

**Again and Again: Is a Disaster What We Call “Disaster”?  
Some Conceptual Notes on Conceptualizing  
the Object of Disaster Sociology**

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*Following Carr who defined disaster as the collapse of cultural protections, this paper develops a sociological approach to processes commonly called a “disaster.” Epistemologically, the definitions used in science and practice are classified and redefined as “programmatically declarations.” Definers declare what they perceive as a problem and how they intend to solve it. Given the fact that neither “problem and perception” nor “solution and exigency” necessarily match, the probability of mismatches increases when inconsistent conceptions prestructure the view one has of reality. Still, the transformation of nature into culture is interpreted within “premodern” expression and false causal attractions: “Des Astro,” “evil star,” “bad luck” and “blind faith.” In contrast, this paper suggests a conception that defines disaster as an empirical falsification of human action, as a proof of the correctness of human insight into both nature and culture.*

Similar to the beginning of sociology as a science, the subdiscipline of disaster sociology faces the problem of defining its object of study. To myself already, the distinction between two different classes of objects, “natural” and “manmade disasters” seems fairly unsociological. Moreover, the definition of disaster as an event raises more questions than any sociological elucidation. In contrast to other scholars in the field, I suspect more dissent than consensus in the ways of conceptualizing the domain of our object of study. The vast number of definitions of “disaster” as an event (Fritz 1961, p. 655) or as an acting entity (Kreps 1993, p. 6) may be mistaken as consensus. But it should be seen as the outcome of a scientific tradition that is “concentrated in time and space.” It is an American specialty, developed and elaborated during the postwar development of the sociology of disaster (see Anderson 1979). However, an emancipation of the field from everyday knowledge and from the practical needs of disaster management has been neglected during this phase of its establishment. Up to today, there is no epistemology of the sociology of disaster. Consequently, almost

no sociological definition of disaster does exist. Thus, instead of harmonizing the views in the field, I will explicate as pointedly as possible my understanding of a sociological definition of disaster, because from a European perspective there still is a lack of sociology in sociological disaster research (Pelanda 1982; Gilbert 1992).

### **We See What We Want To See**

In his epistemological attempt to conceptualize disaster, Quarantelli (1981) stated: "We all have a habitual way of looking at disaster phenomena." So have I and so have all others. Westgate and O'Keefe (1976) analyzed circulating definitions and found that they were mere programmatic declarations. Those who define declare what they intend to do with the social processes called disaster. This is different from defining disaster. The German Red Cross, for example, defines disaster as an "extraordinary situation in which the everyday lives of people are suddenly interrupted and thus protection, nutrition, clothing, housing, medical and social aid or other vital necessities are requested" (K-Vorschrift 1988, p. 2). The German law that states the laws of disaster protection itemizes phenomena (such as storm, flood, blizzard, explosion, etc.) which are seen as typical in releasing disasters. However, it defines "disaster" almost in the same tenor by saying it involves "such severe interference of the public order and safety that an intervention of the centralized, coordinated disaster protection units is necessary" (Seeck 1980), German insurance companies define disaster as a situation involving damage and/or loss of lives beyond one million German marks and/or 1,000 persons killed.

It is easy to add more examples of definitions that serve for nothing else than to claim that the definers approach reality under specific conditions. For the Red Cross, a disaster is a large scale lack of nutrition, clothing, housing, aid, etc., or roughly summarized, a situation where the services and offers of the organization are heavily demanded.

Even more tautological is the definition of disaster by law: A disaster is what the intervention of disaster relief units makes necessary, and due to legal construction, what was called forth by coherent "triggers." For the state, the breakdown of public order and safety is the key, not the phenomena itemized. However, the specification of possible disasters is required because of the need for an appropriate selection of countermeasures to reestablish public order and safety. If the public safety is threatened by other triggers, other—yet appropriate—countermeasures have to be selected. The trigger determines the measure; thus, riots the use of the National Guard; epidemics, the General Surgeon; terrorism, the Special Forces and Bomb

Squads. The maintenance of public order and safety has to be guaranteed under all circumstances, no matter what phenomenon has caused the trouble. The type of phenomenon is only the key for the use of the appropriate tool box.

