Statistical Models and its Impacts in Scientific Explanation:

An Analytical Study applied to social sciences.

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Abstract:

The aim of the present study is to examine the validity of statistical models as applied in social sciences, and its role in scientific explanations. This study displays some historical perspectives that aimed to give explanation of both social phenomena and psychological behaviors. It is indicated that both inductive and deductive approaches could not give proper explanations to social events, or psychological behaviors. We will try to give insights on concept of causality and its epistemological foundations. We claimed in this study that statistical inferences can lead to plausible explanations of social phenomena. Therefore, we apply the probabilistic models to indicate how they are valid to bring social sciences to the domain of exact and natural sciences. The probabilistic model based on factor analysis, as this model employs the most modern ideas, as well as the most accepted and widespread model at the present time.

The probabilistic interpretation is considered the closest to the nature of the social phenomenon that is based on a rational, changing being. This study gains its importance in highlighting the epistemological role of the philosophy of social sciences in dealing with this problem of a special nature. This study depends on critical analysis approach to present and analyze of epistemological foundations. In addition, this study seeks to analyze the
factor analysis approach, as it has been employed to uncover causal relationships in the context of social sciences. The focus is no

longer on the possibility of generalization and prediction, but rather the focus has become on describing the characteristics, mechanisms and factors that relate to the cases of individuals, families, small groups and community organizations. The probabilistic model, as represented in the structure of factor analysis, proposes a relationship between the macro and the micro or between the constant and the variable. The constant here is nothing but context that plays an important role in determining the form and character of the correlations and relationships between different variables. Then, in the context of social sciences, the researcher seeks to analyze these mathematical values in order to understand the phenomenon and provide a set of predictions and generalizations to reach almost certain results. This is why we can say that inferential statistics are used to explain social phenomena or human behavior as a scientific attempt to generalize results and reach - to some extent - possible results based on a measure that is designed as a tool for collecting and analyzing data.

Keywords: causality, social sciences, Scientific Explanation, Probabilities- Factor analysis, mathematical modeling.

الملخص باللغة العربية

تهدف الدراسة الحالية لطرح اشكالية ع امكانية استخدام المنهج الكمي في تفسير الظواهر في العلوم الاجتماعية ومدى صلاحيته. وذلك من خلال التركيز علي طرق تحليل البيانات عبر دراسة المنهج الاحتمالي في تفسير البيانات. بالاضافة الي اسلوب التحليل العاملي للمتغيرات المتضمنة في دراسة الظاهرة في العلوم الاجتماعية. وقد اتضح لنا ان هذا المنهج اكثر فعالية من المناهج الاستدلالية.

بتطبيق نظرية الاحتمالات علي البيانات في العلوم الاجتماعية سيقود ذلك لمعرفة نوع جديد من الاطراد الاحتمالي ومن ثم نمط من التفسير السببي مؤسس علي قوانين الاحتمالات. ان الاهتمام الان لم يعد منصبا علي التعميم والتنبؤ ولكن علي وصف خصائص الظاهرة والية تعاملها والعوامل التي تؤدي لربط الفرادى بالمجموعات وتنظيم هذه الفرادى او العناصر. ففى سياق العلوم الاجتماعية فان الباحث يسعى لتحليل القيم الرياضيةكى يفهم الظاهرة. ويقدم عددا من التنبؤات والتعميمات للوصول الي نتائج دقيقة. ولهذا يمكن القول ان الاحصاء الاستدلالي يستخدم لتفسير السلوك الاساني والظواهر الاجتماعية كمحاولة علمية لتعميم النتائج والوصول الى حد ما الي نتائج محتملمة ممكنة مؤسسة علي مقياس تم تصميمه كأداة لجمع وتحليل البيانات.

ويقترح النموذج الاحتمالي، كما هو ممثل في بنية التحليل العاملي، وجود علاقة بين الكلي والجزئي أو بين الثابت والمتغير. الثابت هنا ليس سوى أي السياق الذي يلعب دورًا مهمًا في تحديد شكل وطبيعة الارتباطات والعلاقات بين المتغيرات المختلفة. وقد توصلت الدراسة لعدد من النتائج المهمة التى يمكن ان تقود الى عملية التكامل بين العلوم الاجتماعية و الدقيقة كما ستضح فى نهاية الدراسة.

الكلمات المفتاحية: السببية، العلوم الاجتماعية، التفسير العلمي، الاحتمالات، التحليل العاملي، النمذجة الرياضية.

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Introduction:

The principle of causality is one of the most important principles discussed in philosophy and science alike, and the most complex and intertwined. The question we ask here: How is this principle applied in the social sciences? In other words, is it possible to find a formula or model to describe causal processes and the conditions and conditions that govern them, such that this formula is valid for use in the context of the social sciences? Were sociologists and psychologists able to justify their causal claims? What role does causality play in social and psychological research? Many questions and problems were raised by social scientists when they were talking about the methodology of causal explanations. This debate has produced multiple theories and models, some of which cast doubt on the possibility of talking about causal explanations in the context of social sciences and history at all.
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Some borrowed proven scientific theories that are used to provide an explanation for the scientific activity of natural phenomena, and they tried to transfer this scientific explanation to the field of social sciences and psychology. For example, but not limited to, we find that naturalists, whether in the field of (neuroscience or quantum physics), aim to analyze mental activity in light of the theoretical principles of the results of these theories,

as we will discuss this with Patricia Church land, Roger Penrose, and psychologist Stuart Hameroff

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In fact, these arguments limit human understanding and awareness to referring to material factors and looking at the human mind in its materiality. Therefore, concepts such as desire and pain do not exist, which falls under the concept of Eliminative materialism.(1) .(Penrose.1991 see also Penrose:1994, Penrose:2011, Churchland.1996 &1992).. :1996 This study claims that causality is not a single concept, and it cannot be interpreted according to a single account, or a specific model. Rather, there are different accounts and interpretations according to the structure of science, its categories, and the context in which this principle is used. Therefore, it becomes useful to review these models through analysis and refutation.

First: Development of causality in social sciences:

We first clarify that there is no agreement on a specific definition of the causal principle by social scientists. Dictionaries and dictionaries contain many definitions that express distinct positions and trends, including, for example:

- Hoult's definition: which believes that the cause is a group of relatively close factors that precede a specific event in time. (Hoult.1972.54)
- Fairchild definition: which states that causality is an expression of the necessary connection between cause and effect in a series of elements and the effect, movement, or change in behavior that results from this sequence. (Fairchild.1966.34).
- Mitchell's definition is based on the distinction between causality based on intentionality or functional causality as opposed to other forms of causal thinking. He argues that all causal generalizations can be expressed in the form of probabilistic statements. (Mitchell.1968.28).

- Theodorson's definition, which is based on the assumption that social facts are interconnected in a unidirectional relationship, such that the occurrence of one leads to the other. This principle is borrowed from the scientific explanation of causality, whereby the function of science is to reveal dependency relationships between cause and effect and formulate laws that express this. (Theodorson,1969.350).
- Davis's definition: According to him, causality is the expression of a connection between two or more variables, such that rearranging the cases in one of them is followed by a rearrangement in the other. If X causes the variable Y, then a change in X is supposed to result in a change in Y. (Klein.1987.20)

When analyzing these definitions, we find that some of them require that the causes directly precede the results, while others do not. Also, some definitions require a temporal separation of some kind between cause and effect, while others acknowledge that the relationship between cause and effect can exist simultaneously. Some definitions seem more deterministic, while others are more probable. Some maintain that causes must be necessary antecedent conditions, while others emphasize merely sufficient antecedent conditions so that the event becomes a chronological antecedent, but does not necessarily produce the "event" called the effect. While others recognize both, i.e. necessary and sufficient conditions.

Some definitions also emphasize the asymmetry of causal relationships, while others explicitly allow for the mutual influences of variables in the causal system. Some definitions specify causal relationships to single events, while others recognize a broader range of social phenomena as potential factors or effects. (Hamdway, G.2015).

It is clear, then, that each definition has a specific epistemological position from which its owner starts. Those who

hold the experimental trend differ in their analysis of causality from those who hold the Gestalt trend, and those of the latter trend differ in their perception of those who hold the contextual trend.

Therefore, it becomes necessary to identify the most prominent models that have provided a fruitful analysis of the concept of causality in the field of social and behavioral sciences, and to recognize the role that these models play in explaining human behavior, and then social phenomena, as well as the theoretical and methodological foundations on which these models were based in revealing and analyzing the principle of causality.

Second: Classical Perspective as applied in social science:

Positivism is a scientific, applied and historical extension of naturalism. Just as naturalism emphasizes the concept of experience and relies on causality in providing a scientific explanation for natural phenomena by subjecting them to deterministic laws, so is the case with positivism, which emphasizes the interpretation of social phenomena based on knowledge of the causes of their occurrence and subjecting this relationship between the influencing factors and the phenomenon under analysis to study to reveal the law that explains it.

Hence, we see that there is an analogy between the natural phenomenon and the social phenomenon in the general application of the experimental concept of causality, in both the natural and social sciences, albeit in a modified form - to some extent - in the case of the latter. Most trends that fall under the umbrella of positive sociology recognize the validity of this doctrine.

The positivist doctrine is considered one of the major sociological doctrines in the history of Western thought. It created an epistemological break with the mythological and metaphysical perceptions that were prevalent, by adopting scientific experimentation as a method for obtaining facts. The intellectual

roots of the interpretive model, which is based on the natural experimental method, lie in France and it spread and spread in England.

We find that achieving important results - whose validity can be verified - in the field of natural sciences has given the motivation to thinkers in the field of social and psychological sciences to apply this natural experimental approach in the field of social life and human behavior. In this climate, which enjoyed a shift away from philosophical and metaphysical interpretations, social thinkers were able to present their ideas and contributions regarding a positivist philosophical model for the social sciences.

