledge achieved in multiple directions, producing a kind of blindness that does not allow reaching holistic and systemic visions of the problems derived from a geological era that has man himself as the protagonist of self-destruction.

The current era, the Anthropocene, is a recent geological era that deserves a pause for epistemological reflection with the integrated participation of all the sciences and disciplines of scientific knowledge. For complexity, the essential thing is the reconnection of knowledge, for transdisciplinarity it is the search for the included third that is between and beyond the disciplines, and in this methodological way the context is not regulated by a fixed reality, but by multiple levels. of reality.

It is not a question of attacking the sciences, paradigms, approaches or disciplines, since each one of them will be essential to advance scientifically, thanks to them we have managed to overcome many problems in the course of history, what is dealt with in these. At times, it is necessary to reposition the academic debate bearing in mind that the main problem facing humanity today is the destruction of planet earth.

Climate change, the drying up of rivers, the emergence of pandemics with more aggressive faces, the melting of the poles, global deforestation, excessive concentration and urban paving, the presence of a science without conscience, the dehumanization of humanity, are Among other problems that are not resolved from the isolated territory of one or two disciplines, according to Morin, a change of path is urgently required that encourages the adoption of differentiating and emerging approaches, in the possibility of redirecting global agendas and bets.

3. Ontology of knowledge

For the positivist paradigm, reality is objective, it is a reality that exists insofar as it is tangible, insofar as it is given, insofar as it is independent of the existence of the human being's consciousness, and it is a tangible reality that can be touched. It is a convergent reality; it is the reality that has an independent existence. For the hermeneutic approach, on the other hand, reality is constructed, that is, we build reality from our experiences, from our beliefs, and this reality has a totalizing character, that is, the reality constructed for us is a world, a constellation of objects ordered according to our culture, according to our beliefs, our notions, etc.… For the critical social approach, it will also coincide with the hermeneutic approach that reality is constructed and is also holistic, it is the subjects who produce the structures social, we are the ones who are part of that constructed totality, but we must not detract from the fact that for Marxism there is also a certain degree of objectivity of the existence of matter as opposed to the idea. For complexity and transdisciplinarity, reality is perceived by levels, it is systematic, that is, it has an order and a disorder at the same time.

The reality is hologrammatic, this means that the whole is not only the meeting of the parts, but also the parts are present in the whole and it is retroactive, because it states that the effects that produce causes do not have a simple linear relationship. of cause and effect and there the story ends. Rather, the effects can again influence the causes and generate a kind of evolution and a much more complex phenomenon, a process of differentiation according to Edgar Morín. Finally, he states that reality is recursive, this means that reality is organized into systems. The human being is part of a system, which is part of another system, which is the social system, the social system is part of another system which is the ecological system, and this in turn of the planetary system, and so on until the infinite, which means that all of reality would be a complex superposition of systems in constant relationship. (Morin, 1999), a position that expands on Bertalanffy's thought by pointing out that from the atom to the galaxy we live in a world of systems.
Subject-object relationship

On the question of the subject-object relationship for positivism and the relationship between the subject and object must be independent, neutral and free of values, in reality, positivism lies in the idea that the researcher to know the object of study separates from it and generates a kind of distancing that allows it to approach the object based on the object's own laws and dynamics that make the researcher object have a complete objective reading of the reality it wants to study, this is harshly questioned by the hermeneutic tradition which posits that there is actually an interrelationship between the subject and the object.
Regarding language, the positivist paradigm of science expresses that the number of times that a certain value of a variable is repeated or its absolute frequency or its average as a sum is what determines knowing which is the number or symbol of greatest equivalence of a variable (Number of times the value is repeated in the study). While the hermeneutic paradigm uses a logical-mathematical language, fundamentally symbolic, however, this does not indicate that it cannot express feelings and emotions when it comes to human activities, on the contrary, the subjectivities of being come into play in its deepest interpretation of the phenomena or social facts.

For the sociocritical paradigm, language is purely a representation of the individual's social interactions. considers that, along with the Device for Language Acquisition (proposed by Chomsky and the Innate Theory), there is a kind of aid that facilitates language acquisition, which corresponds to the environment of the people who interact with that context. In this way, in this theory one can speak of scaffolding, Zones of Proximal Development and Mental Formats or deep structures of thought. That is, language is thought in cognitive and cultural function.

