

ON THE LOGIC OF WEALTH DISTRIBUTION AND RISK DISTRIBUTION

In advanced modernity the social production of *wealth* is systematically accompanied by the social production of *risks*. Accordingly, the problems and conflicts relating to distribution in a society of scarcity overlap with the problems and conflicts that arise from the production, definition and distribution of techno-scientifically produced risks.

This change from the logic of wealth distribution in a society of scarcity to the logic of risk distribution in late modernity is connected historically to (at least) two conditions. First, it occurs – as is recognizable today – where and to the extent that *genuine material need* can be objectively reduced and socially isolated through the development of human and technological productivity, as well as through legal and welfare-state protections and regulations. Second, this categorical change is likewise dependent upon the fact that in the course of the exponentially growing productive forces in the modernization process, hazards and potential threats have been unleashed to an extent previously unknown.¹

To the extent that these conditions occur, one historical type of thinking and acting is relativized or overridden by another. The concepts of 'industrial' or 'class society', in the broadest sense of Marx or Weber, revolved around the issue of how socially produced wealth could be distributed in a socially unequal and *also* 'legitimate' way. This overlaps with the new *paradigm of risk society* which is based on the solution of a similar and yet quite different problem. How can the risks and hazards systematically produced as part of modernization be prevented, minimized, dramatized, or channeled? Where they do finally see the light of day in the shape of 'latent side effects', how can they be limited and distributed away so that they neither hamper the modernization process nor exceed the limits of that which is 'tolerable' – ecologically, medically, psychologically and socially?

We are therefore concerned no longer exclusively with making nature useful, or with releasing mankind from traditional constraints, but also and essentially with problems resulting from techno-economic development itself. Modernization is becoming *reflexive*; it is becoming its own theme. Questions of the development and employment of technologies (in the realms of nature, society and the personality) are being eclipsed by questions of the political and economic 'management' of the risks of actually or potentially utilized technologies – discovering, administering,

acknowledging, avoiding or concealing such hazards with respect to specially defined horizons of relevance. The promise of security grows with the risks and destruction and must be reaffirmed over and over again to an alert and critical public through cosmetic or real interventions in the techno-economic development.

Both 'paradigms' of inequality are systematically related to definite periods of modernization. The distribution of socially produced wealth and related conflicts occupy the foreground so long as obvious material need, the 'dictatorship of scarcity', rules the thought and action of people (as today in large parts of the so-called Third World). Under these conditions of 'scarcity society', the modernization process takes place with the claim of opening the gates to hidden sources of social wealth with the keys of techno-scientific development. These promises of emancipation from undeserved poverty and dependence underlie action, thought and research in the categories of social inequality, from the class through the stratified to the individualized society.

In the welfare states of the West a double process is taking place now. On the one hand, the struggle for one's 'daily bread' has lost its urgency as a cardinal problem overshadowing everything else, compared to material subsistence in the first half of this century and to a Third World menaced by hunger. For many people problems of 'overweight' take the place of hunger. This development, however, withdraws the legitimizing basis from the modernization process, the struggle against obvious scarcity, for which one was prepared to accept a few (no longer completely) unseen side effects.

Parallel to that, the knowledge is spreading that the sources of wealth are 'polluted' by growing 'hazardous side effects'. This is not at all new, but it has remained unnoticed for a long time in the efforts to overcome poverty. This dark side is also gaining importance through the overdevelopment of productive forces. In the modernization process, more and more *destructive* forces are also being unleashed, forces before which the human imagination stands in awe. Both sources feed a growing critique of modernization, which loudly and contentiously determines public discussions.

In systematic terms, sooner or later in the continuity of modernization the social positions and conflicts of a 'wealth-distributing' society begin to be joined by those of a 'risk-distributing' society. In West Germany we have faced the beginning of this transition since the early 1970s at the latest – that is my thesis. That means that two types of topics and conflicts overlap here. We do not *yet* live in a risk society, but we also no longer live *only* within the distribution conflicts of scarcity societies. To the extent that this transition occurs, there will be a real transformation of society which will lead us out of the previous modes of thought and action.

Can the concept of risk carry the theoretical and historical significance which is demanded of it here? Is this not a primeval phenomenon of

human action? Are not risks already characteristic of the industrial society period, against which they are being differentiated here? It is also true that risks are not an invention of modernity. Anyone who set out to discover new countries and continents – like Columbus – certainly accepted 'risks'. But these were *personal* risks, not global dangers like those that arise for all of humanity from nuclear fission or the storage of radioactive waste. In that earlier period, the word 'risk' had a note of bravery and adventure, not the threat of self-destruction of all life on Earth.

Forests have also been dying for some centuries now – first through being transformed into fields, then through reckless overcutting. But the death of forests today occurs *globally*, as the *implicit* consequence of industrialization – with quite different social and political consequences. Heavily wooded countries like Norway and Sweden, which hardly have any pollutant-intensive industries of their own, are also affected. They have to settle up the pollution accounts of other highly industrialized countries with dying trees, plants and animal species.

It is reported that sailors who fell into the Thames in the early nineteenth century did not drown, but rather choked to death inhaling the foul-smelling and poisonous fumes of this London sewer. A walk through the narrow streets of a medieval city would also have been like running the gauntlet for the nose. 'Excrement piles up everywhere, in the streets, at the turnpikes, in the carriages . . . The façades of Parisian houses are decomposing from urine . . . the socially organized constipation threatens to pull all of Paris into the process of putrescent decomposition' (Corbin 1984: 41ff.). It is nevertheless striking that hazards in those days assaulted the nose or the eyes and were thus perceptible to the senses, while the risks of civilization today typically *escape perception* and are localized in the sphere of *physical and chemical formulas* (e.g. toxins in foodstuffs or the nuclear threat).

Another difference is directly connected to this. In the past, the hazards could be traced back to an *undersupply* of hygienic technology. Today they have their basis in industrial *overproduction*. The risks and hazards of today thus differ in an essential way from the superficially similar ones in the Middle Ages through the global nature of their threat (people, animals and plants) and through their *modern* causes. They are risks of *modernization*. They are a *wholesale product* of industrialization, and are systematically intensified as it becomes global.

The concept of risk is directly bound to the concept of reflexive modernization. *Risk* may be defined as a *systematic way of dealing with hazards and insecurities induced and introduced by modernization itself*. Risks, as opposed to older dangers, are consequences which relate to the threatening force of modernization and to its globalization of doubt. They are *politically reflexive*.

Risks, in this meaning of the word, are certainly as old as that development itself. The immiseration of large parts of the population – the

'poverty risk' – kept the nineteenth century holding its breath. 'Threats to skills' and 'health risks' have long been a theme of automation processes and the related social conflicts, protections (and research). It did take some time and struggle to establish social welfare state norms and minimize or limit these kinds of risk politically. Nevertheless, the ecological and high-tech risks that have upset the public for some years now, which will be the focus of what follows, have a new quality. In the afflictions they produce they are no longer tied to their place of origin – the industrial plant. By their nature they endanger *all* forms of life on this planet. The normative bases of their calculation – the concept of accident and insurance, medical precautions, and so on – do not fit the basic dimensions of these modern threats. Atomic plants, for example, are not privately insured or insurable. Atomic accidents are accidents no more (in the limited sense of the word 'accident'). They outlast generations. The affected even include those not yet alive at the time or in the place where the accident occurred but born years later and long distances away.

This means that the calculation of risk as it has been established so far by science and legal institutions *collapses*. Dealing with these consequences of modern productive and destructive forces in the normal terms of risk is a false but nevertheless very effective way of legitimizing them. Risk scientists normally do so as if there is not the gap of a century between the local accidents of the nineteenth century and the often creeping, catastrophic potentials at the end of the twentieth century. Indeed, if you distinguish between calculable and non-calculable threats, under the surface of risk calculation new kinds of *industrialized, decision-produced incalculabilities and threats* are spreading within the globalization of high-risk industries, whether for warfare or welfare purposes. Max Weber's concept of 'rationalization' no longer grasps this late modern reality, produced by successful rationalization. *Along with the growing capacity of technical options [Zweckrationalität] grows the incalculability of their consequences.* Compared to these global consequences, the hazards of primary industrialization indeed belonged to a different age. The dangers of highly developed nuclear and chemical productive forces abolish the foundations and categories according to which we have thought and acted to this point, such as space and time, work and leisure time, factory and nation state, indeed even the borders between continents. To put it differently, in the risk society the unknown and unintended consequences come to be a dominant force in history and society.²

The social architecture and political dynamics of such potentials for self-endangerment in civilization will occupy the center of these discussions. The argument can be set out in five theses:

(1) Risks such as those produced in the late modernity differ essentially from wealth. By risks I mean above all radioactivity, which completely evades human perceptive abilities, but also toxins and pollutants in the air, the water and foodstuffs, together with the accompanying short- and long-term effects on plants, animals and people. They induce systematic

and often *irreversible* harm, generally remain *invisible*, are based on *causal interpretations*, and thus initially only exist in terms of the (scientific or anti-scientific) *knowledge* about them. They can thus be changed, magnified, dramatized or minimized within knowledge, and to that extent they are particularly *open to social definition and construction*. Hence the mass media and the scientific and legal professions in charge of defining risks become key social and political positions.