San Simon, Herbert Spencer, August Conte, and Emile Durkheim are among the largest representatives of this trend. They laid the foundations of this doctrine by relying on the methods of natural sciences in the nineteenth century AD, and by resorting to hypotheses, taking external observation, tending to experimentation, carrying out many tests, issuing general laws and theories, The comparative approach, guided by experimental determinism based on causality and correlation between independent and dependent variables. Therefore, the natural sciences, including: physics, biology, physiology, and chemistry, were a distinct and suitable example and model for these positivist sociologists to follow. (Hamdway, G.2015).

We can seek the intellectual roots of the methodology of causal explanation in the social sciences - according to the natural positivist model - in some philosophical theories applied in the field of natural sciences, for example the theory of (David Hume 1711), according to which causality is considered a matter of experimental rules. So the relationship between cause and effect is an external relationship, in which cause and effect are considered two separate and independent beings, that is, beings that do not depend on each

other for their formation. The matter is not limited to external natural incidents, but rather extends to include psychological interpretation of incidents and the issue of reducing what is external to what is internal, or what is known as logical psychology. We find this process in a similar way in the context of social sciences under the names of independent variables and dependent variables.

As well as the theory of (John Stuart Mill J.S. Mill), which is based on the axiom that there is no difference between the natural sciences and the human sciences except in the degree of accuracy and complexity, and therefore the search for natural laws of human behavior is legitimate. Mill emphasizes that there is undoubted confusion among those who believe that the thoughts, feelings, and actions of humans are not a subject of science, as there is for external subjects of nature. .

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Any event that occurs is a subject of science, even if the laws governing it are not now known, and even if those laws are not discoverable by our current capabilities. This is what we previously pointed out, that there is a response to what is external to what is psychological reduction. We can approximate this understanding through the following example in the context of natural sciences. We find that meteorological phenomena such as rain and its relationship with sunlight, so far scientific research has not succeeded in confirming the sequence of causes and results in that phenomenon. In order to reach the point of being able to predict its occurrence with certainty, Or even with a high degree of probability somewhere on Earth. But this did not prevent these phenomena from being dependent on laws, and that these laws must be derived from other known laws. Such as the laws of heat, electricity, and evaporation etc. .

This also did not prevent meteorology from being considered a science, except that the difficulty of the facts on which the phenomena depend makes it an incomplete science. Likewise, astronomy was a science that was not characterized by accuracy

until its phenomena were included under laws, thus transforming it into an accurate science, as the causes that lead to changes in celestial bodies or in their movement and rotation and the fall of comets.

Others have their scientific reasons, which are ultimately subject to laws that are precise and strict. The same applies in the context of the social sciences, which can be considered in the same position as astronomy before it becomes an exact science. (Anwar.1988.33).

The apparent difference between the data of the human sciences and the natural sciences arose from the failure to acknowledge that the direct data in all sciences are merely human responses to something that provoked those responses. Information in our world is known through human responses, from which we derive knowledge about the existence of any phenomenon in addition to knowing its characteristics. The habit, idea, or belief is considered as real, tangible, observable, and measurable data, that is, it is subject to scientific study, just like the study of a piece of stone, a table, or an animal. (Anwar.1990.55). Accordingly, positive sociology relies on the study of causal relationships and associationism between human phenomena studied or observed, similar to the methodology of research into natural phenomena. The question now is whether there is a symmetry between the experimental method in both the natural sciences and the social and psychological sciences.

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If the positivist model derived its epistemological structure from the experimental method based on observation and experimentation, then what are the features that distinguish the positivist model in the social sciences?

Among the most important features of the positivist model that was later developed by modern positivist schools, as expressed by representatives of this doctrine, are the following:
Commitment to the unity of method between the natural and social sciences; To believe that they both use similar approaches. This similarity implies that appropriate modifications can transform natural science curricula into appropriate social science curricula; Hence, Durkheim stipulates, as a first and fundamental rule of sociology, that social phenomena be considered as objects, on the basis that they are material objects or subjects, which can be subjected to external observation. In this context, Durkheim says:
"Social phenomena constitute things, and they must be studied as things, because everything that is given to us or imposes itself on observation is considered to be things. Therefore, we must study social phenomena in and of themselves, and in complete separation from the conscious individuals who represent them intellectually. We must study them from the outside as things separate from us. It is seen that this rule applies to social reality in its entirety, without exception.

For Durkheim there is no need to take the intentional states of individual agents - their motives and causes - into account. The analysis of society must be objective, objective concepts that can be quantified must be used, and the sociologist must strive to describe general manifestations of social life rather than individual manifestations. Philosophers such as Karl Popper, who support the empirical model, believe that there may be differences in degree between the social and natural sciences, but there are no differences in kind, as both adopt the hypothetical deductive method, which provides deductive, intuitive explanations that are tested by prediction.

It is called the hypothesis approach. Because it does not provide certainty regarding the scientific judgments that we test, and in fact these judgments can always retain the character of an attempt

regarding hypotheses. The important thing is to realize that we are always concerned with explanations, predictions, and tests, and that the approach to hypotheses is always the same. (Anwar.1990.55:33)

Among the features that supporters of the positivist model emphasize is that the social sciences must be able to provide causal explanations for social phenomena just as the natural sciences provide. Hence, positivist sociology relied on the methodology of causal explanation in studying societal phenomena, meaning the study of independent variables and dependent variables, within an inductive and scientific experimental vision, in order to obtain laws and theories, or to reduce a group of phenomena to the smallest number of strict logical operations.

Indeed, sociologists have sought to provide causal explanations regarding the division of labor in many societies, and the forms of social stratification. Economists sought to build models to explain consumer behavior and types of market societies, and the purpose of all of this was to provide a causal analysis in the context of social sciences to cover the various phenomena that this science deals with.

Examples of these explanations include: In 1999, the Home Office in Britain predicted that the number of burglaries and thefts would increase by approximately a third in a short period of two to three years. The expected rise in crime will be a result of the increase in the number of young males in Britain. In this case we have causal analysis and prediction in one statement. The reason for the increase in the number of burglaries and thefts is the increase in the number of young people and the increasing amount of goods that can be stolen. This last phrase is the causal conditions that are said to lead to the effect or result. However, the question that comes to mind - here - is as follows:

Which causal model is most appropriate for the social sciences? It appears from this example that this event cannot be explained using a model of mechanical causation of natural events. The model of mechanical causation may explain why a planet revolves around the sun, but it cannot explain why World War II occurred. However, the previous example illustrates how social scientists seek causal explanations for social events similar to natural phenomena. However, the issue of formulating an appropriate causal philosophical model through which these results can be expressed remains a thorny issue, as it requires examining other issues related to the possibility of the existence of regularities underlying social phenomena.

Sociologists have realized this difficulty, and in this, Durkheim says: “All that this science (i.e., sociology) demands is that people acknowledge that the law of causality also applies to social phenomena. But sociology does not establish this law as a logical necessity; rather, it only determines it as an experimental hypothesis to which legitimate induction has led.

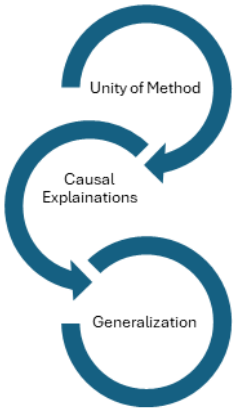
Since the law of causality has been proven to be true in other aspects of nature, and its authority has gradually extended from the natural chemical world to the biological world, and from this last world to the psychological world, we have the right to acknowledge that it is also true of the social world. From now on, we can add the following fact: Research based on this principle tends to confirm its validity. Our method is objective; This is because it is based entirely on the idea that social phenomena are things and must be treated as things.(Mats.1992:107).

Explanations of human events or actions are derived from one or more laws or even a law-like generalization. (Similar to the theory of universal law and covering low formulated by Carl Hempel for causal explanation in the natural sciences, in which causal explanation must be based on a general law) These laws

express general empirical connections. Between events or social phenomena. We must clarify - here - that association does not mean causation, but rather causation must include a connection in one way or another. Hence, the important matter is to determine whether the observed degree of association of variable X with variable Y can be considered to have causal significance. (Goldthorpe.2001.16).

The question that must be asked - here - regarding these social laws or law-like generalizations: Are they laws at the individual or collective level? Scientists have differed in this regard. A number of scientists have adopted the individual position and considered that there are laws that govern the behavior of individuals and express their intentions and motives, such as Freud and John Stuart Mill, who believed Psychological laws exist at the individual level. At the individual level, there are some effective mechanisms, such as the individual's desire To improve his social conditions. While other scientists, such as Durkheim, believed that the individual causal explanation could explain the phenomenon due to its inadequacy in applying its results and generalizing them to similar cases. It is like the introspective approach is not enough and has taken a comprehensive approach.

Durkheim rejected the idea that all total social changes can be reduced to individual factors, and pointed out that the economic activity of society cannot be limited to the desire of individuals to acquire wealth, and social facts cannot be explained by reference to individual facts or even a set of individual facts. Individualism cannot explain large-scale social phenomena. Hence, an explanation of social facts must be sought in the nature of society; Society exceeds the individual in space and time, and the whole is greater than the sum of its parts.



- **Figure 1 indicates to Features of Explanation classical model**

The matter is not limited to these features, as we can include a number of epistemological features that are attributed to this positivist model of interpretation in the field of social sciences, such as the quantization feature of using the language of mathematics as a symbolic language to express the relationship between the variables of the experimental study. (Finerat,2017).

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In addition to the feature of determinism, which makes the explained results of the phenomenon almost certain and the interpretation inevitable, which excludes the psychological dimensions. And internal factors that may play a role in the connections and interpretation of the studied phenomenon. In addition to the previous two characteristics, there is the characteristic of neutralism or objectivity in the experimental study of social phenomena--This is something that supporters of the symbolic or ideal trend question because it is linked to the world's ideology in the field of social sciences and that there is difficulty in the issue of separating what is objective and what is subjective.