For other definers, the function of definitions is the same. For the Red Cross, disasters are large scale situations that lack vital necessities, and triggered by sudden interruptions of the everyday lives of people. But in contrast to the legal context which uses a trigger attributable to a phenomenon known as disaster and a specific activity to maintain the public order, the Red Cross does not even need a precise differentiation between trigger and activity. On the contrary, sometimes the wrong trigger produces a lack of vital necessities which is the case when charity is hampered by repulsive pictures (of victims who have drowned in floods, for example) instead of being spurred by pitiful pictures (of children victimized by droughts and starvation, for example).

### **Types of Definition**

With all that in mind, a strange conclusion may be drawn: the term "disaster" has only ephemeral significance. It is a trigger, a flag to signal a meaning, a stimulus to produce a specific reaction. But it has almost no importance for the activities that are carried out under the label of a disastrous "event." Right here, different lines of argumentation have to be followed up. The first line is following the question of how language is structuring our perception of the world; the second line is following the question of how reality is transformed into the mechanics of problem solving; and the third line is following the question of how disaster sociologists and their ways of conceptualizing disaster will be affected by all this.

Let us trace the first line of argument. I wonder at my own easiness in using the term "event" in the paragraph above. (Mis)using this term, the nesting of the concept of disaster as an event in our minds becomes as obvious as the difficult of avoiding such a view. It is much easier to freeze a complex social process into a static actor or a "thing," than to express adequately its dynamic complexity. However, a conception of casualty that describes nonhuman occurrences in terms of human activities is usually called animistic. Phrases such as "a disaster hit the city," "tornadoes kill and destroy," or a "catastrophe is known by its works" are in the last resort, animistic thinking.

Reflecting on this tenacity of lingual haziness, we first should clear our minds from metaphoric, pseudo-concrete, magical and animistic thinking.

No disaster “works” and an earthquake is nothing more than shockwaves, never a fist that hits a city. The expression that “a disaster strikes” is as wrong as saying “the winds blows,” because there is no separate process that swells the cheeks to blow. Wind is air in specific motion, not a separate being that makes the air move. In a conclusive way, it is the same with disasters: there is no distinction between a disaster and (“its”) effects. Disasters do not cause effects. The effects are what we call a disaster.

For tracing the second line of argument, the findings of organizational sociology will contribute. To my knowledge, the most pointed results about this have been presented by Crozier and Friedberg. On a very abstract level they characterize an organization as a “coalition of human beings with the aim to solve their vital problems” (1979, p. 12). The capabilities of the organization for problem solving, however, evolve step by step from those solutions that have been successful in the first place. Organizations, as Crozier and Friedberg put it, then tend to organize themselves around their success. In the long run, the successful solutions especially have to be defended against competitors and envy. Thus, the operation of organizations tends to turn into a hedgehog position. More and more, the operation of the organization is shifted into the center of the efforts of its members. At that point, an organization has turned to selfishness. Its only interests are self preservation; the organization is administering itself, with the original reason for its establishment being turned into a subordinate, accessory matter.

Simultaneously, the perception of reality changes from a creative, problem-oriented awareness, toward a defensive, solution-oriented persistence. Instead of scanning for upcoming problems, the self-preserving organization defines reality within the framework of its available solutions. The interest is less in focusing on possible solutions for upcoming problems, but more on the applicability of the available solutions. This shift is important because it marks a difference in the ways of perceiving the world. The first way is analyzing the problem in favor of finding an adequate solution.

The second way is defining the problem according to the solution at hand. Thus the latter is not focusing on reality, but cutting reality into the parts that fit into the organizational capabilities to handle them. Most definers of “disasters” act in the way that Prometheus used his bed. In the first place, their definitions of disaster do not focus on the vital problems of the victims, but on the solutions they have at hand or can provide. Reality then is exclusively seen from one approach; the solution defines the problem, and deductively, reality. “Disasters” are predominantly defined this way. The cases where warm clothing was sent to African famines, or thousands of

tons of contraceptives or cough mixtures were sent to mass casualty situations are not only mistakes, but the logical outcome of the internal dynamics of self preserving organizations.

