

"Disasters do not cause effects. The effects are what we call a disaster"

Wolf Dombrowsky

Introduction

The quotation on the cover ([Dombrowsky](#), 1995) contends that the effects, rather than the cause or the cause-and-effects, of an event¹ are the real disasters. In the quotation's source [Dombrowsky](#) discusses a variety of academic definitions of the term “disaster” arguing that few, if any, are entirely adequate for the sociological study of the subject. He also considers briefly that the progenitors of a catastrophe might contribute to the definition of a disaster. Ultimately though the argument revolves around:

- (1) the differing use and understanding of the term “disaster”; and
- (2) the need for a sociologically consistent and relevant definition of the term.

This discussion will explore the assertion that it is the effects rather than the cause which represents what a disaster is. With reference to two specific “disasters”, viz. the [Towyn Floods](#) (February 1990) and the [Chernobyl Incident](#) (April 1986), it will be argued that any meaningful study of disasters per se should represent a broader approach from the outset that embraces the spectrum of contributions, before, during and after the event, whilst acknowledging that from a sociological standpoint a disaster remains focussed on the effects. There will also be some consideration given to the idea that in making a useful definition for the term there is value in determining what makes a disaster different from a similar set of conditions that do not precipitate a calamitous event, and that therefore a disaster is inextricably related to the “incubation” ([Turner](#), 1978) period that precedes the effects.

[Dombrowsky's](#) argument remains centred around the lack of a sociological approach to the sociology of disaster research, at least in Europe. He further argues that the definitions of the term “disaster” that do exist tend to be worked around *elements* derived from the pantheon of disaster perspectives rather than producing a common all-embracing concept of what a disaster actually is. Thus he concludes:

“The type of phenomenon [specifically associated with a disaster] is only the key for the use of the appropriate tool-box.”

Might it not be however that this same criticism could be extended to the consideration that any study of disasters should be limited to a study of their effects? One of the particular advantages of asking this question at this time is that the definitions of the words “emergency”, “crisis”, “major incident” and “disaster”, all commonly used to describe similar events, are legion. Because of this the word “disaster” in this discussion will refer to the dictionary sense of the word, i.e. a sudden calamitous event producing great damage, loss, or destruction. The exception will be wherever an alternative definition is supplied. The argument here is one of basic communication: if we cannot agree on what a word means how can it be used meaningfully to describe anything to another person?

¹ Here taken to mean an occurrence precipitated by a spectrum of events the outcome of which may lead to immediate and/or protracted calamitous individual, social and/or environmental consequences.

What is a “Disaster”?

In modern times the most consistent definition comes from dictionaries. In times past the concept of a disaster was that of a freak event, originally associated with the sixteenth century French word “*desastre*” meaning “bad influence of the stars”, and more recently an “act of God”. In other words it was generally something that was outside the ability of man-kind to influence. More recently still the actual, secular, causes of disasters have become a key element in their definition. This is particularly true where:

- (1) the increasing complexity of modern socio-technical systems is taken into account, along with
- (2) the speed with which a calamitous collapse of all or part of such a system can affect its users.

Examples would be:

- (1) the use of nerve agents and passenger airliners as terrorist tools of mass destruction, and
- (2) the stock market collapse precipitated by the Al Qaeda attack on the twin World Trade Centre towers on the 9th of September, 2001.

Broadly speaking there would appear to be general agreement in the literature that disasters are brought about by a sudden, or large scale, misfortune or failure which has a significant social, socio-technical and/or environmental impact, whether acute, chronic or both.

“Disaster” remains synonymous with events that induce widespread destruction and distress and as such could be seen, superficially, as the cause rather than the effect. Might it be then that when the evolving term disaster is used in modern society what is understood by it is not, strictly speaking, either the cause or the effects but both, thus becoming a term that describes the whole spectrum from precipitating event to farthest reaching consequence? In this way the definition of a disaster becomes related to an event with catastrophic consequences rather than just the event without the costs. Therefore an earthquake of a given scale that occurs in the middle of an unpopulated desert zone in which no one is killed or injured, and where there are no significant environmental impacts, is not seen as a disaster because human social impact effects are absent. Conversely the same scale of earthquake in, say, urban Japan could well be described as a disaster because of the scale of the damage caused to individuals, local communities and industrial society as well as the financial impact. Clearly then this line of argument leads us to the conclusion that the difference between a situation that could be described as a disaster and a similar one that is not, is *strictly* related to the outcome and its impact on humanity and the environment; as [Dombrowsky](#) would have it: the effects. This reasoning leads to the conclusion that dire outcomes, individual, social or environmental, are what define a disaster however it has been precipitated.

What is the Word Generally Taken to Mean?