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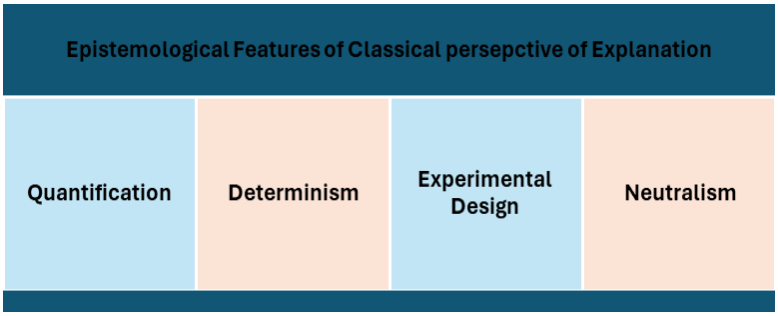
Finally, the characteristic of experimental design is that the researcher in the field of social sciences intends to design an experimental situation to isolate the variables that are the subject of the study in an experimental or quasi-experimental manner, until he finds out the effect of the independent variable on the dependent variable. But there is not enough space to explain these other features so that we can focus on the issue of causality as understood and presented by the positivist model, and it may be the subject of an independent study later.



Fig(2) Epistemological Features of Posivist's Model of Explanation

These were the most prominent features that characterized the positivist model through the presentation and analysis of the opinions of its representatives, and we may ask: -According to this model-, how can causal explanations be derived from patterns of human actions that cannot be directly observed?

How can causal mechanisms in different social structures be revealed, and can they be generalized? The answer is complex, as considering human phenomena as external objects or facts independent of the researcher, his will, and his inclinations is very complex, and has encountered a number of difficulties.

Therefore, we find that this theory declined at the beginning of the twentieth century, and only a few social scientists believed in the existence of causal explanations through experimental correlations between a number of relevant external variables. (Mats.1992.107)..

The most prominent criticism directed at this model is: The positivist view sees social reality as a structure of fixed entities with different characteristics. Causality flows in it from the large to the small and from general trends to specific results. Hence, the positivist view overlooked the fact that these entities change in the social context through death, birth, merger, and division. Consequently, this model ignored the social meanings and types that help form and change these entities.

In other words, the relativity of interpretation due to the change in the context in which the social phenomenon occurs from one society to another and the varying social or cultural connotations it carries. This is in addition to the fact that the same phenomenon may change and vary due to the social, economic, political or cultural transformations that society itself is witnessing, which is reflected in the experimental design of the phenomenon that is the subject of the study, which in turn will be reflected in the variation in interpretation. This is what we meant by referring to fixed entities as opposed to transformed entities. (Daniel.2014.259)

In addition, the positivist perspective overlooked an important aspect in human studies, which is the subject of interaction. We note that the experimental method in social and psychological research has led to leaving out important issues of their value for understanding and directing social activity. Among these issues is the aspect of social and psychological processes that lead to a quantitative or qualitative change in a social phenomenon. Or relationships between variables in certain social situations. How

can, for example, explain phenomena such as: juvenile delinquency, family disintegration, drug abuse...etc.,

Based on empirical principles or laws? If we say that poverty is the cause of deviation, then this interpretation is not correct from a practical standpoint. If poverty were the cause of deviation, then every poor person would be a deviant, and we would not be able to attribute the characteristic of deviation to the category of the rich, and this goes beyond the actual reality to some extent.

Therefore, it is preferable in this position not to rely on a principle or a generalization, and to rely - instead - on the concept of a relationship or probabilistic connection, such that we say that poverty can lead to deviance, or increase the chance of this occurring. We have three possible correlations between these two variables inverse, proportional and probabilistic relationship.

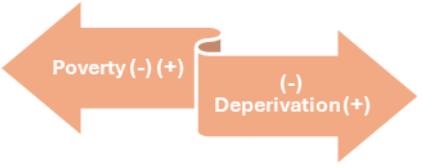


Figure (3) Probabilistic correlation between two variables depending on the context of the correlation

Thus, explanations of human actions cannot be automatic or mechanical - as is the case in the natural sciences - and there are no deterministic laws for human actions or their results in the strict sense, as is the case in the natural sciences. But we can claim that there is a form of determinism through which we can predict these actions. Purposeful behavior is the basic characteristic of a human being and what distinguishes him from other beings in the universe. What a person does in any situation may be the result of his choice among many alternatives.

The ensuing behavior occurs on the basis of which of the alternatives the individual believes has the highest probability of achieving his or her immediate goals. In order to "predict" what a person will do, one must know the person's state of mind moment by moment regarding what he is aiming for, and what alternatives he sees available to him, What are the intuitive possibilities that he assigns to each of these alternatives? Two people with the same goals, facing the same alternatives, may assign different probabilities. And then there are different choices. They may reach the same end through..

Different paths, as in strategic thinking, where one seeks to find associations between variables to reach a solution to the problem that is the subject of the study, depending on the steps of the strategy and the method of connections between the variables and their employment - although they differ - they may lead to the same result, which is to find a solution to the problem that is the subject of the study. There are actually some situations to which people can respond in the same way. However, this cannot be generalized. Hence, it can be said that the scientific methodology in social work is an ever-changing set of mental mechanisms that humans use to approximate some facts about reality. Human behavior cannot be reduced to a set of laws or principles through which we can explain and predict this behavior.(Zimmerman.1989;58)

Hence - it was said by some sociologists - that explanation in the social sciences must be understood as something other than causal explanation; Because what happens in social life cannot be causally explained on the basis of social laws that would To enable us to infer what will happen in the future. Motives, intentionality, and purpose of behavior are all factors that cannot be causally explained on the basis of social laws. However, we must clarify - here - that rejecting or questioning the comprehensive law model does not necessarily mean questioning the causal explanation itself.

The English sociologist Anthony Giddens (1984) agrees with us here in this analysis by saying, "The absence of recognized general laws in the context of the social sciences is not a coincidence, but rather due to the fact that the causal mechanisms in the social sciences depend on the interpretation of human action in the context of a network of intended and unintended consequences. (Mats.1992.107).

Hence, it requires a deep understanding of the behavior or actions of others in this situation." That is, causal explanation in the social sciences is permissible, but with a specific mechanism and according to other conditions, different from the mechanism by which causal explanation is applied in the context of the natural sciences.

Perhaps for these reasons, other ways were sought to understand human behavior, without treating it as a physical given or a natural phenomenon - similar to the positivist model - which does not enable the researcher to access the engines, motives, and meanings from which human action proceeds. Therefore, we can say that the positivist model of interpretation is considered a partial interpretation, as it is limited to isolating a number of variables - which are believed to be solely responsible for the occurrence of the social phenomenon or human behavior - without others that are likely to have a relative impact - albeit to a small extent - on the occurrence and emergence of the phenomenon. This makes the positivist model lack a comprehensive outlook. This is then reflected in the way those of the empirical positivist trend analyze the phenomenon, and in the way the variables are linked to each other in order to provide a scientific explanation for the phenomenon or behavior under study.

Hence, this trend tends toward a process of disintegration and reduction of the variables by selecting some variables and not

others, in contrast to the Holistic view. In the context of the previous analysis, we pose this question: How can the situation - which is considered a scene for the emergence of a social phenomenon or the birth of human behavior - be understood away from that partial view in which the action becomes an expression of an automatic movement?

And humans fall within an inevitable and necessary framework that does not take into account diversity and differences between individuals and multiple contexts? This is why we believe it is necessary to discuss another model of interpretation within the social sciences, which is the model of rational interpretation.

Second: Max Weber's Explanation of Social Phenomena.

This model simply emphasizes that the mind, with its hypotheses, is capable of understanding and then interpreting human and societal phenomena, in that they are conscious, voluntary phenomena that are not repeated and are not subject to consistency. Therefore, it must be dealt with a methodology different from the methodology of causal interpretation in the natural sciences, as it was the model of rational interpretation that depends on the combination of understanding and interpretation. The mental model looks at the societal phenomenon holistically using intuition and perception, then describes this phenomenon by highlighting its common and interconnected characteristics, thus reducing reality to an abstract intellectual model. The function of this intellectual model is to understand the elements that make up societal reality and explore their symbolic connotations by interpreting their meaning. (Hamdway.: 2015.24)

Max Weber (M 1864-1920), a German sociologist, is considered one of the most important sociologists who adopted the approach of understanding. Perhaps this is due to his belonging to the German philosophical heritage, which exalts the importance of

mind over matter. For him, the goal of sociology revolves around understanding and interpreting social action. This action is explained causally by linking it to effects and results. What is meant here is the behavior of the individual or person within society. Regardless of whether that behavior is apparent or implicit, it emanates from free will or is the result of an external order. This action - during communication and interaction - takes on a subjective meaning for the other, as long as this social action is linked to the self and intentionality.

This action is the essence of the processes of influence and influence through which social structures and patterns are formed through the interactions of individuals with each other. (Hamdway. 2015:10) In other words, in order to understand Weber's explanatory model of social phenomena in light of his ideal orientations, we must first understand that social action includes two meanings:

The first: The meaning is at the level of the individual who performs the act, and depends on his desire, inclinations, and intention to carry out this act.

The Second: The meaning is at the group level or at the collective level, and it depends on the motives of the group to which the individual belongs and the significance of this action in relation to the goals and motives of the group to which he belongs.

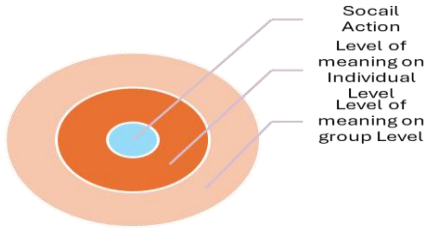


Figure (4) Weber's levels of social action theory

If the positivist school dealt with societal phenomena as objective things, then Max Weber was interested in studying social action or behavior that is achieved through interaction between individuals, when this action takes on a subjective and purposeful meaning. Therefore, it was said that Max Weber moved sociology from the world of objective things to human actions. That is, move from the object to the subject, or from the thing to the person. It also moved beyond the positivist approach towards the interpretive approach, which is based on human self-understanding and interpretation. Thus, he created an epistemological break within the course of sociology, by establishing the hermeneutic school or the sociology of understanding. (Hamdway. 2015:10)

The question now is: How did Weber subject social action to causal understanding and interpretation?