Research paradigms				
Paradigm	**Prevailing interest type**	**Ontology (Nature of reality)**	**Subject-object relationship**	**Purpose**
Analytical or positivist empirical approach to science	**Theoretical interest** (purely descriptive), describe, predict, control	Objective, given, singular, tangible, convergent	Independent, neutral, value free	Generalize knowledge context-free
Rationalist hermeneutic approach to science	**Practical interest** (technological or instrumental). Understand, explain through interpretation	Constructed, holistic, divergent, multiple	Interrelation between the subject and the object.	mathematical logical knowledge
Critical social or experiential approach to science	**Emancipatory interest** (oriented to transformation). Explain, criticize, transform.	Constructed, holistic, critically transformed, materialistic	Interrelation between the subjects by the commitment to change	Symbolic and evaluative knowledge
Complexity or emergent approach to science	**Integrative interest** (oriented to knowledge and action). Relational integration of knowledge	Systemic, hologrammatic, retroactive, recursive	Action and knowledge are inseparable	Systemic and relational knowledge

Adaptado de Soto-Molina, J. E. (2016)

On the other hand, for the supporters of the complexity paradigm, language is a symbolic system, a communication system that includes a vocabulary or lexicon of words (symbols), the basic elements, and a grammar (syntax) or set of rules to combine the words in subsystems that are articulated in the thought under some complexities that offer the interactions of the subjects. This complexity theory inscribes language within a social semiotics, understanding it as a system through which related meanings are created and exchanged.

3.1. Purposes of each paradigm

Regarding the purposes of the empirical-analytical research paradigm, it seeks to generalize knowledge, to produce context-free knowledge applicable in any circumstance. The case of the hermeneutic approach works with its purpose, that is, to generate working hypotheses in given contexts. The particularized knowledge that undoubtedly allows explaining the case in question. For the socio-critical or Marxist approach, the transformation of reality is the sole purpose of knowledge. Reality is only known to the extent that it is consciously transformed, in a contested manner by the researcher. While for the paradigm of complexity, the purpose is to generate multidimensional knowledge, dialogued knowledge between the different disciplines of knowledge, where extremely complex, multidisciplinary explanations can be achieved, which give answers from different fields of knowledge to what is being investigated.

Regarding the relationship of the paradigms with the following categories, the purpose of the explanation or the causality that recognizes the different types of paradigm, the role of values, that is, the axiology, the dimension of the paradigms and the foundations. For positivism, the explanation or causality is absolutely clear, positivism is a paradigm that seeks to establish causal relationships, that is, to search for connections between causes and certain effects. For this, it necessarily uses statistical research, varied and multivariate analysis in statistics. For the hermeneutic approach, on the other hand, we do not talk so much about the causal explanation, but about the interaction of factors, that is, the relationship that exists between factors that may have a certain degree of connection or association, but that are not necessarily testable in competitive terms. In the case of the socio-critical paradigm, there is indeed a much broader complexity than the simple causal relationship and varied and multivariate analysis that is known in positivism. For the socio-critical paradigm, reality is a synthesis of multiple determinations, which means that there is multicausality, multiple factors that are related to each other but that do have causal results. Therefore, they produce a synthesis, a certain product, a certain reality. In the case of complexity, the formation of structures, probably systemic arrangements, is recognized. Very rigidly organized systems, very structured, but the role of explanation has to do with locating uncertainty in those richly organized systems.

Concerning axiology, or the role of values in the formation of knowledge; For the analytical empirical approach or positivism, it can be said that there is a freedom of values, that is, positivism is free of values. The researcher must put aside his subjective assessment. This one must get rid of, get rid of his values now of knowing. On the other hand, in the hermeneutic paradigm there are values. These are given, they influence all research from the very moment in which the researcher defines studying a certain topic. From there he is already playing and activating the values. The researcher is playing a conditioning role in interests, in preferences, in what he observes: the researcher. In the case of the socio-critical paradigm, he also recognizes the existence of values. The values are given. But, nevertheless, what Marxism raises is the need to criticize ideology to generate knowledge that is not contaminated by systems of thought or beliefs that seek to legitimize and seek to naturalize certain orders, or regimes of power. In the case of the paradigm of complexity, the role that the responsibility of the researcher fulfills in always seeking knowledge that is democratic, that is participatory, and that obviously generates a climate of responsible citizenship, where there is absolute and Total freedom. (Osberg, D., & Biesta, G. 2010).