One of the difficulties in defining a more scientifically rigorous concept of disaster is that, like “risk”, the word has passed into common and increasingly frequent usage in recent times. In considering the assertion in the title of this essay; that disasters are what we observe as the effects of an incident rather than the cause we need to be clear about what the term “disaster” is most commonly taken to mean.

As mentioned earlier: in colloquial, rather than academic, usage the word tends to represent more fully the whole sequence of events from the physical manifestation and moment of catastrophe to the farthest reaching effect; mirrored in the saying: “a disaster waiting to happen”. Associated with this definition problem is that amongst response practitioners as well as those who are caught up in a “disaster” most of them would feel that they know what is meant by the word even if they cannot express it in common terms. This empirical observation is related to [Dombrowsky's](#) argument about the variety of perceptions of what a disaster represents. The situation then appears to be that whilst people and organisations at some stage can recognise something they are prepared to call a disaster they tend to do so with a form of “tunnel vision”, based on their specialisations. Therefore they allow themselves to appreciate only a part of the whole that goes to form the entirety that is the “Challenger Disaster”, or the “Zeebrügge Disaster”, or the “Bhopal Disaster” and so on.

How Do You Recognise a Disaster?

If we cannot say for sure exactly what it is how will we recognise one when we see it? The unfortunate answer is that not all disasters, in terms of effects, are immediately recognisable.

What then is special about the sequence of events that precipitates a disaster as opposed to a similar set that do not? And how readily can they be linked to the definition of the term “disaster”? When looking at what does and does not make a disaster it becomes relatively clear that there are two elements in particular, although by no means exclusively, that help to determine when an event can become disastrous. Firstly the number of people that are involved; and by this I mean the number of people for whom the disastrous event becomes a significant item for action, deliberation and/or reflection, whether they are directly involved or not. Second is the eventual cost, in purely financial terms. The greater the disaster the more significant a contribution these two make to the whole. These definition keys can be applied to the societal or individual level. At the level of the individual the first element refers more correctly to the degree to which the personal disaster takes over and pervades their everyday lives - the personal, internalised, equivalent of the number of people concentrating on the disaster.

But what of the period that preceded the effects, should they be excluded from the definition of a disaster? [Turner's](#) argument (1978): that ultimately disasters are a product of latent failures of human operated socio-technical systems implies that a useful definition of the term “disaster” cannot be properly divorced from its progenitors. Clearly, though, there must be a limit to how far back the causes of such system failures

can be traced. The six stage system that [Turner](#) hypothecates to describe the process that creates the conditions of a disaster starts with what is essentially a series of errors of omission and commission (i.e. type I and type II errors respectively). These errors then contribute to a period of:

- (1) INCUBATION; which then succumbs to a
- (2) PRECIPITATING EVENT; which in turn brings about the
- (3) onset of a FULL-BLOWN CRISIS RESPONSE; which will
- (4) ultimately lead to the RECOVERY PERIOD, and the
- (5) subsequent REVIEW AND LEARNING PHASE.

When Does a Crisis Become a Disaster?

Are disasters inevitably the children of crises mishandled? It has been argued widely, prompting recollections of the Commercial Union Insurance company in their advertising in the 1980s, that disasters are born out of mishandled crises. This argument implies that crises, properly handled, would not precipitate a disaster and that therefore, at least some, disasters may be avoided by ensuring that appropriate systems are in place to deal with as full a range of eventualities as possible. This approach has much to recommend it except that it may be, ultimately, unrealistic. The same willingness to adopt a risk taking strategy that lies at the base of the sequence of events that ultimately leads to disaster, also means that the same people and organisations are likely to make similar judgements and compromises when considering appropriate coping measures, particularly where they are seen as too costly, whether in political or financial terms. This is not to say that no-one learns from disasters and crises but rather that competing economic and political pressures will help to ensure that, in many cases, post incident reviews and revisions will be designed to protect those involved ([Scott](#), 1993;208) just as much as those affected. Therefore the chances that an organisation, or community, will ever be able to protect itself entirely adequately from a potential disaster remain smaller than they could theoretically be as long as human nature remains an inevitable part of the equation. In this way a disaster is inextricably linked to its incubation period and the rest of the “disaster cycle” (see [Alexander](#), 2002; 6).