Tracing the third line of argument, one may question whether the area named science underlies the same dynamics of perceiving the world and their problems, and if so, how disaster sociologists may conceptualize the problem named "disaster." Instead of criticizing the attempts of others, I will try to categorize some types of definitions favored in the field. The absolutely most frequent type is the "event" concept with the subcategories "time," "space," and "severity," (or a mixture of them). Next most frequent is the "stage or phase model concept" which often is a variant of the event concept, but with an emphasis on a broader time scheme looking at the time and human activities before and the event or the impact. A much simpler subvariant of the "stage/phase" type is the space-model that seems to be a derivation of the specific threats from bombing or explosions: zones of destruction, casualties, injuries, and rescue activities are drawn in concentric circles around the direct impact. The concept is typically used in disaster medicine and in emergency planning for nuclear accidents (see Suren 1982, p. 41; Notfallschutz 1986, p. 9). Also directly influenced by practice are those conceptualizations of disaster that are built along the typical planning and action schemes of emergency management. They use terms like "pre-emergency phase," "emergency-phase," "warning," "threat and evacuation stage," "dislocation stage," "relocation state," "post-emergency phase" and so on. I am sure that most readers will have identified Stoddard (1968, p. 11) behind the scheme just cited. He presented a wonderful table of the stage models used in the United States at the time he wrote his book.

A little different are those conceptualizations of disaster that use specific ratios, for example, the ratio between resources and demands. I will call these concepts the "lack-of-capacity" type. All of them define disaster as an agent much too fast, severe or overwhelming in relation to the capacities available. Thus, the disaster was too fast relative to the warning or too spacious relative to the rescue capacities, etc.

Another type of conceptualization is explicitly influenced by the natural sciences and technology. I will call these concepts the "systemic catalyst" type. Disasters are defined as the outcomes of misdirected energy or audodynamically colliding interactions between the components of complex systems. Turner (1978) and Perrow (1984), who can both be easily identified with these approaches, define disaster either as wrong amounts of energy at the wrong time and the wrong place, or as a self-induced resonance between technical subsystems leading to dangerous modulations

and collisions. Both concepts have been transferred to organizational and human interaction to explain social failures as well.

Analyzing all these concepts, we have to ask about the type of definitions in use. At the first glance all examples cited seem to use real definitions, i.e., the definiendum is explicated with a specific definiens. For example, a disaster (definiendum) is an event (genus proximum) concentrated in time and space (differentia specifica). In terms of logic, the method is correct, although inappropriate in terms of being sociological. The question is how the genus proximum and the differentia specifica should look like if it is a definite sociological definiens?

At this point, of course, no reformulation of sociology is intended. To avoid a misunderstanding, I am not talking about theoretical orientations, research designs or methodology. I am asking for the specifically social fabric of disaster. In other words: what is a disaster like if explicated in terms of human action? And if trying to do so, will we find specific characteristics (differentiae specifica) which can not be explicated in terms of human action?

### **Masking Reality With False Causality**

To myself, one of the most interesting results of analyzing the definitions categorized above is the implicit false causality. Looking at some examples again, the cases of false causality can be detected easily. In sociological terms, the "lack-of-capacity" type is the most revealing one. Most of those who have used this concept identify a specific shortage, but almost never describe it as a deficiency. Intentional or not, the shortage becomes masked by the turning of causality into false causality. The "event" was "too sudden" instead of time was too "short." Even if the lack of time is addressed, like saying that the warning period was "too short," almost never will the warning system be systematically blamed as inadequate or insufficient. At most, the lack-of-capacity approaches suggest improvements in training, equipment and resources. But in doing so, the risky criticism of this type of conceptualizations comes to the fore. If this definition of disaster is radicalized, nothing else is a disaster but the lack of problem solving capacities. But exactly that is when we should become alert: Who is responsible for such a lacking? Instead of answering that question, it is much easier to turn causality toward the overwhelming forces coming from outside.

### Disaster As Collapse Of Cultural Protections

At this stage of the argument, I will take time by the forelock of the hair to remind us of a disaster sociologist who never has found the appreciation he deserves. I am talking about L. T. Carr (1932), who was as far as I know, the first in the field who tried to understand disasters in terms of social action. I certainly have read his article on social change very selectively, and I concede that my interpretation may miss the original intention. Nevertheless, this idea was the nucleus around which this article was written. This effort in fact is dedicated to this disaster student.

The idea that attracted my attention has not been developed systematically, yet it is evident in the following passage:

Not every windstorm, earth-tremor, or rush of water is a catastrophe. A catastrophe is known by its works; that is, to say, by the occurrence of disaster. So long as the ship rides out the storm, so long as the city resists the earth-shocks, so long as the levees hold, there is no disaster. It is the collapse of the cultural protections that constitutes the disaster proper (1932, p. 211).