(2) Some people are more affected than others by the distribution and growth of risks, that is, *social risk positions* spring up. In some of their dimensions these follow the inequalities of class and strata positions, but they bring a fundamentally different distributional logic into play. Risks of modernization sooner or later also strike those who produce or profit from them. They contain a *boomerang effect*, which breaks up the pattern of class and national society. Ecological disaster and atomic fallout ignore the borders of nations. Even the rich and powerful are not safe from them. These are hazards not only to health, but also to legitimation, property and profit. *Connected* to the recognition of modernization risks are *ecological devaluations and expropriations*, which frequently and systematically enter into contradiction to the profit and property interests which advance the process of industrialization. Simultaneously, risks produce *new international inequalities*, firstly between the Third World and the industrial states, secondly among the industrial states themselves. They undermine the order of national jurisdictions. In view of the universality and supra-nationality of the circulation of pollutants, the life of a blade of grass in the Bavarian Forest ultimately comes to depend on the making and keeping of international agreements. Risk society in this sense is a world risk society.

(3) Nevertheless, the diffusion and commercialization of risks do not break with the logic of capitalist development completely, but instead they raise the latter to a new stage. There are always losers but also winners in risk definitions. The space between them varies in relation to different issues and power differentials. Modernization risks from the winners' points of view are *big business*. They are the insatiable demands long sought by economists. Hunger can be sated, needs can be satisfied, but *civilization risks* are a *bottomless barrel of demands*, unsatisfiable, infinite, self-producible. One could say along with Luhmann that with the advent of risks, the economy becomes 'self-referential', independent of the surrounding satisfaction of human needs. But that means: with the economic exploitation of the risks it sets free, industrial society produces the hazards and the political potential of the risk society.

(4) One can *possess* wealth, but one can only be *afflicted by risks*; they are, so to speak, *ascribed* by civilization. [Bluntly, one might say: in class and stratification positions being determines consciousness, while in risk positions *consciousness determines being*.] Knowledge gains a new political significance. Accordingly the political potential of the risk society

must be elaborated and analyzed in a sociological theory of the origin and diffusion of *knowledge about risks*.

(5) Socially recognized risks, as appears clearly in the discussions of forest destruction, contain a peculiar political explosive: what *was* until now *considered unpolitical becomes political* – *the elimination of the causes in the industrialization process itself*. Suddenly the public and politics extend their rule into the private sphere of plant management – into product planning and technical equipment. What is at stake in the public dispute over the definition of risks is revealed here in an exemplary fashion: not just secondary health problems for nature and mankind, but the *social, economic and political consequences of these side effects* – collapsing markets, devaluation of capital, bureaucratic checks on plant decisions, the opening of new markets, mammoth costs, legal proceedings and loss of face. In smaller or larger increments – a smog alarm, a toxic spill, etc. – what thus emerges in risk society is the *political potential of catastrophes*. Averting and managing these can include a *reorganization of power and authority*. Risk society is a *catastrophic* society. In it the exceptional condition threatens to become the norm.

Scientific Definition and Distributions of Pollutants

The debate on pollutant and toxic elements in air, water and foodstuffs, as well as on the destruction of nature and the environment in general, is still being conducted exclusively or dominantly in the terms and formulas of *natural* science. It remains unrecognized that a social, cultural and political meaning is inherent in such scientific 'immiseration formulas'. There exists accordingly a danger that an environmental discussion conducted exclusively in chemical, biological and technological terms will inadvertently include human beings in the picture only as *organic material*. Thus the discussion runs the risk of making the same mistake for which it has long and justly reproached the prevailing optimism with respect to industrial progress; it runs the risk of atrophying into a discussion of nature *without* people, without asking about matters of social and cultural significance. Particularly the debates over the last few years, in which all arguments critical of technology and industry were once again deployed, have remained at heart *technocratic* and *naturalistic*. They exhausted themselves in the invocation and publication of the pollutant levels in the air, water and foodstuffs, in relative figures of population growth, energy consumption, food requirements, raw material shortages and so on. They did so with a passion and a singlemindedness as if there had never been people such as a certain Max Weber, who apparently wasted his time showing that without including structures of social power and distribution, bureaucracies, prevailing norms and rationalities, such a debate is either meaningless or absurd, and probably both. An understanding has crept in, according to which modernity is reduced to the frame of reference of technology and nature in the manner

of perpetrator and victim. The social, cultural and political risks of modernization remain hidden by this very approach, and from this way of thinking (which is also that of the political environmental movement).

Let us illustrate this with an example. The Rat der Sachverständigen für Umweltfragen (Council of Experts on Environmental Issues) determines in a report that 'in mother's milk beta-hexachlorocyclohexane, hexachlorobenzol and DDT are often found in significant concentrations' (1985: 33). These toxic substances are contained in pesticides and herbicides that have by now been taken off the market. According to the report their origin is undetermined (33). At another point it is stated: 'The exposure of the population to lead is not dangerous on average' (35). What is concealed behind that statement? Perhaps by analogy the following distribution. Two men have two apples. One eats both of them. Thus they have eaten *on average* one each. Transferred to the distribution of foodstuffs on the global scale this statement would mean: 'on average' all the people in the world have enough to eat. The cynicism here is obvious. In one part of the Earth people are dying of hunger, while in the other the consequences of overeating have become a major item of expense. It may be, of course, that this statement about pollutants and toxins is *not* cynical, that the *average* exposure is also the *actual* exposure of *all* groups in the population. But do we know that? In order to defend this statement, is it not a prerequisite that we know what other poisons the people are forced to inhale and ingest? It is astonishing how *as a matter of course* one inquires about 'the average'. A person who inquires about the average already excludes many socially unequal risk positions. But that is exactly what that person cannot know. Perhaps there are groups and living conditions for which the levels of lead and the like that are 'on average harmless' constitute a *mortal danger*?

The next sentence of the report reads: 'Only in the vicinity of industrial emitters are dangerous concentrations of lead sometimes found in children.' What is characteristic is not just the absence of any social differentiations in this and other reports on pollutants and toxins. It is also characteristic *how* differentiations are made – along *regional* lines with regard to emission sources and according to *age* differences – both criteria that are rooted in *biological* (or more generally, natural scientific) thinking. This cannot be blamed on the expert committees. It only reflects the general state of scientific and social thought with regard to environmental problems. These are generally viewed as matters of nature and technology, or of economics and medicine. What is astonishing about that is that the industrial pollution of the environment and the destruction of nature, with their multifarious effects on the health and social life of people, which only arise in highly developed societies, are characterized by a *loss of social thinking*. This loss becomes caricature – this absence seems to strike no one, not even sociologists themselves.

People inquire about and investigate the distribution of pollutants, toxins, contamination of water, air, and foodstuffs. The results are

presented to an alarmed public on multi-colored 'environmental maps', differentiated along regional lines. To the extent that the state of the environment is to be presented in this way, this mode of presentation and consideration is obviously appropriate. As soon as *consequences for people* are to be drawn from it, however, the underlying thought *short-circuits*. Either one implies broadly that *all* people are *equally* affected in the identified pollution centers – independent of their income, education, occupation and the associated eating, living and recreational opportunities and habits (which would have to be proved). Or one ultimately excludes people and the extent of their affliction entirely and speaks only about pollutants and their distributions and effects on the region.

The pollution debate conducted in terms of natural science correspondingly moves between the false conclusion of social afflictions based on biological ones, and a view of nature which excludes the selective affliction of people as well as the social and cultural meaning connected to it. At the same time what is not taken into consideration is that *the same* pollutants can have quite *different* meanings for *different* people, according to age, gender, eating habits, type of work, information, education and so on.