Regarding the dimensions of the paradigms, the positivist paradigm is hypothetical deductive because it starts from a theoretically established hypothesis and the entire process of knowledge is produced from deductions. In the case of the hermeneutic approach, it is a paradigm whose dimension is fundamentally interpretive. It focuses on recovering the point of view of others, of the people being investigated, naturalistic because it seeks to capture the phenomena in their full naturalness and therefore the use of qualitative methodologies is central. In the case of the socio-critical paradigm, the work dimension of paradigms and critics is basically the critique of knowledge, the critique of society. This critique is the key factor for knowledge to be an element or a factor of change, of transformation of social, economic, cultural structures, etc. etc. For the complexity paradigm, the dimension of separation is basically located in reflexivity, it is not a paradigm that poses the necessary relationship of knowledge.

Observing the fundamentals of paradigms. For the analytical empirical paradigm, the basic theoretical foundation is logical positivism. Which comes from authors such as Augusto Comte who proposed that it was possible to generate knowledge of society from the use of research methods that will be applied in the natural sciences. Let

us remember that Augusto Comte was an author located more or less in the 19th century. , a period in which the boom in the natural sciences had basically wiped out any possibility of knowledge that was not scientific and based on that scientific spirit of the time, Augusto Comte stated that the purpose of scientificity in the social or human sciences , the sciences of society. That is a positivist foundation of the sciences. Hence the approach to recover the methods of the natural sciences to study society. He was considered the first great current and scientific tendency. For others, extremely dominant, even until the middle of the 20th century, in the academy; Positivism has been a very dominant current within research. On the other hand, for the hermeneutic approach, which is a reaction to positivist approaches, the foundations have more to do with phenomenology. Approaches developed by authors such as Dilthey, Max Weber, Husserl, Gadamer, etc., who propose to study the phenomena that have to do with the qualitative, the spiritual, the cultural, that is, with the symbolic and therefore a completely different from what positivism proposes.

Research paradigms				
Paradigm	**Causality explanation**	**Axiology (the role of values)**	**Dimension (method)**	**Foundation**
Analytical or positivist empirical approach to science	Cause effect relationship	Free of values	Deductive hypothetical	Logical positivism
Rationalist hermeneutic approach to science	Interaction of factors	Values, and data influence all research	Interpretive, naturalistic, qualitative	Hermeneutics, interpretationist
Critical social or experiential approach to science	Synthesis of multiple determinations	Values, and data critical of ideology	Dialectical or sociocritical	Critical theory, marxism
Complexity or emergent approach to science	Uncertainty in richly organized systems	Phenomenology	Reflexibility	Systems theory, information, cybernetics, and communication

Adaptado de Soto-Molina, J. E. (2016)

In the case of the socio-critical paradigm, the approach is clear, it is based on critical theory and Marxism. This is a very dominant current of thought during the 20th century in the social sciences. Which states that any type of knowledge of reality always starts to know. Critical theory or Marxism as the foundation of the socio-critical paradigm suggests that reality can be known by focusing and concentrating on the material economic processes of a society that are the explanatory key to other cultural, ideological, political, legal phenomena, etc.… While for the paradigm of complexity, systems theory, theories of information, cybernetics, and communication are the basis of this paradigm. Actually, the latest developments in knowledge regarding cybernetics and on the subject of artificial intelligence, autonomous systems, the learning capacity of systems, at the same time systems theory, the generation of networks of information and communication are the theoretical foundations of the paradigm of complexity.

The last dimensions of analysis of the paradigms that we are going to analyze now have to do with the approach regarding the theory and practice of these four paradigms and the quality criteria that recognize the paradigms, the techniques, instruments and research strategies in terms of the data analysis in each of the paradigms.

Concerting to theory and practice, positivism states that both are dissociated. There is no doubt that the positivist paradigm will always state that in its investigations the central and fundamental role will be centered on theory. The idea of research is where there is a rigid structured theoretical framework, a well-defined theoretical framework from where the indicators come from, where the variables come from to carry out the measurements, based on the data collection that is positivist research. Therefore, there is a divorce or a dissociation between theory and practice.

In turn, in the hermeneutic approach, theory and practice are related, there is mutual feedback. In any case, for the hermeneutic approach, practice is the starting point to generate knowledge, that is, first we experience, live, know a reality and then we can only formulate or dare to propose explanatory theories of the reality that we are wanting to know. On the other hand, in positivism it is the other way around, it goes from theory to reality and in the hermeneutic approach, it starts from reality, but towards theory. In the case of the socio-critical paradigm, the approach is much more controversial because theory and practice are inseparable.