Carr's conclusion signifies that disasters are the results of human activities, not of natural or supranatural forces. Disasters are simply the collapse of cultural protections, thus, they are principally man-made. Deductively, mankind is responsible for the consequences of his action as well as of his omissions.

As far as I can see, Carr interpreted the forces of nature as some sort of challenge (the "precipitating event"), that comes up during time (the "preliminary or prodromal period") (Carr 1932, p. 209). "In every disaster there is a preliminary period during which the forces which are to cause the ultimate collapse are getting under way" (Carr 1932, p. 211). If the cultural protections do not collapse under nature's attack, they have been proved to be functionally adequate, otherwise they are inadequate and collapse. To Carr, this collapse is the disaster proper, not the prior inflight of nature and culture.

Albeit, there are some confusing inconsistencies in his argument. He often wrote that catastrophes "cause" disasters (1932, p. 210) or that a disaster "resulted from both earthquake and fire" (1932, p. 210), and he separates disaster and their consequences. Yet Carr has very clearly seen the problem of social causes and non-social causes that lead to disaster. His differentiation between disaster and catastrophe makes the point. Carr distinguished:

disasters not only on the basis of consequences but also on the basis of (1) the character of the precipitating event, or catastrophe, and (2) the scope of the resulting cultural collapse (1932, p. 209).

In his preceding argument, he explicated catastrophic change as:

changes in the functional adequacy of cultural protections following catastrophes, i.e., the relatively sudden collapses of cultural protections resulting from catastrophes (1932, p. 207).

On the one hand, Carr realized the predominance of human action in the production of disasters. Thus, he knew that the collapse of cultural protections might be so rapid and radical that its functional adequacy may be totally questioned. Then, society in its entirety is endangered, not only its cultural protections (Clausen 1992). Therefore, both the extraordinary scope of cultural collapse and the extraordinary outburst of natural forces can lead to catastrophic change.

On the other hand, the helpfulness of Carr's differentiation must be doubted. In terms of logic, the introduction of extraordinary challenges does not alter the basic problem. If nature is too beastly or society too weak, and the loss of control too fast and complete, it is a human failure all the same. As a matter of fact, the breakdown of society or of some parts make a difference in term of harm and damage, but not in logic. Both have collapsed because of their inadequacy. One inadequacy was a lack of foresight in seeing the challenges the protections will have to survive; another inadequacy was not taking additional precautions to allow keeping control even during very rapid and radical changes.

To my mind, Carr's attempt to describe disasters as social processes and as interrelated exchanges between natural and cultural forces was an important step in sociological disaster theory. Nevertheless, his concept of nature as a permanent source of trials, as a powerful adversary that continuously enforces acts of submission (1932, p. 209) reflects the contemporary conception of nature, instead of the inherent logic of his own approach. Thus, Carr turned causality the wrong way because of a wrong conception of nature. In his causal concatenation, a natural force would become a catastrophe the moment the cultural protections could not stand the challenge. Whether nature turns to catastrophe or not, can only be decided on the basis of cultural criteria and only the challenge of these criteria: Did the cultural protections collapse?; if so, nature was catastrophic. Did they resist?; nature only tried to go berserk, yet "conquered." If one remains consistent in terms of Carr's basic approach and its sociological and logical implications, a disaster is nothing else than the failure of protection meas-



ures, and that is the inadequacy of means (the cultural protections) in relation to given ends (to avoid their collapse).

### Future Disasters?

Seen that way, some major differentiations in the perception of “disaster” are necessary. The first problem is with the term “functional adequacy of cultural protection.” If adequacy is decided after the extreme trial by natural or technological hazards, the question is how people will be able to create measurements in advance?

Logically, we know that knowledge in advance is impossible. Future modalities (possibilities) are only likely. Thus, the events that have not yet happened can only be anticipated in terms of probabilistic propositions, whereas for the events that have happened (the ex-post-facto-state) they are facts of the past. They can be documented definitely and completely (at least in principle). Consequently, two different conceptions of logic become necessary—one for the facts or things that have happened, and one for the events that are likely to happen in the future. Thus, the historiographic logic of facts has to be supplemented with a logic of probability.