What is particularly aggravating is that investigations which start from individual pollutants can *never* determine the concentration of pollutants *in people*. What may seem 'insignificant' for a single product, is perhaps extremely significant when collected in the 'consumer reservoirs' which people have become in the advanced stage of total marketing. We are in the presence here of a *category error*. A pollution analysis oriented to nature and products is incapable of answering questions about safety, at least as long as the 'safety' or 'danger' has anything to do with the people who swallow or breathe the stuff. What is known is that the taking of several medications can nullify or amplify the effect of each individual one. Now people obviously do not (yet) live by medications alone. They also breathe the pollutants in the air, drink those in the water, eat those in the vegetables, and so on. In other words, the insignificances can add up quite significantly. Do they thereby become more and more insignificant – as is usual for sums according to the rules of mathematics?

On the Knowledge Dependence of Modernization Risks

Risks like wealth are the object of distributions, and both constitute positions – risk positions and class positions respectively. In each case, however, one is concerned with a quite different good and a quite different controversy on its distribution. In the case of social wealth, one is dealing with consumer goods, incomes, educational opportunities, property, etc. as desirable items in scarcity. By contrast, risks are an *incidental* problem of modernization in *undesirable abundance*. These must be either eliminated or denied and reinterpreted. The *positive logic of acquisition* contrasts with a *negative logic of disposition*, avoidance, denial, and reinterpretation.

While such things as income and education are consumable goods that can be experienced by the individual, the existence of and distribution of risks and hazards are *mediated on principle through argument*. That which impairs health or destroys nature is not recognizable to one's own feeling or eye, and even where it is seemingly in plain view, qualified expert judgment is still required to determine it 'objectively'. Many of the newer risks (nuclear or chemical contaminations, pollutants in foodstuffs, diseases of civilization) completely escape human powers of direct perception. The focus is more and more on hazards which are neither visible nor perceptible to the victims; hazards that in some cases may not even take effect within the lifespans of those affected, but instead during those of their children; hazards in any case that *require the 'sensory organs' of science – theories, experiments, measuring instruments – in order to become visible or interpretable as hazards at all*. The paradigm of these hazards is the gene-altering effects of radioactivity, which, as the reactor accident at Three Mile Island shows, imperceptibly abandon the victims completely to the judgments, mistakes and controversies of experts, while subjecting them to terrible psychological stresses.

Thinking the Separated Together: Presumptions of Causality

The knowledge dependency and invisibility of civilization's risk positions of course do not suffice to define them conceptually; they also contain additional components. Statements on hazards are never reducible to mere statements of fact. As part of their constitution, they contain both a *theoretical* and a *normative* component. The findings 'significant concentrations of lead in children' or 'pesticide substances in mothers' milk' *as such* are no more risk positions of civilization than the nitrate concentrations in the rivers or the sulfur dioxide content of the air. A causal interpretation must be added, which makes this appear to be a product of the industrial mode of production, a systematic side effect of modernization. In socially recognized risks, therefore, the authorities and agents of the modernization process along with all their particular interests and dependencies are presumed, and are placed in a direct connection, in the pattern of cause and effect, with signs of damage and threats that are socially, substantively, spatially and temporally quite detached. The woman sitting in a three-bedroom apartment in a housing estate of suburban Munich and nursing her three-month-old son Martin is in this way 'directly related' to the chemical industry that produces agricultural chemicals, to the farmers who find themselves forced by EEC rules to engage in specialized mass production with overfertilization and so on. The radius in which one can search for side effects remains largely open. Recently an overdose of DDT was even found in Antarctic penguins.

These examples show two things: firstly, that modernization risks appear in geographically specific areas, as well as unspecifically and universally; secondly, how *erratic* and *unpredictable* the tortuous paths of

their deleterious effects can be. In modernization risks, then, things which are substantively-objectively, spatially and temporally disparate are drawn together causally and thus brought into a social and legal context of responsibility. As we have known at least since Hume, however, presumptions of causality escape our perception. They must always be imagined, implied to be true, believed. In this sense too, risks are *invisible*. The implied causality always remains more or less uncertain and tentative. Thus we are dealing with a *theoretical* and hence a *scientized* consciousness, even in the everyday consciousness of risks.

Implicit Ethics

Even this causal linking of the institutionally separated does not suffice. Risks experienced presume a *normative horizon* of lost security and broken trust. Hence, even where they approach us silently, clad in numbers and formulas, risks remain fundamentally *localized*, mathematical condensations of wounded images of a life worth living. These ideas must in turn be *believed*, that is, they cannot be experienced *as such*. In this sense, risks are objectified negative images of utopias, in which the human, or what is left of it, is preserved and revived in the modernization process. Despite all its unrecognizability, this normative horizon, in which the riskiness of the risk first becomes tangible, cannot ultimately be removed by mathematics or experiments. Behind all the objectifications, sooner or later the question of *acceptance* arises and with it anew the old question: *how do we wish to live?* What is the human quality of humankind, the natural quality of nature which is to be preserved? The spreading talk of 'catastrophe' is in this sense an objectified, pointed, radicalized expression that this development is *not wanted*.

These revived questions – what is humankind? what do we think about nature? – may be shunted back and forth between everyday life, politics and science. In the most advanced developmental stage of civilization they once again occupy a very high place on the agenda, even or *especially* where they were supposed to have been made invisible by their traditional magic cap of mathematical formulas and methodological controversies. Determinations of risks are the form in which ethics, and with it also philosophy, culture and politics, is resurrected *inside* the centers of modernization – in business, the natural sciences and the technical disciplines. They are, one might say, an unwanted means of democratization in the fields of industrial production and management, which somehow does become public discussion, depending on risk reasoning. Risk determinations are an unrecognized, still undeveloped symbiosis of the natural and the human sciences, of everyday and expert rationality, of interest and fact. They are simultaneously neither simply the one nor only the other. They can no longer be isolated from one another through specialization, and developed and set down according to their own

standards of rationality. They require a cooperation across the trenches of disciplines, citizens' groups, factories, administration and politics, or – which is more likely – they disintegrate between these into antagonistic definitions and *definitional struggles*.

Scientific and Social Rationality

Herein lies the essential and momentous consequence: in definitions of risks the *sciences' monopoly on rationality is broken*. There are always competing and conflicting claims, interests and viewpoints of the various agents of modernity and affected groups, which are forced together in defining risks in the sense of cause and effect, instigator and injured party. There is no expert on risk. Many scientists do go to work with the entire impetus and pathos of their objective rationality, and their effort to be objective grows in proportion to the political content of their definitions. But at the center of their work they continue to be reliant on social and thus prescribed expectations and values. Where and how does one draw the line between *still* acceptable and *no longer* acceptable exposures? How susceptible to compromise are the presupposed standards? Should the possibility of an ecological catastrophe be accepted, for instance, in order to satisfy economic interests? What are necessities, *supposed* necessities, and necessities *that must be changed*?

Science's rationality claim to be able to investigate objectively the hazardousness of a risk permanently refutes itself. It is based, firstly, on a house of cards of speculative assumptions, and moves exclusively within a framework of probability statements, whose prognoses of safety cannot even be refuted, strictly speaking, by *actual accidents*. Secondly, one must assume an *ethical point of view* in order to discuss risks meaningfully at all. Risk determinations are *based* on mathematical *possibilities* and social interests, especially, if they are presented with technical certainty. In dealing with civilization's risks, the sciences have always abandoned their foundation of experimental logic and made a polygamous marriage with business, politics and ethics – or more precisely, they live with the latter in a sort of 'permanent marriage without a license'.

This hidden external determination in risk research becomes a problem at the very least when scientists still appear with a monopoly claim on rationality. The studies of reactor safety restrict themselves to the estimation of certain quantifiable risks on the basis of probable accidents. The dimensions of the hazard are limited from the very beginning to *technical manageability*. In some circles it is said that risks which are not yet technically manageable do not exist – at least not in scientific calculation or jurisdictional judgment. These uncalculable threats add up to an unknown residual risk which becomes the industrial endowment for everyone everywhere. For large segments of the population and for opponents of nuclear energy, its *catastrophic potential* is central. No matter how small an accident probability is held, it is too large when *one*

accident means annihilation. But the quantifiable concepts of risk concentrate on the probable occurrence of an accident and deny the difference, let us say, between a limited aircraft crash and the explosion of an atomic plant, improbable as it might be, which affects nations and generations not yet born. Furthermore, in the public discussions, hazardous qualities have roles which are not dealt with at all in the risk studies, such as the proliferation of nuclear weapons; the changeability of chemical and atomic technologies from civil to military uses and purposes; the gray zone between normal and war production, which expands with expanding risk industries and markets all over the world; the contradiction between humanity (mistakes and failures) and safety; or the length and irreversibility of mega-technological decisions that trifle with the lives of future generations. There is no perfect system, and no perfect human being who fits its necessities. Even trying to establish something like a perfect system would mean to establish perfect control, some kind of dictatorship in everyday life.