Max Weber defines sociology, in his book "Economy and Society," saying: "Sociology is the science that is concerned with understanding and interpreting social activity, and causally interpreting its event and result." It seems - here - that Weber did not consider understanding and interpretation as conflicting or distinct activities, but rather considered them as two essential and complementary parts. For the same method, the sociological research method. (Mats.1992.).

All human actions - which are meaningful - can be explained causally, by understanding the meanings contained in the action. These meanings are what drive people to a certain type of action. For Weber, this integrated perspective of understanding and interpretation is a basic and decisive condition for causal interpretation in history and the social sciences. It is required on the one hand to clarify the social and cultural meaning of what is to be explained causally, and on the other hand to know the processes that link cause and effect. This causal analysis is also a prerequisite for understanding the cultural significance, distinctive character,

interrelationship, and historical formation of various phenomena. Therefore, in several cases, Weber treats the concepts of understanding and interpretation as synonymous. (Mats.1992.107).

We may now ask what Weber intended by understanding, and how was this approach applied to reach satisfactory causal explanations?

Understanding in the context of social sciences generally means monitoring the meaning of human action within society, and clarifying its purposes, goals, objectives and purposes. That is: deconstructing awareness, taking into account the actor's intent, and exploring the meanings of symbols and actions within the structure of society. (Hamdway. 2015:10)

While Weber means by understanding: the individual's action within the framework of the theory of influence and influence or within the framework of the theory of social interaction. That is: understanding the meanings that this individual action takes within society. This principle (i.e. understanding) is consistent with the human sciences or cultural sciences in particular.

Because a person is an individual actor who possesses awareness, and his actions result from some meaning or intention, it is difficult to study him in an objective, causal scientific study. Because the results will undoubtedly be relative and nothing more than relative, no matter how much we try to be scientific, neutral, and objectively honest. Therefore, it is necessary to penetrate into the individual realm to understand the meaning that he attaches to his world. Interpreting his action and behavior according to the apparent circumstances and circumstances in which this action occurs, and searching for the interactive relationship that exists between the subject and the object. Thus, the way to explain phenomena is a causal or causal explanation, not on the basis of a

single cause, as in Karl Marx, Rather, it is based on multiple reasons. This interpretive model of Weber is based on comparison, showing similarities and differences between phenomena, and then clarifying the relationship of influence and influence between them.

An example of this is his explanation of the emergence of the capitalist spirit in Europe, attributing this to its influence by the Protestant ethic. This does not mean that the religious reason is the only factor explaining the emergence of liberal capitalism, but there are other reasons, including the economic factors themselves.

Weber simply stated that the Protestant ethic was "one" of the causal factors that led to the emergence of the modern capitalist spirit. He described the idea that Protestantism was the sole cause as inaccurate. (Hamdway. 2015:17) Perhaps this indicates Weber's rejection of the issue of causal response (Single causal reduction) to a single factor responsible for the occurrence of a social phenomenon.

Rather, it is due to a number of reasons. Perhaps this puts us directly in front of Weber's keenness on a comprehensive approach in understanding the phenomenon. For example, if we want to know the increase in violent behavior among young people in Egyptian society in the current period in light of Weber's model of rational interpretation, We must first know what motivates this behavior in every young man. Here we focus on the subjective aspect of the social phenomenon, and then we move to the motives and goals of the group of youth that participate in societal violent behavior. Here we move to another level of the meaning of social action related to violence, which is the collective level of a group of youth. Therefore, according to Weber's model, the cause of the phenomenon of violence among young people cannot be attributed to the socialization factor alone. Or the factor of watching violent films, or playing electronic games. None of these reasons alone is responsible for the emergence of the phenomenon of violence in Egyptian society. But the researcher in the field of social science

must see the picture in its totality and comprehensiveness by explaining the phenomenon by referring it to a number of causes linked together that together constitute the emergence of the phenomenon of violence in Egyptian society.

The important thing that needs to be clarified about Weber's ideas about causality is that he did not work with a one-way model, but rather he was always investigating the relationships between a numbers of social factors. Weber adopted the mental model as an interpretive approach to understanding societal phenomena, not on the basis of a single cause, but rather on the basis of multiple causes. (Hamdway. 2015:18)

This is done by understanding the meaning behind human action. Every social fact is the result of human practice, emerging from social relations. These practices or actions give meaning and content to reality, through mutual influence and influence between people in particular social and cultural contexts. (Weber.1949)

Hence, the causal explanation - here - is the intentionality and intentions behind those actions(Weber.1949)
Human motives and ideas are behind social change and the formation of social structures, and opinions, values and beliefs can contribute to social transformations and then shape these structures. According to Weber, the individual can also act freely and chart his future destiny. Weber did not believe, as Durkheim and Marx believed, that social structures exist independently of individuals. Rather, he believed that the structures in society are formed by a complex reciprocal action between actions, and hence it is the sociologist's duty to understand the meanings behind these actions.(Fayad.2018.7)

These ideas - according to Weber - were a revolution against the positivist model that had its representatives. Causality, as measurable regularities or laws, emphasizes two ideas: the idea of a

dynamic link between cause and effect, and the idea of subjection to laws that can be relied upon in the process of causal interpretation in the future based on the past. Weber discussed these two ideas and emphasized that generalizations in terms of statistical correlations cannot replace the explanatory understanding of the causal properties that explain a particular behavior or action. He proves this by saying: Suppose - for example - that through careful experimental statistical analysis, it has been shown that all people in a certain place, who were placed in a certain situation, have always behaved in the same way and to the same extent. Suppose that whenever this situation is reproduced experimentally the same reaction always occurs. That is, suppose that this reaction is literally calculable. Such statistical work would not bring us one step closer to providing a "causal explanation" for this reaction, and would do absolutely nothing for the project of "understanding" this reaction(Mats.1992.111).

Then Weber criticized the idea that causation has no meaning except within the framework of a generalization or law, and explained that perhaps an individual event could be a cause of another single event. Or the cause may be a set of relationships between a numbers of social factors. (Salem.1986.86) .

Thus, Weber rejected the objective analysis of social events (that analysis which is based on an ideal of science in which empirical reality is reduced to laws); Because social accidents are not identical to natural accidents, they are less subject to the rule of substantive law. Knowledge of social laws is not knowledge of social reality, but rather it is one of multiple aids that our minds use to achieve this goal, i.e. knowledge of social reality. In addition, knowledge of social events cannot be perceived on the basis of a rule, but rather within the framework of specific, individual, value-based positions.(Qnsowa.1981.115)

Perhaps this difference in the interpretive position between the followers of the empirical positivist trend and its representatives (Auguste Comte and Emile Durkheim) on the one hand, and the owners of the interpretive trend led by (Max Weber) on the other hand, is mainly due to the intellectual or epistemological position adopted by both trends.

While the former advocates experimentation, experimentation, experimental design, and arriving at results based on laws that can be measured and subjected to observation, and arriving at satisfactory generalizations that provide a satisfactory explanation that applies to all cases without taking into account the subjective aspects of the research sample. The second trend is the opposite, as it focuses on internal and subjective factors as a basis for understanding the objective world and its phenomena.

Then Weber identified the difference between the social sciences and the natural sciences, which is the attribution to values. But this is not in the sense that social sciences cannot be explained causally - as some think - but the matter is quite the opposite. Because society is required to provide appropriate explanations at the level of meaning. It's just that causality in the social sciences does not perform the same function as it does in natural science.

Because social phenomena are qualitative individual phenomena, and when it comes to the individuality of the phenomenon, the issue of causality is not a question of laws, but a question of individual concrete causal relationships. It is not the inclusion of an incident under a general heading as a representative case. But it is an invasion and attribution of an event as a result of a specific gathering or formation.

Weber asserts that in the social sciences we are not concerned with laws in their narrow sense, as in disciplined natural science, but rather we are only concerned with appropriate or

appropriate causal relationships that we express in rules. -Here- the purpose of causal laws is to visualize the result that becomes the cause of an action. We not only observe human behavior, but we can understand it and desire it (i.e., understanding) because; The social problems that move people from within are always renewed in various colors. (Qnswa.1981.115)

It is true that the causal explanation of human action in the sciences of spirit or culture differs from the pattern of explanations in the natural sciences, but not in a way that makes natural phenomena easier to explain or more predictable. This also does not prevent highlighting causal relationships, that is, the causes and motives that led to the emergence of behavior. Therefore, the sociologist can reveal causal relationships between an actor's incentives and the means he uses to achieve certain goals.

As well as determining the specific context of the meaning that includes this verb. Also, actions from Weber's perspective can be calculated more than events in nature. Nature may be more multiple and complex than social reality in various circumstances.(Mats. 1992.112)

The difference between the natural sciences and the social sciences is not an ontological difference, but rather an epistemological difference. The researcher in the natural sciences cannot observe the relationships inherent in phenomena, i.e. how they arise, their significance, because they are outside the human self, so he finds them ready-made, while human action stems from himself, is aware of his actions, interprets them, and is of the same nature as the observer, which necessitates the use of a methodology in the social sciences that differs from the methodology of the natural sciences. Social facts are, in the end, perceived facts. When we know the reasons for the fall of a government, the setting of a price, or the reasons for a disturbance or decline in the birth rate in a society, this knowledge will be different in an important and vital aspect from our knowledge of the reasons for rain to fall or the

conditions for liquids to freeze. Facts of the second type can only be known from the outside, while facts of the first type can be known - to some extent from the inside. (Hamdway. 2015:1٧)

The essence of the method advocated by Weber for arriving at causal explanations of social actions is rational explanation. In short, it is a matter of reconstructing the context of meaning for the purpose of understanding why people behave as they do. Meaningful practices and actions are then explained by situating them in relation to stereotyped ends and means, and at the same time to the meanings they have for the agent.