Specific Issues Arising From Two Case Studies

CHERNOBYL

The far reaching, both in time and space, consequences of the Chernobyl accident on April 26th 1986 are an indication of the nature of what relates “disaster” to effects in the sense indicated by [Dombrowsky](#). The consequences of the disaster were manifold. There were not only the problems caused on-site by the explosion, fire and deaths in reactor no.4, but also the off-site implications in the evacuation of the nearby town of Pripyat and the contamination of the surrounding region. Another effect element was the consequence to the USSR’s political-industrial prestige coupled to the fact that this disaster was to be made known to the world under *glasnost*. Those were some of the more immediate effects in that region of the south-western USSR but both the acute and chronic effects reached much further afield. For example reindeer herders in

southern Norway, which received approximately 3.5% of the radio-Caesium ejected by the explosion at Chernobyl ([Tveten, Brynildsen, Amudsen and Bergan](#); 1998; 233), saw the condemning, as unfit for human consumption, of 85% of the 1986 production of reindeer meat (1998; 246) at a cost of (US)\$4,000,000. In total (US)\$26,000,000 in 1986 alone were lost to the Norwegian economy in responding to the effects of the incident in that part of the world. Over the 10 year period 1986-95 the simple financial cost to Norway was estimated by [Tveten et al](#) as (US)\$70,900,000 (1998; 252). The question is now “was what happened in Norway a disaster?” The answer revolves around:

- (1) whether the Norwegian economy could absorb the financial impact, both acute and chronic;
- (2) whether farmers and other producers lost their livelihoods (through no fault of their own);
- (3) whether the markets for affected products were able to recover their market share afterwards; and
- (4) whether the environment was, or is, able to recover sufficiently to return it to a condition comparable with, or better than, that prior to the accident.

Twenty-nine people died as an acute direct result of the Chernobyl accident. It is arguable that the eventual death rate will actually be much higher. The *million* or so extra deaths from cancer that have been estimated will occur across Europe over the next forty years are unlikely to be detectable in any statistical sense but they are expected.

All these effects represent elements of a personal, community, regional, national and even international disaster and as such support the definition that [Dombrowsky](#) argues for. Some of them were brought about by circumstances outside the control of those who were directly affected (e.g. the Norwegian reindeer farmers), others, particularly those that caused the immediate deaths, were a result of direct socio-technical systems failures (as argued by [Turner](#)).

The 1986 Chernobyl reactor accident was brought about by the by-passing of six separate reactor safety systems in order to carry out a test that was itself designed to enhance the safe operation of the reactor ([Sagan](#), 1993; 161). [Sagan](#) argues (1993; 39) that increasing use and reliance on built in redundancy and safety systems to protect dangerous processes may reduce the operational safety of the system to which they are applied. In particular with more complex systems it may be that multiple simultaneous failures are not as unlikely as thought and that over-reliance on protective systems at the design stage fails to take into account the way in which operators may choose to use and test the system(s). Should these failings be included in a definition of what represents a “disaster”? How do they contribute to the inevitability of the disaster? Put another way would the disaster study of the Chernobyl accident be hampered by a focus on the effects alone, as representing a disaster, rather than the entire sequence of events leading up to and following the actual explosion? Before attempting to answer that question let us look at another incident.

TOWYN

Like [Chernobyl](#) the Towyn floods were brought about by an unexpected catastrophic failure of an engineering system (the sea wall) the existence of which had led to a certain contempt for the familiar potential hazard associated with it. The event became known as the "Towyn Floods" largely because that was where the media set up camp but in all 2,800 properties were affected in Pensarn, Belgrano, Towyn and Kinnell Bay. Colwyn Borough Council's review of their involvement in the Towyn floods of February 1990 notes that:

"people become complacent over the years when nothing of note arises -"
([Gough](#), 1993;1).

Lack of insurance (or under-insurance) was a common factor in worsening the impact of the floods ([Fordham & Kettridge](#), 1995). Some 15% of the damaged properties had no buildings insurance; 40% had no contents insurance ([WCC](#),1992:37, 39). These exacerbating conditions were largely brought about by the relatively low incomes of the people living in the region ([Fordham & Kettridge](#), 1995; EPCa, 1994). They represent "incubation" period elements that contribute to the magnitude and extent of the effects that occur after the event that precipitates them and as such are inextricably related to the after-effects.

Other negative sociological effects induced after the flood occurred were caused by communication problems between the responders and the evacuees and included:

- (1) On the 26th of March Colwyn Borough Council had to issue a letter to all residents in the area following a radiation scare that had been broadcast on local TV (S4C). The report had claimed that radiation levels in the area were in excess of the generally accepted standard for that environment. The letter made no attempt to deny the television report but tried instead to assure its readers that all reasonable steps had been taken to determine whether there was any kind of radiation danger in the area.
- (2) In addition to this scare the local population had received similar letters from the Borough Council relating to "contamination by flood water" (6 of March 1990), "infectious disease medical advice" (7th of March 1990), "inhalation of dust" (27th of March) and well as general cleaning advice from Welsh water.
- (3) Residents returning to their homes were provided with information by the Borough Council this included advice to:
 - i. **"STOP** - do not enter premises until they have been checked by MANWEB and British Gas."
 - ii. **"WAIT** - until the council has taken away the debris, disinfected your home and removed **ALL** foodstuffs." And
 - iii. **"GO** - only when your home is hygienic unsafe." (Original emphasis).