In other words, what becomes clear in risk discussions are the fissures and gaps between scientific and social rationality in dealing with the hazardous potential of civilization. The two sides talk past each other. Social movements raise questions that are not answered by the risk technicians at all, and the technicians answer questions which miss the point of what was really asked and what feeds public anxiety.

Scientific and social rationality do indeed break apart, but they remain at the same time interwoven and interdependent. Strictly speaking, even this distinction is becoming less and less possible. The scientific concern with the risks of industrial development in fact relies on social expectations and value judgments, just as the social discussion and perception of risks depend on scientific arguments. Risk research follows with some embarrassment in the footsteps of 'technophobia' which it was called upon to restrain, and from which, moreover, it has received an undreamed-of material support in recent years. Public criticism and disquiet derive essentially from the dialectic of expertise and counter-expertise. Without scientific arguments and scientific critique of scientific arguments they remain *dull*; indeed, they cannot even perceive the mainly 'invisible' object and event of their critique and fears. To modify a famous phrase: scientific rationality without social rationality remains empty, but social rationality without scientific rationality remains blind.

The above is not supposed to outline an image of general harmony. On the contrary, what is addressed are frequently competing rationality claims, struggling for acceptance. In both camps quite different things occupy the center of attention and different things are considered variable or held constant. In one camp the primary emphasis for change lies on the industrial mode of production, in the other on the technological manageability of accident probabilities.

The Multiplicity of Definitions: More and More Risks

The theoretical content and the value reference of risks imply additional components: the observable *conflictual pluralization and multiplicity of definitions of civilization's risks*. There occurs, so to speak, an over-production of risks, which sometimes relativize, sometimes supplement and sometimes outdo one another. One hazardous product might be defended by dramatizing the risks of the others (for example, the dramatization of climatic consequences 'minimizes' the risk of nuclear energy). Every interested party attempts to defend itself with risk definitions, and in this way to ward off risks which could affect its pocketbook. The endangering of the soil, plants, air, water and animals occupies a special place in this struggle of all against all for the most beneficial risk definition, to the extent that it expresses the *common good* and the vote of those who themselves have neither vote nor voice (perhaps only a passive franchise for grass and earthworms will bring humanity to its senses). This pluralism is evident in the scope of risks; the urgency and existence of risks fluctuate with the variety of values and interests. That this has an effect on the substantive element of risks is less obvious.

The causal nexus produced in risks between actual or potential damaging effects and the system of industrial production opens an almost infinite number of individual explanations. Actually, one can relate everything to everything else, at least experimentally, so long as the basic pattern is retained – modernization as the cause, damage as the side effect. Much will not be able to be corroborated. Even what has been corroborated will have to maintain itself against systematic and lasting skepticism. It is essential, however, that even in the incalculable profusion of individual interpretations, *individual* conditions are again and again related to each other. Let us pick out forest destruction. So long as bark beetles, squirrels or the particular responsible forestry office were still being considered as causes and guilty parties, we were seemingly concerned not with a 'risk of modernization', but rather with sloppy forestry or animal voracity.

A quite different spectrum of causes and guilty parties is opened up when this typical local misdiagnosis, which risks always have to break through in order to be acknowledged, is overcome and the destruction of the forest is understood and recognized as an effect of *industrialization*. Only then does it become a long-term, systematically caused problem, which can no longer be alleviated at the local level, but instead requires *political* solutions. Once this change in views has become established, many other things become possible. Is it sulfur dioxide, nitrogen oxides, their photochemical breakdown products, hydrocarbons, or something else as yet totally unknown, which are giving us the final and eternal autumn – the falling leaves? These chemical formulas appear to stand alone. Behind them, however, companies, industrial sectors, business, scientific and professional groups move into the firing line of public

criticism. For every socially recognized 'cause' comes under massive pressure for change, and with it, the system of action in which it originated. Even if this public pressure is fended off, sales drop, markets collapse and the 'trust' of customers has to be won back and strengthened by large, expensive advertising campaigns. Is the automobile the 'chief polluter of the nation' and thus the real 'forest killer'? Or is it finally time to install high-quality, state-of-the-art scrubbing apparatus in coal-fired power plants? Or would that too perhaps prove useless, since the pollutants which cause the forest to die are delivered 'free to our doorstep' (or 'free to our forest') from the smokestacks and exhaust pipes of neighboring countries?

Everywhere the spotlight in search of a cause falls, fire breaks out, so to speak, and the hastily assembled and poorly equipped 'argumentation fire company' must try to put it out with a powerful stream of counter-arguments, and save whatever can still be saved. Those who find themselves in the public pillory as risk producers refute the charges as well as they can, with the aid of a 'counter-science' gradually becoming institutionalized in industry, and attempt to bring in other causes and thus other originators. The picture reproduces itself. Access to the media becomes crucial. The insecurity within industry intensifies: no one knows who will be struck next by the anathema of ecological morality. Good arguments, or at least arguments capable of convincing the public, become a condition of business success. Publicity people, the 'argumentation craftsmen', get their opportunity in the organization.

Chains of Causality and Cycles of Damage: the Concept of System

To put it again bluntly, all these effects set in quite independently of how tenable the implied causal interpretations may appear from a possible scientific perspective. Generally, opinions within the sciences and disciplines concerned diverge wildly anyway. The social effect of risk definitions is therefore not dependent on their scientific validity.

This diversity of interpretations, however, also has its basis in the logic of modernization risks themselves. After all, the attempt is being made here to relate destructive effects to individual factors that can scarcely be isolated within the complex system of the industrial mode of production. The systemic interdependence of the highly specialized agents of modernization in business, agriculture, the law and politics corresponds to the absence of isolable single causes and responsibilities. Is agriculture contaminating the soil, or are the farmers merely the weakest link in the chain of destructive cycles? Are they perhaps just dependent and subordinate markets for the chemical feed and fertilizer industries, and are they where one should apply leverage for a preventive decontamination of the soil? The authorities could have forbidden or drastically limited the sale of toxic chemicals long ago. But they do not do it. On the contrary, with

the support of science they continually issue licenses for the 'harmless' production of toxic chemicals that are cutting us all to the quick (and deeper still). Who will take the hot potato: the authorities, science or politics? But they do not till the soil, after all. So it is the farmers? But they were squeezed by the EEC, they have to practice fertilizer-intensive overproduction in order to survive . . .

In other words, corresponding to the highly differentiated division of labor, there is a general complicity, and the complicity is matched by a general lack of responsibility. Everyone is cause *and* effect, and thus *non-cause*. The causes dribble away into a general amalgam of agents and conditions, reactions and counter-reactions, which brings social certainty and popularity to the concept of system.

This reveals in exemplary fashion the ethical significance of the system concept: *one can do something and continue doing it without having to take personal responsibility for it.* It is as if one were acting while being personally absent. One acts physically, without acting morally or politically. The generalized other – the system – acts within and through oneself: this is the slave morality of civilization, in which people act personally and socially as if they were subject to a natural fate, the 'law of gravitation' of the system. This is the way the 'hot potato' is passed in the face of the threatening ecological disaster.³

The Risk Content: the Not-Yet-Event as Stimulus to Action

Risks of course do not exhaust themselves in the effects and damages that have already occurred. There must be a distinction between *already destructive consequences* and the *potential element* of risks. In this second sense, risks essentially express a *future* component. This is based in part on the prolonging of currently calculable damages into the future, and in part on a general loss of confidence or on 'risk multipliers'. By nature, then, risks have something to do with anticipation, with destruction that has not yet happened but is threatening, and of course in that sense risks are already real today. An example from the Rat der Sachverständigen für Umweltfragen (1985): the Council notes that the high nitrate concentrations from nitrogen fertilizers have so far barely if at all seeped down to the deep ground water from which we draw our drinking water. The nitrates are largely broken down in the subsoil. It is not known, though, how this happens or how long it will continue. There are good reasons not to project the filtering effect of this protective layer into the future without reservations. 'It is to be feared that the current leaching of nitrate will also have reached deeper layers of ground water years or decades from now, with a delay corresponding to the flow time' (29). In other words: the time bomb is ticking. In this sense risks signify a future which is to be prevented.