As the goal or purpose of the socio-critical paradigm is the transformation of reality. It is only possible to know reality as soon as it is transformed. Therefore, there are no theories without practice; in social terms there are no theories without revolutionary practice. This means that when someone wants to know a social phenomenon, they have to transform or endeavor to transform that social phenomenon, so that the phenomenon will react and reveal its contradictions, its laws, its relationships and will to be a moment in which from the change and conscious transformation of reality the individual will generate knowledge that can explain that reality. Otherwise, there is no way to know reality. for the socio-critical paradigm.

Regarding the paradigm of complexity, in the same way, there is no dissociation between theory and practice. For this paradigm, there is the systemic vision that anything that affects one part of the system will necessarily affect all the other components of the system. Therefore, the action of the person or individual of the researcher will always influence the system. An effect that can generate much more complex relationships within the field of research, for which reason complexity is the central component of the explanation of any of these dimensions of the research paradigms.

In relation to the quality criteria, in the empirical analytical paradigm, the desire for validity, the reliability of the data, and objectivity are the three criteria that give quality to positivism and support research from its paradigm. For the hermeneutic paradigm it really has to do with credibility, confirmation of information, and transferability. For the socio-critical paradigm, it has to do with intersubjectivity and the consensual validity of knowledge. For the paradigm of complexity, the quality criteria must do fundamentally with a continuous dialogue of knowledge between the different disciplines of scientific knowledge. It is Morin who raises the need for dialogical knowledge, knowledge that breaks the borders and disciplinary structures and rather allows the integration of knowledge so that reality is known in a multidimensional way.

Now, about research techniques and instruments, in the case of the analytical empirical approach, the techniques are quantitative, they are measurement-oriented, there are tests, questionnaires, measurement scales, observation, content analysis, etc. In the case of the hermeneutic approach, the research techniques are qualitative, they are descriptive and have more to do with narrative technologies, with technologies for obtaining narrative information, the interview, the field diary, the life stories, the focus group, etc. For the socio-critical paradigm, the research is based mainly on case studies, this can also occur in hermeneutical research, but the socio-critical approach makes extensive use of case studies, and the techniques are dialectical, that is, they are techniques that can interchangeably incorporate techniques. and quantitative and qualitative instruments, that is, a methodological articulation that does not rule out any possibility of using quantitative and qualitative techniques, but it should be recognized that it is the only level of methodologies in which there can be a combination or coordination of techniques and instruments. quantitative and qualitative, in the case of the socio-critical approach.

In complex research, it is possible to speak indistinctly of a professional use of quantitative techniques and qualitative techniques, in the same way. In the complexity paradigm there would be a kind of freedom or openness to methodological creativity. As long as it is consistent with the principles and starting points of the complexity paradigm that have to do with systematicity, recursion, complexity, etc. So, the complexity paradigm does state that quantitative or qualitative methods can be used. There are some authors who suggest that the paradigm of complexity would lean more towards qualitative techniques by using only qualitative procedures. But without a doubt, the methodological path and in terms of techniques is completely open.

Concerning the analysis of the data, in the analytical empirical approach it is basically statistical, descriptive, inferential. In the hermeneutic it is analytical, inductive and there is the necessary triangulation of the data. In the

critical partner, the analysis of the data is intersubjective, it is dialectical. The data is always interpreted in the light of the theory and of the central approaches of Marxism contained in the dialectical method. In the case of complexity theory, data analysis is open to much broader possibilities, but without always losing sight of the principles or presuppositions of complexity, which has to do with always recognizing the existence of systems, the hologrammatic principle, the principle of recursion, and the principle of feedback, that is, the reentry of the effects to act again on the causes and modify the phenomena into things that are much more complex for knowledge and understanding.