Practically, humankind has to deal with future possibilities every day. Thus, the likelihood of the things to come has to be anticipated, which implies to think and to act under conditions of incomplete information and uncertainty. Generally, the mixture of the logic of facts and the logic of probability is not noticed. For most people continuance is the reasonable stance, and during one’s individual life cycle, only extremely few are forced to learn by personal experiences that the facts of today may be valid but useless to handle the tomorrow. Even in science the idea is predominant that future developments can be anticipated by extrapolating from the past and the present. In principle, this is the only way to deal with an unknown tomorrow (aside from more sophisticated mathematical and statistical methods). As a matter of fact, under condition of definite and complete information, most developments will come true with a likelihood close to determination. On the other hand, man is not omniscient. In most cases, people decide under conditions of ambiguous and incomplete information, and knowingly or not, they bear the risk of failure. Altogether, very little is known about the totality of the world, the universe, the sum total of effects, and their interactions and the interferences they have already caused and will still cause.

Transferring these considerations to Carr’s conception of disaster, “cultural protections” may be redefined as realizations of warnings, or, more precise, of prognoses. The aim to take protective measurements necessarily

presupposes the expectation of future failures. But what is the material these expectations are based on? On the one hand, they are based on the experiences which have been generated during the evolutionary process of trial and error (Murphy's law represents the highest generalization). On the other hand, they are based on substantiated imaginations, pictures of possibilities, visualizations, and visions. In most cases, it is a mixture of both and in the "modern," secularized society it is called prognostication, forecast, or futurology. To tell the truth, nobody knows for sure how the latter differ from intuition, fortune-telling, soothsaying, prophecy, or revelation.

All this indicates the magic involved in anticipating the future. But without extrasensory perception or supernatural guidance the only way to "look" into the future is via probabilistic predictions. The difference from prophecies (like those of Nostradamus) is very small and, correspondingly, the risk of falling for charlatanism is high. That is the reason why most people like predictions which are as close as possible to their known reality (or wishful thinking). Thus, every century has deciphered predictions and prophecies on the foil of common sense and empirical knowledge. An interpretation of the vision of doom by Nostradamus of the "holy fire that will fall from the sky" as nuclear explosion, would have been impossible before the Manhattan Project had been finished.

With all this in mind, I should like to turn back again to Carr's argument. Under certain circumstances, he had said, the forces of nature become a catastrophe. The test criterion for this change in state is the collapse of cultural projections. Consequently, nature becomes a catastrophe only when culture collapses. Thus, the "prognosis" of the forthcoming change of nature to catastrophe is verified after the collapse of cultural projections. In fact, a very strange syllogism! Nevertheless, for the present position, the individual errors in reasoning are not significant—except for one: What exactly might a meaningful criterion be like which marks the change in nature's state (from a "force" to a "catastrophe")? Keeping this clue in argument, I can not find such a criterion in objective scales (like the Richter-scale" for earthquakes) or in speed classifications for air currents (like a scale from 1 to 12), because an earthquake in the desert or a heavy storm in the Arctic ice is meaningless (for our present state of mind at least). I do not exclude further wisdom and insight in the interrelation of human existence with the life of animals, plants and matter. One day perhaps we will care about the whole planet; today, we are selfish to the point of annihilation. However, the argument I want to make is this: In contrast to the facts of history, future occurrences cannot be described in terms of a logic of acts and cannot be tested empirically. Thus, a decision between

“true” or “false” is only deducible from an appropriate logic, the logic of probability.

Theoretically, an applicable test criterion for probabilistic propositions is available. To put it on a simplistic level, an applied test program for prognoses requires the complete and perfect duplication of our world on the basis of the algorithms that make it move and change. Similar to computer simulations, the selection of algorithms and the conceptualization of trial runs is a most delicate problem. As Perrow (1984) demonstrated, in most cases the failures that happened later in reality have not been anticipated in theory. The same problem is to be found in the field of technology assessment. What are the likely effects of a new technique (a chemical compound, a medicine, a product, etc.) and on which level of effects should the assessment process be stopped?

Of course, Turing (1936) gave a hint; the Turing generator makes it possible to transform every argument (variable) into algorithms. Nevertheless, the transformation requires not only a unique basis of calculation, but also a unique category of reference. Until now, a unique system of transferable references have not been developed. The attempts to do so (e.g., the transformation of everything into quantitative amounts of energy exchanges) are highly contested (see Rifkin 1980). Consequently, in the field of probabilistics no valid criterion is available that allows us to distinguish between “true” and “false.”

The lack of an empirical test criterion in the field of probabilistics (mis)leads for the reuse of even those arguments which are refutable or which have been refuted with the help of empirical facts. In the end, the transfer of arguments out of the system of the logic of facts into the system of the logic of probability, irrationalizes every argument. Without a test criterion every argument will become equivalent in the sense of indifference, because “true” and “false” become undecidable.