By contrast to the tangible clarity of wealth, risks have something *unreal* about them. In a fundamental sense they are both *real* and *unreal*.

On the one hand, many hazards and damages are already real today: polluted and dying bodies of water, the destruction of the forest, new types of disease, and so on. On the other hand, the actual social impetus of risks lies in the *projected dangers of the future*. In this sense there are hazards which, if they occur, would mean destruction on such a scale that action afterwards would be practically impossible. Therefore, even as conjectures, as threats to the future, as prognoses, they have and develop a practical relevance to preventive actions. The center of risk consciousness lies not in the present, but *in the future*. In the risk society, the past loses the power to determine the present. Its place is taken by the future, thus, something non-existent, invented, fictive as the 'cause' of current experience and action. We become active today in order to prevent, alleviate or take precautions against the problems and crises of tomorrow and the day after tomorrow – or not to do so. Bottlenecks in the labor market projected in mathematical models have a direct effect on educational behavior. Anticipated, threatening unemployment is an essential determinant of the conditions of and attitude towards life today. The predicted destruction of the environment and the nuclear threat upset society and bring large portions of the younger generation into the streets. In the discussion of the future we are dealing with a 'projected variable', a 'projected cause' of present (personal and political) action. The relevance and importance of these variables is directly proportional to their unpredictability and their threat, and we (must) project the latter in order to determine and organize our present actions.

Legitimation: 'Latent Side Effects'

This presupposes, of course, that risks have successfully passed through a process of social recognition. At first, risks are, however, goods to be avoided, *whose non-existence is implied until canceled* – according to the motto '*in dubio pro progress*', which means '*in dubio pro looking away*'. A mode of legitimation is clearly connected to this, one which differs clearly from the unequal distribution of social wealth. Risks can be legitimated by the fact that one neither *saw nor wanted their consequences*. Risk positions first have to break through the protective shield of taboos surrounding them, and 'be born scientifically' in scientized civilization. This generally happens as the status of a 'latent side effect', which simultaneously admits and legitimates the reality of the hazard. What was not seen could not be prevented, was produced with the best intentions, and is an unwanted problem child of the objective in mind. 'Latent side effect' thus stands for a type of license, a *natural fate* of civilization, which simultaneously confesses to, selectively distributes and justifies undesirable consequences.

Class-Specific Risks

The type, pattern and media for the distribution of risks differ systematically from those of the distribution of wealth. That does not exclude risks from often being distributed in a stratified or class-specific way. In this sense there are broad overlapping areas between class and risk society. The history of risk distribution shows that, like wealth, risks adhere to the class pattern, only inversely: wealth accumulates at the top, risks at the bottom. To that extent, risks seem to *strengthen*, not to abolish, the class society. Poverty attracts an *unfortunate abundance of risks*. By contrast, *the wealthy (in income, power or education) can purchase safety and freedom from risk*. This 'law' of the class-specific distribution of risks and thus of the intensification of class antagonisms through the concentration of risks among the poor and the weak was valid for a long time and still applies today to some central dimensions of risk. The risk of becoming unemployed is considerably higher for unskilled than for skilled workers. Risks from stress, radiation and toxic chemicals that are connected to working in the corresponding industrial plants are unevenly distributed among specific occupations. It is especially the cheaper residential areas for low-income groups near centers of industrial production that are permanently exposed to various pollutants in the air, the water and the soil. A higher tolerance can be obtained with the threat of a loss of income.

Here it is not just this social filtering or amplification effect which produces class-specific afflictions. The possibilities and abilities to deal with risks, avoid them or compensate for them are probably unequally divided among the various occupational and educational strata. Whoever has the necessary long-term financial cushion at hand can attempt to avoid risk through the choice of a place of residence or the set-up of the residence itself (or through a second house, vacations, etc.). The same is true for nutrition, education and the related behavior patterns in eating and informing oneself. *A sufficiently well filled wallet puts one in a position to dine on eggs from 'contented hens' and salads from 'pampered heads of lettuce'*. Education and attentiveness to information open up new possibilities of dealing with and avoiding risks. One can avoid certain products (e.g. liver from old steers with high levels of lead), and through sophisticated nutritional techniques one can vary the weekly menu so that the heavy metals in North Sea fish are dissolved, supplemented or neutralized by the toxic chemicals in pork and tea (or maybe they are intensified after all?). Cooking and eating are becoming a kind of *implicit food chemistry*, a kind of witch's cauldron in reverse, meant to minimize harmful effects. Here quite extensive knowledge is required in order use 'nutritional engineering' to play a little private trick on the overproduction of pollutants and toxins in the chemical and agricultural industries. Nonetheless, it is very probable that class-specifically distributed 'anti-chemical' nutritional and living habits *depend on knowledge* and will

emerge in reaction to news about pollution in the press and television. In 'nutritionally aware', well heeled segments of the population, this everyday 'anti-chemistry' (often brought neatly packaged to consumers as an offshoot of the chemical industry) will turn every area of subsistence inside out – from food to housing, from illness to leisure behavior (and it has already done that). From this, one could derive the general assessment that through these reflective and well financed dealings with risks the old social inequalities are strengthened on a *new* level. But that does *not* strike at the heart of the distributional logic of risks.

Parallel to the intensification of risk positions, the private escape routes and possibilities for compensation shrink and are simultaneously propagated. The exponential growth of risks, the impossibility of escaping from them, political abstinence and the announcement and sale of private escape opportunities *condition* one another. For *some* foods this private evasive action may still help, but already in the water supply all the social strata are connected to the same pipe. When one looks at 'forest skeletons' in 'rural idylls' far removed from industry, it becomes clear that the class-specific barriers fall before the air we all breathe. In these circumstances, only *not* eating, *not* drinking and *not* breathing could provide effective protection. And even that only helps to a degree. After all, we know what is happening to the stone in buildings and the lichens on the ground.

Globalizing the Risks of Civilization

Reduced to a formula: *poverty is hierarchic, smog is democratic*. With the expansion of modernization risks – with the endangering of nature, health, nutrition, and so on – the social differences and limits are relativized. Very different consequences continue to be drawn from this. *Objectively*, however, risks display an *equalizing* effect within their scope and among those affected by them. It is precisely therein that their novel political power resides. In this sense risk societies are *not* exactly class societies; their risk positions cannot be understood as class positions, or their conflicts as class conflicts.

This becomes even clearer when one inspects the particular style, the particular distribution pattern of modernization risks. They possess an *inherent tendency towards globalization*. A universalization of hazards accompanies industrial production, independent of the place where they are produced: food chains connect practically everyone on earth to everyone else. They dip under borders. The acid content of the air is not only nibbling at sculptures and artistic treasures, it also long ago brought about the disintegration of modern customs barriers. Even in Canada the lakes have become acidified, and forests are dying even in the northern reaches of Scandinavia.

The globalization tendency brings about afflictions, which are once again unspecific in their generality. Where everything turns into a hazard,

somehow nothing is dangerous anymore. Where there is no escape, people ultimately no longer want to think about it. This eschatological eco-fatalism allows the pendulum of private and political moods to swing in *any* direction. The risk society shifts from hysteria to indifference and vice versa. Action belongs to yesterday anyway. Perhaps one can get at the omnipresent and everlasting pesticides with (in)sects?

The Boomerang Effect

Contained within the globalization and yet clearly differentiated from it is a distribution pattern of risks which contains a considerable amount of political explosive. Sooner or later the risks also catch up with those who produce or profit from them. Risks display a social *boomerang effect* in their diffusion: even the rich and powerful are not safe from them. The formerly 'latent side effects' strike back even at the centers of their production. The agents of modernization themselves are emphatically caught in the maelstrom of hazards that they unleash and profit from. This can happen in a multitude of ways.