Meanings in the form of socially and culturally defined motives. This kind of understanding and interpretation cannot be achieved through introspection or empathy, but first and foremost by analyzing the social and cultural contexts in which people act.

It is clear - here - that Weber's methodology is more sensitive to interpretive processes, and to causal properties that are of different importance to socio-cultural contexts. But at the same time, he emphasizes that interpretations of meaning contexts must be verified, and must be correct and objective. Meaning that others understand the specific circumstances in the same way. As we explained in the previous example about the phenomenon of widespread violent behavior among young people in Egyptian society.(Weber. M. 1949.)

In this way, Weber asserts that the sociologist is required to provide explanations that are appropriate at the level of meaning, as well as explanations that are appropriate at the level of cause. In his approach, he differs somewhat from Wilhelm Dilthey, for whom social phenomena are linked to actions only as symbolic methods of expression or embodiments of meaning.

In his view, the sociologist's task is limited to seeking to understand these meanings. Thus, the scientist has no need for generalizations based on causality. Thus, he differs from Weber, who takes a special position on the approach to understanding. This approach can be formulated in a way that does not conflict with known scientific methods.

This is what he explains in his application to what he calls the mental pattern of action in which the actor uses appropriate means in a way that is easy to know from a scientific standpoint, allowing us to become acquainted with the results of experimental science. In the process of understanding in this case, it is possible to present a hypothesis that explains any action by returning it to an end that the actor thinks about and seeks through rational means. However, on the condition that these hypotheses are formulated in subjective terms, the researcher can proceed with them to formulate further explanations to explain deviations from these hypotheses. (Qnsowa. :1981.116)

However, the dilemma facing Weber - here - and any rational model is to clarify the method that can express social phenomena in their individuality and quality, and at the same time achieve the goals of science of generalization and interpretation. Weber tried to achieve this goal by presenting a mental conception of the components that are distinct and perceptible by the mind of empirical reality.
By selecting and arranging certain essential aspects of the real world. They have been called “ideal models” for studying specific individuals, events, or societies. An example model is an intellectual canvas - according to Weber - that is used as an image through which we can organize truth according to example.

Hence, these models are not the social reality in themselves, but rather an intellectual structure used to organize reality and enable us to understand the social reality. These are

subjective models because they are linked to the researcher's point of view. Salem.A(1986)

Concept formation (abstraction) has a central role in Weber's causal methodology. If we are to distinguish between what is causally relevant and what is not relevant in a phenomenon, our explanation must be conceptually detailed. Since causal explanations concern intrinsic relationships, meanings, and qualities, Concepts must also be rich in meaning. Therefore, Weber emphasizes the importance of building abstract, ideal models of meaning. These ideal models are an expression of how people would act if they acted rationally with respect to a specific goal in a specific situation. We have to wonder what these ideal models might be and how they are built?

The ideal model according to Max Weber is an abstract concept, or a general descriptive statement that helps us understand and theorize a group of phenomena. It is not necessary that the characteristics of this model be always present and well in the observed and perceived phenomena. Rather, the goal of the example model is to create a pattern for the social phenomenon or a meaningful perspective on it.

The concept of the ideal model does not refer us to quality, mastery, or positive judgment, but rather it is a guide for building hypotheses, a model for understanding perceived phenomena in reality, or an expression of organized thought. Meaning that it is the product of a synthetic process of a set of features and specifications of a societal phenomenon, which is abstract and general, and its classification within a consistent intellectual, mental, and logical model.

We can demonstrate this with an example as follows: When we study bureaucracy, we study it in multiple fields, and in different places and times, but we talk about it in a general, ideal way,

focusing on its abstract and generally common characteristics and features, to mold it within some conceptual and descriptive model. An ideal model is the result of a set of comparisons and descriptive processes for a societal phenomenon.

Or abstraction or transformation of the perceived and observed societal phenomenon into an abstract mental model in the form of abstract and general common characteristics, components, and attributes. Then move from the tangible to the abstract. If these patterns are truly inherent in the structures of society, they nevertheless serve as guiding patterns that determine behavior and direct the mind. This means that the ideal type is a tool for understanding and perceiving societal phenomena directly and clearly(Mats.:1992.112)

The English sociologist Anthony Giddens described Weber's idea of ideal models by saying that it is one of the most important ideas in his sociological perspective, as ideal models are conceptual and analytical models that can be used to understand the world. These models rarely exist in the real world. Maybe it doesn't exist at all. In most cases, only a few aspects or features of it actually become clear. However, these hypothetical models can be very useful when we try to understand the actual conditions in the world by comparing them to one of these ideal patterns. In this context, ideal types may serve as a fixed reference point. It should be noted - here - that the ideal pattern did not mean for Weber that the concept had reached the limits of perfection or achieved the desired goal. Rather, what Weber meant was that the model represents a pure picture of a phenomenon. Or a synthetic heuristic structure that helps discover causal relationships. (Giddens, 1991.71)

A number of contemporary sociologists, such as Anthony Giddens and the French sociologist Pierre Bourdieu (1930-2002), agree with Weber about the importance of symbolic connotations or

meanings provided by the subject in the overall structure in which social action takes place. (See Bourdieu, P: 1998) Therefore, understanding the meaning included in the social structure contributes to giving more space to the rational interpretation of social action. This is why this front of scientists opposed the model of Auguste Comte and the sociological positivists, who sought to define the goal of sociology through understanding, controlling, and then predicting the development of society away from meanings or symbols that represent the reality of changes within society or social phenomenon and understanding them (See Bourdieu, P: 1998)

The question we must ask now: What are the epistemological characteristics that characterize the model of rational interpretation in sociology? In fact, we can summarize these epistemological characteristics as follows:

1- Structuralism:

It means that understanding social action is determined within the framework of the system or schema diagram, which aims to understand and arrange the elements of the situation, and to link these elements in an organizational manner, which leads to a correct assessment of the situation. This structure or model, which is created by the mind, is what organizes our sensory experiences, our social actions, and our behavior, so that no part of these elements can be understood in isolation from that organizational structure. Bourdieu,P(1998), also Giddens, Anthony (1976)& (1991)

2- Idealism:

The interpretive model of interpretation tends toward the idealistic tendency in analysis. It was founded as a reaction against pure materialism and strict empiricism, which reduced every social action to variables Physics and stimuli for the emergence of this action. In other words, they - that is, the materialistic trends - carried

out a process of returning to what is external or to the subject, and completely neglected the self and the meaning that the subject adds to the subject, as well as the symbol that the subject carries, which is what gives the social action its social significance. Hence, we can say that the interpretive model is based on ideal foundations of presentation and interpretation.

3- Comprehension:

It means the comprehensive or gestalt view of the social situation. It is a view that allows the mind to perceive the situation as a whole or as a single structure. This view goes beyond the partial view of matters that depends on identifying a number of variables and isolating them from the social context or situation, claiming to study them as the factor responsible for the occurrence of the social phenomenon. In fact, this tendency is called a partial or exclusionary tendency, and it revolves around a materialistic framework, which is why some sometimes call it eliminative Materialism. Hence, the interpretive model on which sociologists such as (Max Weber) and later (Pierre Bourdieu) and (Anthony Giddens) relied, was characterized by a completely comprehensive view and an understanding of the situation not as the result of the collection of individual elements, but as a comprehensive, comprehensive system of establishing the mind, which leads to understanding and arranging the randomness of the situation and the state of non-order included in it.(Churchland,:1996.18)

4- Symbolism

What is meant is that the subject is difficult to understand by reference to material factors alone, but the subject must carry a subjective meaning according to the analyzes of Max Weber, or a symbol according to the analyzes of Pierre Bourdieu. This symbolic meaning is what gives the sociological significance of social action. Perhaps there is agreement between those who follow the interpretive trend and what the philosopher of science (Ernst Cassirer 1874-1945) presented about the idea of symbolic pregnancy, that It gives explanatory significance to the topic,

whether it is in the field of exact science, in the field of social and behavioral sciences, art, or civilization itself. Speculative interpretation strives to reveal those symbolic and semantic meanings to transcend the limits of the material conditions that dominate the interpretation of the subject.

5- Integration:

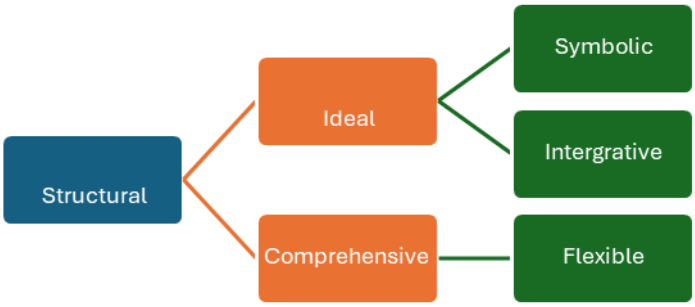
What is meant is that the interpretive model depends on achieving an integrated view between what is subjective and semantic and what is objective and achieved. In other words, it is a model that does not tend to objectify the phenomenon and search for the material cause in isolation from the active self in the situation - as those of the purely experimental and positivist tendency have argued - nor does it fall into the clutches of paradoxical idealism that completely transcends the conditions of reality. But we see that there is a kind of integration between the world of the subject and the world of the subject, and that providing a comprehensive explanation of the causes of the phenomenon or social action by the sociologist must be based on integration in his view and analysis between the subject and the subject.

6- Flexibility:

Flexibility here means that the mental model or mental structure that is the reference for interpreting social action is not considered a fixed or solid structure, but is characterized by flexibility and the ability to be transformed. Meaning that this structure is variable depending on the context itself and also on the flexible nature of the connection between the elements of the structure and the interaction between those elements. And the interrelations that arise between them depending on the constant that regulates the axis in the light of which the manifolds are connected. This is why we see that structure is characterized by the ability to transform and change depending on the type of relationships and

overlap between the elements of the structure or the model itself. (Hassan.2007.112)

This is in contrast to the positivist model, which always reduces the relationship to a fixed connection between two or more variables, which are responsible for interpreting social action in a manner characterized by inevitability and firm.