Research paradigms				
Approach	**Theory-practice**	**Quality criteria**	**Techniques, instruments, strategies, and procedures**	**Data analysis**
Analytical or positivist empirical approach to science	Dissociated	Validity, reliability, and objectivity	Quantitative, test measurement, questionnaire, observation	Statistical, descriptive, and inferential
Rationalist hermeneutic approach to science	Related, mutual feedback	Credibility, confirmation, and transferability	Qualitative, explanatory	Deductive, triangulation
Critical social or experiential approach to science	Inseparable, there is no theory without revolutionary practice	Intersubjectivity, consensual validity	Case studies, dialectical techniques	Intersubjective, and dialectical
Complexity or emergent approach to science	Action presupposes complexity and systematicity	Intersubjectivity, consensual validity	Qualitative, and quantitative; mixed investigations	imaginative and creative

Adaptado de Soto-Molina, J. E. (2016)

4. Synthesis

By way of synthesis. The procedures, techniques, and the philosophical, cultural, and informational bodies are determined by the type of research that also privileges a prototype of knowledge that originates from these paradigms of science analyzed above. Each paradigm reflects a worldview of the researcher who must be coherent in the use of procedures, techniques, and philosophical, cultural, and informational bodies that undoubtedly reflect his way of thinking as a researcher. This is what allows you to first access knowledge and then produce it in the context of a given investigation.

Systems thinking is a perspective that is applied in the context of social and human research to understand and address the complexity of the phenomena studied. It is based on analyzing systems as entities composed of interrelated and interdependent parts, recognizing that the whole is more than the sum of the individual parts (Morin, 1995).

This way of thinking seeks to understand the interactions between the parts of the system and how they influence each other. Rather than looking at each variable in isolation, the system is considered, recognizing that the parts affect each other and that understanding the system requires examining the interconnections.

In the field of social and human research, systemic thinking makes it possible to address the complexity of the phenomena studied and understand the relationships between the different aspects involved. The importance of analyzing the contexts, social interactions, beliefs, practices, and representations of the subjects is recognized, in addition to empirical data, to obtain a broader and deeper understanding of social phenomena (Martínez, & Londoño, 2012).

Systemic thinking also focuses on aspects such as organizational culture, problem solving, leadership oriented towards team building, staff capacity development, communication and information flow, as well as openness to change as an opportunity. It seeks to understand how these elements are intertwined and affect organizational learning and the ability to adapt in a context of permanent change (Dualde, 2021).

In summary, systems thinking in the context of social and human research refers to the perspective that considers systems as interrelated and interdependent entities. It seeks to understand the interactions between the parts of the system and how they influence each other, recognizing that the whole is more than the sum of the individual parts. This approach allows addressing the complexity of social phenomena and understanding the relationships between different aspects, including contexts, social interactions, beliefs and practices of the subjects.

References

Boladeras Cucurella, M. (2001). Public opinion in Habermas. Anàlisi: quaderns de comunicació i cultura, (26), 0051-70.

Dualde, F. J. (2021). Systemic thinking. Rehearsal. Organizational culture: a miniature society.

Habermas, J. (2003). Discourse ethics and the question of truth. Barcelona: Paidós.

Habermas, J., & Husserl, E. (1995). Knowledge and interest / Philosophy in the crisis of European humanity (Vol. 12). Universitat de València.

HABERMAS, J (2001): Communicative Action Theory: complements and previous studies. Espana, Cátedra.

Heidegger, M. (1994). Hegel's phenomenology of spirit. Indiana University Press.

Morin, E. (1992). From the concept of system to the paradigm of complexity. Journal of social and evolutionary systems, 15(4), 371-385.

Morin, E. (1995). Complex thought. Gedisa. Madrid.

Morin, E. (1999). Organization and complexity. Annals of the New York Academy of Sciences, 879(1), 115-121.

Martínez, F. L., & Londoño, J. E. (2012). Systemic thinking as a methodological tool for problem solving. Revista Soluciones de Postgrado, 4(8), 43-65.

Osberg, D., & Biesta, G. (2010). Complexity theory and the politics of education. BRILL.

Salazar, I. C. (2004). The paradigm of complexity in social research. Educere, 8(24), 22-25.

Soto- Molina, J. E. (2019). Social representations, systemic thinking, and intercultural approach to language teaching. Entretextos, 13(24), 45-55.

Soto-Molina, J. E. (2016). Epistemological and cognitive foundations of social and human research. Revista Cedotic, 1(1), 114-138.

Soto, J. (2017). From an ontology of language towards an intercultural ethics of otherness. Amauta, 15(30), 135-150.

Soto-Molina, J. E., Molina, M. K. R., & Vanegas, W. J. (2021). Notion of alterity in education as an emancipating experience of intercultural dialogue. Revista de filosofía, 295.

Valencia López, E. (2007). On the sphere of morality in Hegel. Universidad Javeriana