Take the example of agriculture once again. In Germany, the consumption of artificial fertilizer grew from 143 to 378 kilograms per hectare over the period 1951 to 1983, and the use of agricultural chemicals rose from 25,000 to 35,000 tonnes between 1975 and 1983. The yields per hectare also rose, but not nearly as fast as the expense for fertilizer and pesticides. Yields doubled for grain and were 20 percent higher for potatoes. A disproportionately *small* increase of yields in relation to the use of fertilizer and chemicals contrasts with a disproportionately *large* increase in the natural destruction that is visible and painful to the farmer.

An outstanding index of this alarming development is the strong decrease in many wild plant and animal species. The 'red lists' that serve as official 'death certificates' to record these threats to existence are growing longer and longer.

Of 680 plant species occurring in Greenland, 519 are endangered. The populations of bird species dependent on meadows, such as the white stork, the curlew, or the whinchat, are decreasing drastically; people are trying to preserve the last flocks in Bavaria through a 'meadow birds program' . . . The affected animals include ground nesting birds, animals at the top of food chains like predatory birds, owls and dragonflies, or those specialized in food which is becoming scarce, for instance large insects or flower nectar available through the whole growing season. (Rat der Sachverständigen für Umweltfragen 1985: 20)

Formerly 'unseen secondary effects' thus become visible primary effects which endanger their causal production centers themselves. The production of modernization risks follows the *boomerang curve*. Intensive industrial agriculture, subsidized with billions, does not just cause the lead content in mothers' milk and children to rise dramatically in distant cities. It also frequently undermines the natural basis of agricultural production

itself: the fertility of the soil declines, vitally important animals and plants disappear, and the danger of soil erosion grows.

The circularity of this social endangering can be generalized: under the roof of modernization risks, *perpetrator and victim* sooner or later become *identical*. In the worst, unthinkable case, a nuclear world war, this is evident; it also destroys the aggressor. Here it becomes clear that the Earth has become an ejector seat that no longer recognizes any distinctions between rich and poor, black and white, north and south or east and west. But the effect only exists when it occurs, and when it occurs, it no longer exists, because nothing exists any more. This apocalyptic threat therefore leaves behind no tangible traces *in the now* of its threat (Anders 1983). That is different in the ecological crisis. It undermines even the economic foundations of agriculture, and thus the food supply of the people themselves. Here effects are visible which make their mark not just in nature, but also in the pocketbooks of the wealthy and the health of the powerful. From competent authorities, and not divided along party lines at all, one can hear quite shrill, apocalyptic sounds in this field.

Ecological Devaluation and Expropriation

The boomerang effect need not manifest itself as a direct threat to life; it can also affect secondary media, money, property and legitimation. It does not just strike back directly at the individual source; in a wholesale, egalitarian way it impairs everyone. The destruction of forests does not just cause bird species to disappear, but also makes the economic value of land and forest property shrink. Where a nuclear or coal-fired power plant is being built or planned, land prices fall. Urban and industrial areas, freeways and thoroughfares all pollute their vicinity. It may still be a matter of debate whether 7 percent of the land in Germany is already so polluted from these causes that in good conscience no agriculture should be carried out there, or whether this will not occur until some point in the near future. The principle, however, is the same: property is being devalued, it is undergoing a creeping *ecological expropriation*.

This effect can be generalized. The destruction and endangering of nature and the environment, news of toxic substances in foodstuffs and consumer articles, threatening – and worse yet, actual – chemical, toxic or reactor accidents have the effect of a creeping or galloping devaluation and expropriation of property rights. Through the unrestrained production of modernization risks, a policy of *making the Earth uninhabitable* is being conducted in continuing leaps and bounds, and sometimes in catastrophic intensifications. What is being opposed as a ‘communist menace’ is occurring as the sum of our own actions via the detour through a contaminated nature. On the battlefield of market opportunities, beyond the doctrinal wars of ideology, everyone is pursuing a ‘scorched Earth’ policy against everyone else – with resounding but seldom lasting success.

What is contaminated or considered contaminated may belong to whomever you will – for the loss of social and economic value the distinction is inconsequential. Even if legal title to ownership is maintained, it will become useless and worthless. In the case of ‘ecological expropriation’ we are thus concerned with a *social and economic expropriation while legal ownership continues*. This applies to foodstuffs as much as to the air, the soil and the water. It applies to everything that lives *in* them, and above all, to those who live *from* what lives in them. The talk of ‘residential toxins’ makes it clear that everything that constitutes the culture of our everyday life can be included here.

The basic insight lying behind all this is as simple as possible: everything which threatens life on this Earth also threatens the property and commercial interests of those who live *from* the commodification of life and its requisites. In this way a genuine and systematically intensifying *contradiction* arises between the profit and property interests that advance the industrialization process and its frequently threatening consequences, which endanger and expropriate possessions and profits (not to mention the possession and profit of life).

With reactor accidents or chemical catastrophes, ‘blank spots’ on the map arise again in the most advanced stage of civilization. They are monuments of what threatens us. Even toxic accidents, or suddenly discovered toxic waste dumps, transform housing estates into *toxic waste* estates and turn farmland into *wasteland*. But there are many preliminary and insidious forms. The fish from the contaminated seas endanger not just the people who eat them, but *because of that*, also all the many people who make a living *from* fishing. During smog alerts the land dies temporarily. Entire industrial regions are transformed into eerie ghost towns. Such is the will of the boomerang effect: even the wheels of the polluting industries come to a halt. But not only theirs. *Smog cares not a jot about the polluter pays principle*. On a wholesale and egalitarian basis it strikes everyone, independently of his or her share in smog production. Thus, smog is certainly not an advertising factor for sanatoriums, certainly not a big seller. The legally established requirement to publicize effectively the maximum smog levels in the air at such establishments (like air and water temperatures) ought to turn the spa administrations and the resort industry into committed supporters of a pollution-fighting policy – even though they have so far advocated policies against setting standards.

Risk Positions are not Class Positions

In this way, with the globalization of risks a social dynamic is set in motion, which can no longer be composed of and understood in class categories. Ownership implies non-ownership and thus a social relationship of tension and conflict, in which reciprocal social identities can continually evolve and solidify – ‘them up there, us down here’. The

situation is quite different for risk positions. Anyone affected by them is badly off, but deprives the others, the non-affected, of nothing. Expressed in an analogy: the 'class' of the 'affected' does not confront a 'class' that is not affected. It confronts at most a 'class' of not-yet-affected people. The escalating scarcity of health will drive even those still well off today (in health and well-being) into the ranks of the 'soup kitchens' provided by insurance companies tomorrow, and the day after tomorrow into the pariah community of the invalid and the wounded.

The perplexity of authorities in the face of toxic accidents and toxic waste scandals, and the avalanche of legal, jurisdictional and compensation issues that is triggered each time, all speak a clear language. To wit, freedom from risk can turn overnight into irreversible affliction. The conflicts that arise around modernization risks occur around *systematic causes* that coincide with the motor of progress and profit. They relate to the scale and expansion of hazards and the ensuing demands for compensation and/or a fundamental change of course. In those conflicts what is at stake is the issue of whether we can continue the exploitation of nature (including our own), and thus, whether our concepts of 'progress', 'prosperity', 'economic growth', or 'scientific rationality' are still correct. In this sense, the conflicts that erupt here take on the character of *doctrinal struggles* within *civilization* over the proper road for modernity. In many respects, these resemble the doctrinal struggles of the Middle Ages more than the class conflicts of the nineteenth and early twentieth centuries.

Neither do industrial risks and destruction have any respect for national boundaries. They couple the life of a blade of grass in the Bavarian Forest ultimately to effective international agreements on fighting pollution. The *supra*-nationality of the movement of pollution can no longer be dealt with by individual national efforts. The industrial countries must agree from now on to be distinguished according to their *national balances of emissions or immissions*. In other words, *international inequalities* are arising between different industrial nations with 'active', 'even', or 'passive' balances of pollutants, or to put it more clearly, between 'filthy countries' and those who have to clean up, inhale or pay for the filth of others with increasing deaths, expropriations and devaluations. The socialist 'fraternal community' will also soon have to face up to this distinction and the sources of conflict in it.