In the sphere of social interaction, indifferent and undecidable conditions are hardly bearable. Thus, many sociologists suppose that the most important objective of social action is to get control over or conduct of others and of nature (see Burns 1958; Elias 1983). To avoid dangerous surprises and uncertainties, social action is preferably transformed into reliable repetition and certitude. Consequently, perpetual action is often firmly established by rituals, customs, norms, institutions, or organizations which react upon human action like a silent but unchangeable force of circumstances. Accordingly, human action appears in process and in manifestation; both forms will influence interaction as counterparts.

The most efficient way to get control over complex systems and interaction is to manipulate their "lode-star," or in other words, the algorithm with the highest complexity. In religious systems it might be the deity's will revealed by the priesthood. In feudal systems it might be the fief, distributed by the nobility, and in modern times it might be the status, based on the money that people have available. The advantage of controls by the top algorithm is the extreme efficiency: The alteration of one factor alters the whole system.

On the other hand, there is the risk that the subordinated algorithms will win an extensive autonomy. Similar to the rise of the city during feudalism, this autonomy may steadily undermine the efficacy of the top algorithm. On the surface, the whole system seems to be under the lode-star's control, but underneath contraproductive effects thwart the original intentions. In most cases, the collisions of different intentions are not realized as the outcome of social action or social change, because people mostly do not know the true intention of others. Thus, the collision of different intentions and planning is more often interpreted as a disaster than as loss of control.

Speaking more generally, the explication of disaster as an unplanned and unintended result of human activities which is a counterstroke to the planned and intended effects of action above a certain level of tolerable disturbance, can lead to a misleading sociologism. It is not only human interaction itself or interaction with material culture and its autodynamics that may generate failures, but also the interaction with nature and its own autodynamic and self organizing processes. Most authors in the field (including Carr) have reflected on nature's influence on human interactions, but only few have analyzed the significance of nature's autodynamics without treating nature animalistically or in categories of an acting subject. Nevertheless, as a living system, nature is interacting with the effects of human metabolism. Thus, the human effects of first (planned and intended effects) and second order (unplanned and unintended effects) may also collide with the unforeseen response of the autodynamics of nature. Altogether, the chance to fail is increasing exponentially, because most effects of human interferences in natural and cultural processes are unknown.

From a statistical perspective, it must be foolishness or madness to intervene in systems that people depend on without knowing how the systems work and how they will react. Above a certain quality of intervention, the chance to destroy the basis of living becomes possible (and in this respect Chernobyl is a "good" proof). The dilemma we have to deal with is this: Without the knowledge of the effects of our action and without the knowledge of the functioning of all the systems that are interfered with, the

resulting risk of failures becomes very high. But without interferences experience and knowledge is impossible. Consequently, the most important parts of our journey of discovery are the failures, because only failures will unlock the secrets of the universe of the unknown. As in the philosophy of science, which does not accept verification as final proof, human praxis should not accept success as final proof because one never knows whether it was a lucky chance or proper application of applied knowledge.

Therefore, from my perspective, correct praxis is the key word in human action, but this cannot be completely defined in terms of technological success or of the correctness of the planned and intended action. As long as the unplanned and unintended effects of human action, and of the autodynamics of nature are not added to our concept of reality, we only believe in "metaphysics" but not in rational knowledge. Separated from a definite theory of the entire interplay of effects of all kinds, every epistemology remains pseudo-concrete.

Regarding from a very abstract level, the investigation of disasters (failures) starting after their occurrence, resembles the inductive method. From a unique and single "event" a universe of possible causes has to be concluded. But without the imagination of this universe, of the totality of effects, the range and scope of possible causes cannot be anticipated. Mere description or vertigo in the circle of hermeneutics will be the alternative. Nevertheless, inductive disaster research is the step-by-step method to explore the totality of effects. Comparing the intended with the unintended, we will be able to detect the algorithms that lead to disaster at the same time. Vice versa, we will find out how we have to use the algorithms to avoid disasters. Seen that way, disasters are the only falsifications we have to prove the truth, i.e., the empirical correctness of our theories. Moreover, disasters are the proof of the knowledge of our knowledge. They are the key algorithm of our epistemologies. In this sense, disasters are fairly well sociological.

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