Figure(5) Epistemological Features of Interprtative Model of Explanation

We return again to Max Weber to clarify that the view he developed about the nature of the causal explanation of social action was influenced by Kantian and neo-Kantian epistemology. Before explaining his interpretive rational approach, he relied on rejecting a number of possible ways to deal with this complex context, the context of the social sciences, as follows:

First, there is a rejection of radical contextualism where the goal is to capture a portion of reality in its total diversity without the aid of any conceptual framework. For Weber, comprehensive causal interrogation of any concrete phenomenon in its full reality is not only practically impossible—it is sheer nonsense.

Second: There is a rejection of the nominal-positivist approach, which seeks to formulate general laws on the basis of which concrete causal relationships can be inferred, mainly because

universal concepts would be devoid of content and meaning without roots in concrete reality.

Third: Among the goals of explanatory causal science is knowledge of the individual, concrete composition of reality, and thus Weber rejects a science that seeks, through the formation of the concept, to reveal the basic, abstract, unobservable structures and processes that operate behind the stream of events in reality. It emphasizes that the researcher's socially and culturally determined values and beliefs constitute the criteria necessary for selection from unstructured experimental reality.(Mata.115)

Thus Weber emphasizes that the causal explanation of social action is found in the social properties and meanings that operate in different contexts. In the processes by which social phenomena are produced from pre-existing conditions. The role assigned to the sociologist is to uncover the real existing structures and causal mechanisms by going beyond what can be observed directly. Weber's approach gives importance to the social and cultural context in the process of understanding and interpretation, as the causal analysis of social action must seek an approach that expresses the continuous interaction between building theoretical concepts and setting the context.

Fourth - Probabilistic Perspective: factorial structure

In order to learn about the probabilistic perspective in the causal interpretation of social action, we must refer to the deterministic perspective - previously - which was prevalent for many decades not only in classical sociology, but - also - in psychology, history, and other social sciences. Determinism is a doctrine that believes that everything that happens in the universe is subject to some causal law. Every event has a causal explanation, that is, every event has necessary and sufficient causes that explain its occurrence. This is what led some thinkers to say that

determinism in its simple sense is nothing but a kind of causal connection between phenomena. In fact, the principle of determinism includes axioms that precede it, justify it, and give it its content. Perhaps the most important of them is that there is an order in nature, and that this order occurs repeatedly in a uniformity, and that regularity is governed by the relationship between cause and effect (or the principle of causality).

Deterministic philosophers believe that everything that happens in the universe is explainable and predictable in principle, including human actions. Thus, the concept of determinism leads to the fact that our knowledge of all the conditions that determine the occurrence of a phenomenon enables us to predict what will inevitably happen, and this prediction is the result of the steady relations between phenomena and their interconnectedness. Increasing our knowledge of the circumstances surrounding human behavior, for example, is sufficient to help discover the correct laws that govern this behavior. The ability to predict is thus referred to as causal determinism.(alukah.vol 8.40)

If we trace the historical roots of causal determinism, we find that they go back to the philosopher Democritus, who said of necessity. Then Aristotle came and spoke about the four causes and the idea that the material cause is the essence and the final cause is the goal. The issue of causality remained a subject of discussion by philosophers and scientists such as Hume, Mill, and Karl Popper, so many interpretations varied from one field to another.(Zimmerman, 54)

This led to the destabilization of the idea of determinism that had governed the issue of causality for many decades. The fact that causes are not always followed by effects represents a great difficulty not only in the field of social sciences, but also in the field of natural sciences. Especially after the discovery of Heisenberg's Uncertainty Principle, which states that it is not possible to accurately determine the position and speed of an electron at the

same time. This principle and its applications in the field of physics have led to the destabilization of the classical deterministic model.

All scientific assumptions are nothing more than probabilistic assumptions, and instead of viewing causes as requiring results, they simply increase the probability of their occurrence.(Direnzo.G :1987.35)

Hence, the probabilistic model became the most supported and widespread model. Causal laws were replaced by probabilistic laws. The emergence of the probabilistic approach in sociology was linked to this transformation. The physical sciences were the ideal - so to speak - on which sociology was built - according to Saint-Simon and August Comte. In the past decade, all the efforts made by social scientists were in causal explanation, concept formation, and theory building.

It was all basically an attempt to remove the stigma of soft science from sociology and replace it with the scientific methodology and foundations of searching for and verifying causes and facts. But the problem that has always faced social scientists has been the inability to determine the level of accuracy, certainty, and predictability that was prevalent - to some extent - in the natural sciences. For this reason, it is not possible to talk about laws in the social and behavioral sciences in general. Strict laws cannot be proven in the study of human behavior, as there is no accurate measurement technique for this behavior.(Direnzo.G :1987.29)

The best way is to rely on statistical laws, and the greater the statistical correlation between a number of variables, the stronger the evidence of a causal relationship between them. Hence, the probabilistic approach in the social sciences may develop due to quantitative research methods and statistics.(Humphreys: 1986.4)

Of course, positivist sociologists such as Comte and Mill were not enthusiastic about the probabilistic perspective in the

causal explanation of social action; Because the basic principles of positivism are that knowledge should be based on societal phenomena, and the relationships between phenomena should be verified through observation and experimentation. However, the matter changed with the expansion of the probabilistic approach to sociology in Britain, Germany and France, due to a number of early classical studies of great importance such as the books of Keynes, Knight and Ramsey in economics and Sieberman in psychology. By applying probability theory to social data, this led to the recognition of a new type of probabilistic regularity and then a type of causal explanation based on probabilistic laws.(Erola:2010.121)

The focus is no longer on the possibility of generalization and prediction, but rather the focus has become on describing the characteristics, mechanisms and factors that relate to the cases of individuals, families, small groups and community organizations. (Zimmerman, 54)

Hence, the probabilistic approach was the model that kept pace with this rapid accumulation of knowledge and theoretical understanding of social issues in the various fields of social research such as class division, poverty, demography, etc., all of which develop and grow due to the probabilistic interpretation, which offers different alternatives and explanations according to the context, and the most acceptable of these interpretations is the one most closely linked to reality.(Erola:2010.122)

This is what we can see through descriptive statistics based on calculating the mean, mode, and standard deviation of the variables, or this may extend to inferential statistics, which is concerned with studying the relationships between variables specific to the phenomenon under study, through the conclusions that the researcher makes regarding mathematical values. Then, in the context of social sciences, the researcher seeks to analyze these mathematical values in order to understand the phenomenon and provide a set of predictions and generalizations to reach almost certain results. This is why we can say that inferential statistics are

used to explain social phenomena or human behavior as a scientific attempt to generalize results and reach - to some extent - possible results based on a measure that is designed as a tool for collecting and analyzing data.

These measures that the researcher applies in the field of social sciences are described by their reliability, then their validity, and then the extent of their ability to be adopted and their results trusted. Accountability, through statistical methods through which we can make decisions regarding a particular social phenomenon or behavior. This is because inferential statistics depend on the sample method to collect data from the subjects and process it statistically with the aim of knowing whether the results of the study apply to society as a whole or not, Provided that the sample is representative of society as a whole, and the hypotheses can be determined, tested, and generalizations that are applicable to a large extent can be reached. Which we will try to present and discuss later in the factor analysis model or factorial structure.

In this way, the idea of probability moved from the field of physics and natural science to the field of social sciences, and instead of causal laws, talk began with variables or general statements similar to laws, mechanisms, properties, causal forces...etc. But even with the application of the probabilistic approach, the difficulties faced by social scientists in the issue of forming concepts and linking the theoretical and empirical aspects of forming these concepts remained. Some tried to overcome these difficulties, such as the scientist Paul Lazar Feild, who contented himself with probabilistic prediction instead of searching for absolute prediction, and identified a set of conditions that must be met in social phenomena, and we are going to talk about their causal connection, as follows:

First: The cause precedes the result in time, so we cannot imagine the result occurring before the cause that led to it. Smoke,

for example, does not cause fire, but rather the opposite is true. But even this issue may deviate from the truth, as long as we are talking about the social sciences. For example, the saying "The educational level of the fathers affects the educational level of the children" may not always be true, as it may sometimes happen that the educational level of the children affects the fathers, as the fathers go to school or university influenced by their children. In the same way, we say that poverty may lead to deviance, and deviance may also lead to poverty. It is known as mutual causality.(Hassan& Abdel hafez:2021. 13)

Second: To prove scientifically and experimentally the correlation of the two factors with each other, for example the correlation of fire with smoke or heat, but it also happens in the social sciences that the correlation may have a certain percentage or influence factor to some degree, as the perfect correlation is an issue that is difficult to achieve or verify. For example, Our statement that all Arabs speak Arabic may not be correct, as there are Arabs who do not speak Arabic and there are non-Arabs who speak Arabic. The connection between Arabs and Arabic is not necessarily complete and complete.

Third: The association whose existence has been proven scientifically and experimentally cannot be traced back to any other factor that may be the reason for the two factors to occur together. For example, if we find a strong negative relationship between students' smoking and their level of academic achievement, there may be a third factor, for example, family instability is the reason for both smoking and low academic achievement. This is what we will try to clarify by examining the structure of factor analysis as one of the quantitative inferential methods that contribute to revealing the type of relationships between the variables that contribute to shaping the behavior or phenomenon under study.