Risk Position as Fate

The international intractability of modernization risks is matched by the way they spread. At least for the consumer, their invisibility hardly leaves a decision open. They are 'piggy-back products' which are inhaled or ingested *with* other things. They are the *stowaways of normal consumption*. They travel on the wind and in the water. They can be in anything and everything, and along with the absolute necessities of life – air to

breathe, food, clothing, home furnishings – they pass through all the otherwise strictly controlled protective areas of modernity. Unlike wealth, which is attractive but can also be repellent, for which selection, purchase and decisions are always possible and necessary, risks and destruction steal in everywhere implicitly and unhindered by free(!) decisions. In this sense they bring about a new kind of risk *ascription* by civilization. This recalls in some respects the *status fate in medieval society*. Now there exists a kind of *risk fate in developed civilization*, into which one is born, which one cannot escape with any amount of achievement, with the 'small difference' (that is the one with the big effect) that we are *all* confronted similarly by that fate.

In developed civilization, which had set out to remove ascriptions, to evolve privacy, and to free people from the constraints of nature and tradition, there is thus emerging a new global ascription of risks, against which individual decisions hardly exist for the simple reason that the toxins and pollutants are interwoven with the natural basis and the elementary life processes of the industrial world. The experience of this victimization by risks which is *closed to decisions* makes understandable much of the shock, the helpless rage and the 'no future' feelings with which many people react ambivalently and with necessarily exploitative criticism to the latest achievements of technical civilization. Is it at all possible to create and maintain a critical distance towards things one cannot escape? Is it permissible to abandon a critical distance just *because* one cannot escape it, and to flee to the inevitable with scorn or cynicism, indifference or jubilation?

New International Inequalities

The worldwide equalization of risk positions must not deceive us about *new* social inequalities *within* the affliction by risk. These arise especially where risk positions and class positions *overlap* – also on an international scale. The proletariat of the global risk society settles beneath the smokestacks, next to the refineries and chemical factories in the industrial centers of the Third World. The 'greatest industrial catastrophe in history' (*Der Spiegel*), the toxic accident in the Indian city of Bhopal, has raised this in the consciousness of the global public. Hazardous industries have been transferred to the low-wage countries of the Third World. This is no coincidence. There is a systematic 'attraction' between extreme poverty and extreme risk. In the shunting yard where risks are distributed, stations in 'underdeveloped provincial holes' enjoy special popularity. And one would have to be a naive fool to continue to assume that the responsible switchmen do not know what they are doing. More evidence for this is the attested 'higher acceptance' of an unemployed provincial population of 'new' (job-creating) technologies.

On the international scale it is emphatically true that material misery and blindness to hazards coincide. 'A German development expert reports

on the careless use of pesticides, in Sri Lanka, for instance. "There they spread DDT around with bare hands, the people are powdered white." On the Antilles island of Trinidad (population 1.2 million) a total of 120 deaths from pesticides were reported. 'A farmer: "If you don't feel sick after spraying, you haven't sprayed enough"' (*Der Spiegel* 1984, no. 50: 119).

For these people the complex installations of the chemical factories with their imposing pipes and tanks are expensive symbols of success. The death threat they contain, by contrast, remains largely invisible. For them, the fertilizers, pesticides and herbicides they produce signify above all emancipation from material need. They are prerequisites of the 'green revolution', which, systematically supported by the Western industrial states, has raised food production by 30 percent, and in some Asian and Latin American countries by 40 percent over the past few years. The fact that every year 'several hundred thousand tonnes of pesticides are sprayed . . . on cotton and rice fields, on tobacco and fruit plantations' (119) recedes behind these tangible successes. In the competition between the visible threat of death from hunger and the invisible threat of death from toxic chemicals, the evident fight against material misery is victorious. *Without* the widespread use of chemical materials the yields of the land would sink and insects and spoilage would consume their part. *With* chemicals the poor countries of the periphery can build up their own stocks of foodstuffs, and gain a bit of independence from the power centers of the industrial world. The chemical factories in the Third World reinforce this impression of independence in production and from expensive imports. The struggle against hunger and for autonomy forms the protective shield behind which the hazards, imperceptible in any case, are suppressed, minimized and, *by virtue of that*, amplified, diffused and eventually returned to the wealthy industrial countries via the food chain.

Safety and protection regulations are insufficiently developed, and where they do exist, they are often just so much paper. The 'industrial naiveté' of the rural population, which often can neither read nor write, much less afford protective clothing, provides management with unimagined opportunities to legitimize the ways of dealing with risks that would be unthinkable in the more risk-conscious milieus of the industrial states. Management can issue strict safety regulations, knowing they will be unenforceable, and insist that they be obeyed. This way they keep their hands clean, and can shift responsibility for accidents and death to the people's cultural blindness to hazards, cheaply and in good conscience. When catastrophes do occur, the jungle of competing jurisdictions and the material interest of the poor countries offer good opportunities for a policy of minimization and obfuscation to limit the devastating consequences by selectively defining the problem. Economic conditions of production, freed from the constraints of legitimation, attract industrial concerns like magnets, and combine with the particular interests of the countries in overcoming material poverty and gaining national autonomy

into an explosive mixture, in the truest sense of the word. *The devil of hunger is fought with the Beelzebub of multiplying risks*. Particularly hazardous industries are transferred to the poor countries of the periphery. The poverty of the Third World is joined by horror at the unleashed destructive powers of the developed risk industry. The pictures and reports from Bhopal and Latin America speak a language of their own.

Villa Parisi

The dirtiest chemical town in the world is located in Brazil . . . Every year the slum residents have to redo their corrugated iron roofs, because the acidic rain eats them away. Anyone who lives here for some time develops rashes, 'alligator skin', as the Brazilians say.

The worst affected are the residents of Villa Parisi, a slum of 15,000 people, most of whom have been able to build modest little houses of gray stone. Here they even sell gas masks in supermarkets. Most of the children have asthma, bronchitis, diseases of the nose and throat, and skin rashes.

In Villa Parisi, it's easy to find your way by smell. On one corner an open sewer is bubbling, on the other a slimy green stream runs. A smell like burnt chicken feathers indicates the steel works, while the odor of rotten eggs marks the chemical factory. An emission meter set up by the town's authorities failed in 1977, after one and a half years of service. It apparently could not withstand the pollution.

The history of the dirtiest town in the world began in 1954, when Petrobrás, the Brazilian oil company, selected the coastal marsh as the site for its refinery. Soon Cosipa, Brazil's largest steel concern, and Copegrás, a Brazilian-American fertilizer company, arrived, followed by multinationals like Fiat, Dow Chemical and Union Carbide. It was the boom phase of Brazilian capitalism. The military government invited foreign enterprises to produce environmentally harmful products there. 'Brazil can still afford to import pollution', boasted Planning Minister Paulo Veloso in 1972, the year of the environmental conference in Stockholm. Brazil's only ecological problem was poverty, he claimed.

'The main causes of disease are malnutrition, alcohol and cigarettes', the spokesman for Petrobrás says. 'The people are already ill when they come from Copataó', agrees Paulo Figueiredo, boss of Union Carbide, 'and if they get worse, they blame it on us. That's simply illogical.' For years, the governor of São Paulo has been attempting to bring a fresh breeze into polluted Copataó. He fired thirteen officials of the lax environmental agency and employed computers to monitor emissions. But the minor fines of a few thousand dollars didn't bother the environmental violators.

The catastrophe happened on 25 February of this year. Through the sloppiness of Petrobrás, 700,000 liters of oil flowed into the swamp on which the pile buildings of Villa Soco stand. Within two minutes a fire storm raced through the *favela*. Over 500 people were burnt to death. The corpses of small children were never found. 'They just evaporated from the heat', a Brazilian official said. (*Der Spiegel* 1984, no. 50: 110)

Bhopal

The birds fell from the skies. Water buffaloes, cows and dogs lay dead in the streets and fields - bloated after a few hours in the sun of Central Asia [*sic*]. And everywhere the asphyxiated people, curled up, foam at the lips, their cramped hands dug into the earth. There were 3000 of them by the end of last week and new victims were still being found; the authorities stopped counting. 20,000 people will probably go blind. As many as 200,000 were injured.