Many of these exacerbators of disaster effects were the result of inadequate preparation and false assumptions in the pre-event phase, whether they were about what the threat

was, what it's associated risks might be, what the reactions of organisations would be and what was being, or could be, done about it before during or after the event.

The mixture of pre- and post-event elements like those outlined above may be said to have contributed to the nature of both the [Chernobyl](#) and Towyn disasters and in some cases, undoubtedly, to have made a bad situation worse. This is where much of the social impact of a disaster comes from and where a consideration of the definition of disaster from the sociological standpoint would tend to preclude the limitation of the study of what we call “disasters” to research on the effects of a significant impact event.

Where Does That Leave Us?

However one looks at it ultimately there are no disasters without effects that are a cause for significant and intense concern. Therefore the original assertion becomes, particularly from a human (whether societal or individual) or environmental perspective: a disaster is the mess we are faced with rather than what brought it about in the first place.

[Dombrowsky](#) suggests that, when considering the plethora of disaster definitions, in the end:

“[the term disaster]... is a trigger, a flag to signal a meaning, a stimulus to produce a specific reaction”

rather than a clearly defined and widely understood characterisation of a complex dynamic.

It seems clear that disasters do not occur when there are no human, or environmental, impacts. Therefore on the face of it it would seem that disasters should more properly be considered to be the effects rather than the cause, or perhaps the cause and the effects. Yet there are no disastrous effects without a precipitating event and the nature of this event dictates to a large extent the nature of the effects. Added to this must be the consideration that the progenitors of the initial incident can have a bearing on both the type and magnitude of the event that precipitates the effects as well as some of the effects themselves. Is it after all reasonable then to limit the term “disaster” to the effects alone?

The effects of a disaster can “rumble” down the years and yet remain closely related to the precipitating event with great emphasis being placed in post-incident inquiries on the audit trail that leads up to the event itself. As a result individuals and organisations may become specifically risk averse and dedicate significant resources into mitigating, or avoiding, the same type of disaster in the future.

[Dombrowsky](#) mentions that it is as inaccurate to suggest that “disaster strikes” as it is to imply that the “wind blows”. In fairness to the majority of people who use these phrases it can be assumed that most of them know, at least empirically, what is meant by them. Is it then entirely reasonable to attempt to remove a word or phrase from the common

vernacular and potentially redefine it to suit the academic pursuit of a clear, unequivocal, concise and common definition of what a disaster actually is? After all language is a living organ of society and like all living creatures that which exhibits the most relevant application to its environment tends to survive and dominate.

[Adams](#) (1995; 194) argues that, in the same way that chaos theory implies that weather prediction must remain an imprecise art, “*science has no firm ground on which to stand*” when examining risk (here taken to include the ultimate expression of the failure to remove risk). This, he argues, is because human beings are constantly interacting with the world around them and so altering it, in a risk-evolution sense, moment by moment. Consequently predictions produced in isolation of the consideration of how human systems will interact with technology ultimately fail because, in a system predicated on what is known, not enough is known about the future and how people will react to it from the micro- to the macro- level. At least not enough to predict with certainty the outcome of any particular scenario. The question that must now be asked is “How much of the seeds of future disasters do we sow in our preparations to forestall them?”

Conclusion

Famine is seen to precipitate a humanitarian disaster as millions suffer the consequences of drought, starvation and mismanagement, whereas equally severe droughts in unpopulated parts of the world (e.g. Antarctica) tend not to be referred to as disasters because the effects do not travel far enough into human society at that time.

The presaging of disasters, and in turn the construction of appropriate mitigation systems and philosophies, is a two-fold process as described by [Dombrowsky](#). In the first instance historical evidence informs the perception of the threat (here taken to mean the type of event that could produce potentially harmful effects to society and or the environment). In the second probabilistic assessments must be made of the likelihood and magnitude of adverse effects given the condition of current coping strategies. The double-edged sword created by this approach means that although there may be a willingness to learn from the past there is no guarantee that those lessons are entirely applicable to the future. Thus the commonly perceived military problem that defending armies are always trying to “fight the last war”. The depressing implication here, however, is that the seeds of future calamitous failures are sown in the response to the last disaster. To divorce the seeds from the fruit implies an, at best, tenuous relationship between the two; so in attempts to avoid future disasters it should be as much the progenitors that are focussed upon in mitigation proceedings as the after-effects.

In the end we are left with the conclusion that the response to disasters is the response to the effects but only insofar as the study of disasters is not included. When we include their study we must look back past the event itself to the conditions and decisions that brought about the eventual effects and recognise that, under those specific conditions, disasters are something more than the effects.

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