It is clear, then, that there are difficulties that limit the effectiveness of the causal relationship in the social sciences, including the

interaction of a large number of causes and factors in shaping a particular social phenomenon or situation. The process of completely isolating social systems or phenomena is not an easy matter. Therefore; As Bertrand Russell says, we apply the laws of causality to the social phenomena and systems that are under study and research. Determining the relative importance of causes is possible but difficult. When we say that a particular factor or group of factors is more important than another factor in influencing a particular phenomenon, this means calculating the degree of influence that is most important for all factors. For example, when we say that determining a person's health in the future depends on the person's current diet, level of physical activity, and lifestyle... Thus, it is necessary to identify the most powerful of these factors that are related to the phenomenon under investigation (Mansour.:2018.130)

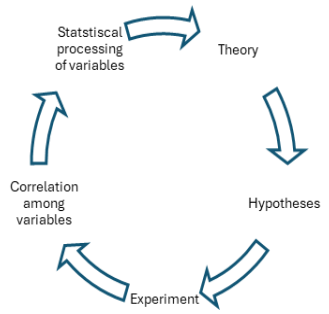
Then, statisticians were called to reformulate the concepts of causality by statistically calculating the influence factor for the set of factors and conditions that are related to the phenomenon studied in a lived experience or a specific realistic context.

That is why scholars in the field of social sciences have agreed to resort to factor analysis as one of the mathematical methods concerned with classifying study variables and finding links between those variables in light of the theoretical or epistemological orientations from which the researcher proceeds to test his hypotheses and their validity. The factor structure analysis method is distinguished - compared to other statistical methods - by the contributions it may provide to the researcher in modifying the theoretical framework in light of the results of the statistical analysis of the variables and the degree of correlations between them. Unlike other experimental procedures, which interpret the results of correlations in light of the theoretical orientation of the study and do not include intervention or feedback, unlike, Factorial analysis of

the study's variables allows the researcher to have the flexibility to change, by deleting, adding, or renewing the theoretical concepts, theoretical orientation, and scientific logic from which the researcher started to suggest possible modifications to it.

Knowing the form of the relationship between variables helps to formulate scientific hypotheses that test the theoretical foundations on which scientists built their experimental perceptions and then formulate the scientific law.

This results in the fact that we can use this statistical method to organize a new field whose characteristics and variables we need to know, and this is a need that the researcher seeks when he approaches a new field where he does not know all of its variables. Or when examining the extent to which the various variables relate to the main phenomenon, the direct result of this exploratory step is to re-study and address the important variables in the field, and to build hypotheses that explain the relationships between these variables.



Fig(6) indicates interrelationship between theory and experiment within probabilistic model

Factor analysis, as a comprehensive approach, seeks to reveal the relationships between variables and the connections between them in a comprehensive, comprehensive framework. With the aim

of understanding the relationships of variables to each other within the framework of this whole or the overall situation in which the phenomenon occurs or the behavior results. Hence, the factor analysis approach makes the researcher go beyond being immersed in the partial situation, and in scientific observations and observations, with the aim of arriving at a scientific explanation for the phenomena. The factor analysis approach takes into account the overall context in which the phenomenon or behavior appears, in addition to paying attention to the partial elements that constitute the situation as a whole, through which the researcher seeks - through which - to uncover the connections between the elements of a single situation to understand the relationship between the partial and total elements and then predict the social phenomenon or behavior.

Therefore, he agrees with the positivist trend, but at the same time he understands these connections between the elements of the situation or experience through his appreciation and interest in the context - as a holistic context -. This is in light of the theoretical framework adopted by the researcher, which causes differences in the degrees and correlations between the elements of the attitude or behavior as affected by the theoretical orientation - which is considered a subjective matter in which the researcher's cognitive formation intervenes - so that the context and the connection between the elements of the context are interpreted within the framework of the researcher's cognitive orientation. For this reason, factor analysis relied on theoretical or conceptual modeling, because the model involves a number of relationships between variables, and it aims to approach the reality of the relationships between variables. .(Bou Zaian.:2012.130)

In addition to modeling, there is what is known as Structural Equation Modeling SEM, which is advanced statistical strategies that seek to test the validity of the network of relationships between

variables (theoretical models) that the researcher assumes without the need to divide the hypothesized relationships into parts, and to test the validity of each part of the relationships separately without dividing them into partial relationships. This systematic procedure gives the researcher a more accurate picture of the real behavior of the variables. This is because the nature of social or behavioral reality is complex, which makes it impossible to extract simple parts from the fabric of relationships between variables, as the positivist school tends to do. (Bou Zaian.:2012.130)

The method of factor analysis provides us with a comprehensive vision of the field or context in which the social phenomenon or behavior arises - as was the case with the positivist trend analysis - which was limited to binary relationships between two variables in isolation from the social or behavioral field as it represents a coherent whole.

In contrast to this perception comes the interpretive trend that is concerned with the context and the field as a whole without being concerned with the relationships between variables. Because the attention was focused on the structure without paying attention to its elements. For example, Intelligence, loyalty, giving, introversion, sharing, and other variables that are supposed to be among the reasons for the growth of this feeling. Then the researcher obtains a matrix of correlations between the variables among a selected sample of young people. When analyzing this array of variables, the researcher is not satisfied with examining the strength of the relationship, for example, between social responsibility and intelligence, or between introversion and social responsibility. The relationship between the variable (A-B) or between (A-C) and other dozens of correlations do not lead to a complete understanding of the field or context in which these correlations between variables occur. These simple relationships do not give us a complete picture of the true causes of the phenomenon or behavior, but they must be understood together from a comprehensive, comprehensive

perspective. The same applies in the field of behavior and psychology (Mansour.2018)

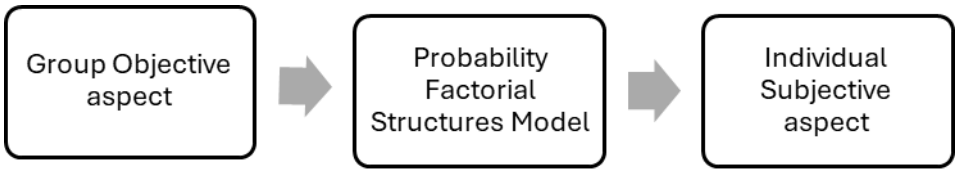
Therefore, the factor analysis method does not only provide an analysis of existing causal relationships between variables - as is done in the positivist model - but within the framework of a total factor structure, it proposes possible and probable causal relationships between the variables of the study that have not been previously discovered or subjected to sensory experience before. The probabilistic model represented in analyzing the factor structure is an approach in analysis that seeks to overcome both the positivistic model and resorting to scientific law in an obligatory manner. Without taking into account the subjective dimension in shaping the social phenomenon or behavior. It is also an attempt to go beyond the interpretive model that gave attention to the self and the meanings contained in social action or human behavior as opposed to the subject and the objective view of consideration and analysis.

This is why we see that the structure of factor analysis is a method or approach in consideration and analysis that seeks to link the positivist and interpretive approach in understanding social phenomena, by emphasizing that a single concept may be disagreed upon by researchers in sociology in terms of designing a measurement scale that measures the dimensions of this concept.

In addition to the belief that the results applied to a sample do not represent a general law valid for all similar cases, due to the difference in context, as we will explain. On the other hand, the factor analysis model agrees with the interpretive model in believing that there are a number of causes and factors that are responsible for the emergence of a particular social phenomenon or behavior, and that this phenomenon or behavior cannot be understood by reducing

it to a single factor or cause, as claimed by those of the empirical positivist trend.

Then it becomes clear to us - as shown in the following figure - that the probabilistic model - as proposed by the factor model or analysis of the factor structure - is the link or bridge that brings the subjective back to what is objective and an attempt to understand the social topic or human behavior not in a dry way as if it were something static - as in the natural sciences - but as a vital topic that has sensations and feelings and lives in an environment that is diverse in the variety of stimuli that stimulate its emergence.



(Fig7) Compatible nature of factorial structure model

Perhaps this understanding makes us seek to develop an equation that explains the epistemological nature on which the Probable Structural Model, known as factor analysis, is based. This equation is as follows:

PS= ^{C}[F(n)+S(O)] RE

Where (f) is the influencing factor, ((n is the sum of factors, s)) is the subjective dimension, (o) is the objective dimension, (c) The context or field of study that is characterized by completeness and plausibility.

This equation, in which we tried to clarify the epistemological basis upon which the structure of factor analysis is based, reflects the probabilistic and relative formula of the nature of scientific explanation of the causes of social phenomena or human

behavior. So, this interpretation is characterized by relativity as opposed to the deterministic nature that the positivist trend in this interpretation presents to us on the one hand. On the other hand, this equation refers to the objective nature by clarifying that the interest in universal values and the comprehensive nature of interpretation - as in the hermeneutical trend - does not make us overlook the necessity of resorting to objective reality, and this is what the hermeneutic trend lacks.

The probabilistic model, as represented in the structure of factor analysis, proposes a relationship between the macro and the micro or between the constant and the variable. The constant here is nothing but C, that is, the context that plays an important role in determining the form and character of the correlations and relationships between different variables. If we say, for example: that poverty is positively linked to deviance, then the factor analysis approach requires us to examine this relationship and the form and degree of the relationship between poverty, deviance and other factors, such as work - age - gender - culture - education...etc. The form of the correlations between these factors becomes clear as they are reasons that play a role in the spread of the phenomenon of deviance, but the type and size of the correlation and the relationships between these variables depend on the form of the context, which varies from one society to another and from one environment to another, in the same single society.

The same applies to personality traits, such as the relationship between intelligence and academic achievement. The form of the relationship varies depending on the relationships between other variables such as gender - level of ambition - age - family culture - type of education - educational subject... etc.

Finally, it can be said that the probabilistic perspective of causal explanation in the social sciences - according to the factor

analysis model - as we discussed it, is an attempt to overcome the existing controversy between interpretive sociology and positive causal sociology. Here, causal explanations are not directed towards producing some kind of experimental correlations between variables, or making strict predictions on the basis of a set of empirical laws, but in addition to that, the probabilistic perspective and statistical analysis are employed as tools to analyze and interpret the complex relationships between events, processes, and various social structures, in accordance with the various theories in calculating probability, and also in accordance with the approach to understanding and interpretation. We assert that every interpretation of the studied phenomenon is tantamount to a re-representation of it in the mind and consciousness of the interpreter, and therefore every interpretation is also subject to the logic of possibility and the most acceptable interpretations are those that are linked to reality and provide an acceptable higher interpretation of it.

Through this presentation of models of causal interpretation of social action, we can derive a methodology for causal interpretation of social action, based on the overlap between these three models. It is based on combining the processes of interpretation and understanding within the framework of statistical laws of a probabilistic nature. A methodology that involves a process of continuous interaction between building theoretical concepts and setting the context. (See Figure 9).

There is no doubt that these two types of knowledge are different, but each represents a goal of science. Conceptualization and theory building refers to a process by which we extract data in an attempt to capture the mechanisms and causal structures that cannot be directly observed and that generate observable phenomena and events.

The search for hidden causes is not something metaphysical or less than scientific, but a fundamental aspect of the causal analysis of social actions, which calls for the construction of

concepts, theories and hence logic for causal explanation. Theories are not viewed here as organizational frameworks in the form of models of relationships between independent and dependent variables, nor as experimental production, as the process of arriving at generalizations is not a transition from some to all, or moving from observables to the unobservable structures and mechanisms that always explain them. Rather, the concrete import of causal mechanisms and their effects must be linked to the open and complex context in which they operate. It becomes crucial in the social sciences to reconstruct the relevant social, temporal and spatial context, and to study - guided by concepts and theories - how particular causal mechanisms are expressed in such a context.

Empirical generalizations are always conditional and depend on how generally the context in question occurs. Because social contexts are so diverse, complex and variable, it makes it difficult to make accurate predictions. Then trying to derive the ideal quasi-experimental situation by statistically controlling for traditional social variables (gender, age, income, etc.), the research should be directed by deep knowledge of the contexts towards constructing relevant objects for comparison. Here, causal explanatory analysis and interpretive analysis appear not as two contradictory processes, but as overlapping. The practice of hermeneutic research is most important, because it is a practical matter through which we can deepen, develop and constantly review our knowledge of different social contexts. Hermeneutic research enables us to interpret and understand the meaning with which people invest different situations and actions and becomes of central importance for causal explanations of social actions.

Many sociologists today agree that social reality constitutes, in principle, a complex, constantly changing macrostructure composed of interwoven social properties and processes that are

partly unobserved, active and affected at different levels. However, this is often ignored in their causal explanatory research practice.
Some scientists still adhere to the causal explanation related - specifically - to the production of empirical correlations between observable phenomena, which makes their work incomplete.(Mata:1992.27).

Conclusions:

It is concluded that:

- At the beginning of the research, we wondered about the possibility of a satisfactory account or explanatory model for social action that can be relied upon in the field of social sciences? Now we answer that the philosophical debate in social work reveals the importance of having a logic and methodology for work in the field of social research Hence, a causal explanation of social phenomena and human actions is a necessary requirement, even if it does not depend on laws, similar to the natural sciences. However, the question of justifying causal claims in the social sciences is controversial; Because explaining human actions, including explaining and justifying actions, desires, motives, and beliefs, involves difficulty, as there is no law that can explain to us how the reasons of actors are related to their actions, but every account or model can be acceptable as long as it provides a rational basis for justification. This is why the study revealed that the methodology of composing and integrating both the positivist trend and the interpretive trend - as it became clear to us through the probabilistic model - through which it is possible to overcome the dualism that leads to a definitive view, the duality of understanding or interpretation.

- The traditional idea of causality as an inevitable relationship between an effect and a result must be overcome, because it is still stuck in the minds of some. There is no causal explanation limited to this binary relationship only, but there is a context that defines the set of conditions and factors, their degree of

importance, their temporal connection, their generality...etc. conditions.

- The term cause or causation is no longer used in the field of social research. In fact, perhaps this term is on its way out even from the field of natural sciences, as Russell said: "There are no causal claims in physics, and causality is not part of the physical description of the world." Then the term cause was replaced with other terms that express the degree of correlation between variables statistically and indicate the relationship between them, such as the terms: forces, factors, mechanisms, conditions, motives, etc. All of these terms are used to express causal relationships between variables. We also explained this through the factor analysis model to refer to the concept of causality as it is now circulated in the social sciences.

- The methodology of causal interpretation of social action must rely on a type of interaction between the causal interpretation approach based on observation, experimentation, comparison...etc. and the approach of understanding and interpretation that depends on monitoring the meanings, connotations and purposes of human action. We have proposed the factor analysis model as a mechanism for this integration.

- Theoretical discussions (epistemological and methodological) related to causality are still few. Perhaps if these discussions were expanded, an approach or method could be reached that would help reduce the severity of the differences in causal interpretation approaches in the social sciences, and this matter is the responsibility of this branch called the philosophy of social sciences. The study has proven that the experimental or natural model, which emphasizes that the causal analysis of social events is the primary factor, is an incomplete point of view, and the question that must be asked - here - is: How can we think about

causality in the social sciences from a philosophical point of view? The mechanical view of causality, which has been undermined by Heisenberg's principle of indeterminacy, must be overcome hence, the concept of contextual causality is an appropriate beginning for understanding the nature of connections in the social sciences.

References

1. Bert Leuridan and Erik Weber, Causality, and explanation in science, Erkenntnis (1975-), 2013, Vol. 78, Supplement 2: (2013).
2. Bourdieu (1998) Practical Reason: On the Theory of Action. Sandford University Press.
3. Churchland, P (1996) The Mind-Brain Continuum. Edited by R.R. L linás. The MIT Press.
4. Daniel Hirschman and Isaac Ariail Reed, Fourmation Stories and Causality in Sociology, Sociological Theory, DECEMBER 2014, Vol. 32, No. 4 (DECEMBER 2014).
5. David M. Klein, Causation in Sociology Today, Sociological Theory, Spring, 1987, Vol. 5, No. 1.
6. Davis, James A. 1971. Elementary Survey Analysis. Englewood Cliffs, New Jersey: Prentice.
7. Fairchild, Henry Pratt (Ed.). 1966. Dictionary of Sociology and Related Sciences. Totowa, New Jersey, 1968.
8. Gerhard Wagner and Karin Ikas, Function and Causality, Revue International de Philosophie, 2012, Vol. 66, No. 259
9. Giddens, Anthony (1976) New Rules of Sociological Method: a Positive Critique of interpretative Sociologies. London: Hutchinson.
10. Giddens, Anthony (1991) Modernity and Self-Identity: Self and Society in the Late Modern Age. Cambridge: Polity.
11. Gordon J. Direnzo, Probability and low in social explanation, Sociological Theory, Spring, 1987, Vol. 5, No. 1 (Spring, 1987), Published by: American Sociological Association.
12. Hoult, Thomas Ford. 1972. Dictionary of Modern Sociology. Totowa, New Jersey, 1972.

13. Jani Erola, why probability has not scucceded in sociology, Sociology, FEBRUARY 2010, Vol. 44, No. 1 (FEBRUARY 2010).
14. Jerome H. Zimmerman, Determinism, Science, and Social Work, Social Service Review, Mar. 1989, Vol. 63, No. 1 (Mar. 1989).
15. John H. Goldthorpe, Causation, Staticsand Sociology, European Sociological Review, Mar. 2001, Vol. 17, No. 1
16. Mats Ekstrom, Causal Explanation of Social Action: The Contribution of Max Weber and of Critical Realism to a Generative View of Causal Explanation in Social Science, Acta Sociologica, 1992, Vol. 35, No. 2 (1992).
17. Mitchell, G. Duncan (Ed.). 1968. A Dictionary of Sociology. Chicago: Aldine.
18. M. Hassan& E. Abdel Hafez, Some Epistemological and Ontological Reflections on Concept of Causality: From Scientific Causality to Contextual Causality
19. M. Hassan, (2007) Cassirer and Structuralism of Perception: an Application of Group Theory to Psychology. PhD, Durham University. UK
20. Paul Humphreys, Causation in the Social Sciences, Synthese , Jul., 1986, Vol. 68, No. 1
21. Penrose,R , Clarke,C , Kragh ,H & 4 more(2011): Cosmology of Consciousness: Quantum Physics & Neuroscience of Mind.
22. Penrose,R , Gardner,M (1991) The Emperor's New Mind: Concerning Computers, Minds, and the Laws of Physics.
23. Penrose,R ,(1994) Shadows of the Mind: A Search for the Missing Science of Consciousness.
24. Theodorson, George A. 1969. A Modern Dictionary of Sociology. New York: Thomas Y. Crowell.
25. Weber. M. 1949. Objectivity in Social Science and Social Policy. In E. A. Shils & H. A. Finch (eds). The Methodology of the Social Sciences. New York: The Free Press.

26. Weber. M. 1978. Economy and Society. London: University of California Press.

Second: Arabic sources and references

Anwr.A(1988) Explanation in Social Sciences. Study in Philosophy of Science. Dar Elsakfa publication. Cairo.

Anwr.A(1990) Crisis of Method in Humanities. Contemporary Muslim Journal, vol(14) No 55.

Bou Zaian.A(2012) Exploratory and confirmatory factor analysis, its concepts and methodology, using a package SPPS&LISREL. Masira publication, Amman.

(Fayad.2018)Weber's Theory of Social Action. Vol1, Library of enlightened sociology.

Finerat, R(2017) Copercuis, Darwin and Freud:Revolutions in History and Philosophy of Science (Trans) Ahmed Shakel, Hendway Publication House.

Gaber.S.M(1986) Methodology of Social and Communication Research . Dar Elmarfa University.Alexandria.

Hamdway,G(2015) Max Weber's efforrts in Socoiolgy., Alouk Net.

Mansour.M(2018) The factor structure of giving behavior and its prediction by social responsibility, positive emotions, and the Big Five personality factors. Journal of Psychological Research – Faculty of Arts. Cairo University.

Qnsowa.S(1981) Objectivity in Weber's Theory of Knowledge. Journal of Contemporary Arabic Thought.

Salem.A(1986) Readings in Weber's Theory of Knowledge. . Journal of Contemporary Arabic Thought.