In the city of Bhopal an industrial apocalypse without parallel in history occurred last Sunday night and Monday morning. A toxic cloud escaped from a chemical factory and settled like a shroud over sixty-five thickly settled square kilometers; when it finally dissipated, the sickly sweet smell of decay was spreading. The city had turned into a battlefield, in the midst of peace. Hindus burned their dead on cremation pyres, twenty-five at a time. Soon there was a shortage of wood for the ritual cremation – thus kerosene flames licked around the corpses. The Moslem cemetery became too crowded. Earlier graves had to be opened, breaking holy commandments of Islam. 'I know it's a sin to bury two people in a single grave', one of the grave-diggers complains. 'May Allah forgive us. We're putting three, four and even more in.' (110)

In contrast to material poverty, however, the pauperization of the Third World through hazards is contagious for the wealthy. The multiplication of risks causes world society to contract into a community of danger. The boomerang effect strikes precisely those wealthy countries which had hoped to get rid of hazards by transferring them overseas, but then had to import cheaper foodstuffs. The pesticides return to their highly industrialized homeland in the fruit, cacao beans and tea leaves. The extreme international inequalities and the interconnections of the world markets move the poor neighborhoods in the peripheral countries to the doorsteps of the rich industrial centers. They become the breeding grounds of an international contamination, which – like the infectious diseases of the poor in the cramped medieval cities – does not spare even the wealthy neighborhoods of the world community.

Two Epochs, Two Cultures: on the Relationship between the Perception and the Production of Risks

Inequalities in class and risk society can therefore overlap and condition one another; the latter can produce the former. The unequal distribution of social wealth offers almost impregnable defensive walls and justifications for the production of risks. Here a precise distinction must be made between the cultural and political *attention* to risks and their actual *diffusion*.

Class societies are societies where, across all the gaps between classes, the main concern is the visible satisfaction of material needs. Here, hunger and surplus or power and weakness confront each other. Misery needs no self-confirmation. It exists. Its directness and visibility correspond to the material evidence of wealth and power. The certainties of class societies are in this sense the certainties of a culture of *visibility*: emaciated hunger contrasts with plump satiety; palaces with hovels, splendor with rags.

These evident qualities of the tangible no longer hold in risk societies. What escapes perceptibility no longer coincides with the unreal, but can instead even possess a higher degree of hazardous reality. Immediate need competes with the known element of risk. The world of visible scarcity or surplus grows dim under the predominance of risks.

The race between perceptible wealth and imperceptible risks cannot be won by the latter. The visible cannot compete with the invisible. Paradox decrees that *for that very reason* the invisible risks win the race.

The ignoring of risks that are in any case imperceptible, which always finds its justification in the elimination of tangible need – and in fact actually *has* that justification (see the Third World!) – is the cultural and political soil on which the risks and hazards *grow, bloom and thrive*. In the overlap and competition between the problems of class, industrial and market society on one side and those of the risk society on the other, the logic of wealth production always wins, in accordance with the power relationships and standards of relevance – *and for that very reason the risk society is ultimately victorious*. The tangibility of need suppresses the *perception* of risks, but only the perception, not their reality or their effects; risks denied grow especially quickly and well. At a certain stage of social production, characterized by the development of the chemical industry, but also by reactor technology, microelectronics, and genetic technology, the predominance of the logic and conflicts of wealth production, and thus the social invisibility of the risk society, is no proof of its unreality; on the contrary, it is a motor for the origin of the risk society and thus a proof that it is becoming real.

This is what the overlapping and amplification of class and risk positions in the Third World teaches; the same can be said, however, of action and thought in the wealthy industrial countries. Protecting economic recovery and growth still enjoys unchallenged first priority. The threatening loss of jobs is played up, in order to keep the loopholes in prescribed emissions regulations wide and their enforcement lax, or to prevent any investigation into certain toxic residues in foodstuffs. No records are kept on entire families of chemicals out of consideration for the economic consequences; they do not exist legally and can be freely circulated for that very reason. The contradiction that fighting environmental risks has itself become a flourishing branch of industry that guarantees many millions of people secure (all too secure) jobs in Germany is passed over in silence.

At the same time the instruments of *definitional* risk 'management' are being sharpened and the relevant axes are being swung. Those who point out risks are defamed as 'alarmists' and risk producers. Their presentation of the hazards is considered 'unproven'. The effects on man and animals they demonstrate are called 'outrageously exaggerated'. More research is required, they say, before one can be sure what the situation is and take the appropriate measures. Only a rapidly growing gross national product could create the prerequisites for improved environmental protection. They invoke trust in science and research. Their rationality has so far found solutions to every problem, the argument goes. Critique of science and anxieties about the future are stigmatized in contrast as 'irrationalism'. They are supposed to be the real roots of the evils. Risk belongs to progress as much as a bow-wave belongs to a speeding ship.

Risk is no invention of modern times. It is tolerated in many areas of social life. The deaths from traffic accidents, for instance. Every year a middle-sized city in Germany disappears without a trace, so to speak. People have even got used to that. So there is plenty of free space and air for little mini-catastrophes with radioactive material or waste or such (these are in any case extremely unlikely, considering German safety technology).

Even the dominance of this interpretation cannot delude us as to its loss of reality. Its victory is a Pyrrhic one. Where it prevails it produces what it denies, the risk society. But there is no consolation in that; on the contrary there is a growing danger.

The Utopia of a World Society

Thus it is also and especially in denial and non-perception that the *objective community* of a global risk comes into being. Behind the variety of interests, the reality of risk threatens and grows, knowing no social or national differences anymore. Behind the walls of indifference, danger runs wild. Of course, this does not mean that a grand harmony will break out in the face of the growing risks of civilization. Precisely *in* dealing with risks, a variety of new social differentiations and conflicts emerge. These no longer adhere to the plan of class society. They arise above all from the double face of risks in late industrial society: risks are no longer the dark side of opportunities, they are also *market opportunities*. As the risk society develops, so does the antagonism between those *afflicted* by risks and those who *profit* from them. The social and economic importance of *knowledge* grows similarly, and with it the power over the media to structure knowledge (science and research) and disseminate it (mass media). The risk society is in this sense also the *science, media and information* society. Thus new antagonisms open up between those who *produce* risk definitions and those who *consume* them.

These tensions between business and the elimination of risks, and between the consumption and the production of risk definitions, range across all areas of social action. Here lie the essential sources of the *definitional struggles over the scale, degree and urgency of risks*. In the fixing of acceptable levels, the numbers of people afflicted as patients or victims increase or decrease. By drawing lines of causation, companies and occupations are caught in the firing line of accusation. Politicians and politics release pressure by holding individuals and not systems responsible for the accidents and damage. On the other hand, the viewers of risk definition take over and expand their market opportunities. Some, like chemists, are on both sides at the same time; they make people sick and then feed them pills to cure their secondary sickness (allergy medication, for example).

The market-expanding exploitation of risks favors a general to and fro between revealing and concealing risks – with the effect that ultimately no

one quite knows whether the ‘problem’ might not be the ‘solution’ or vice versa, who profits from what, where responsibilities for creation are being covered up or concealed through causal speculations, and whether the whole talk about risk is not the expression of a displaced political drama, which in reality intends something quite different.

But unlike wealth, risks *always produce only partial polarization*, based on the advantages, which they *also produce*, at least while they are not yet fully developed. As soon as the growing element of damage moves into view, the advantages and differences melt away. Sooner or later risks simply present us with threats, which in turn relativize and undermine the associated advantages, and precisely with the growth of the danger they make the commonality of risk a reality, through all the variety of interests. In that way, under the canopy of risk affliction – no matter how much this covers – commonalities behind all the antagonisms also come into being. In order to prevent hazards from nuclear energy or toxic waste or obvious destruction of nature, members of divergent classes, parties, occupational groups and age groups organize into citizens’ movements.

In this sense, the risk society produces new antagonisms of interest *and* a new type of community of the endangered whose political carrying capacity remains, however, an open question. To the extent to which modernization hazards generalize and thus abolish the remaining zones of non-involvement, the risk society (in contrast to class society) develops a tendency to unify the victims in global risk positions. In the limiting case, then, friend and foe, east and west, above and below, city and country, south and north are all exposed to the leveling pressure of the exponentially increasing risks of civilization. Risk societies are not class societies – that is not saying enough. They contain within themselves a *grass-roots developmental dynamics that destroys boundaries*, through which the people are forced together in the uniform position of civilization’s self-endangering.

To that extent the risk society controls new sources of conflict and consensus. The place of *eliminating scarcity* is taken by *eliminating risk*. Even if the consciousness and the forms of political organization for this are still lacking, one can say that risk society, through the dynamic of endangerment it sets in motion, *undermines the borders of nation states as much as those of military alliances and economic blocs*. While class societies are capable of being organized as national states, risk societies bring about ‘communities of danger’ that ultimately can only be comprised in the United Nations.

The potential for self-endangering developed by civilization in the modernization process thus also makes the utopia of a world society a little more real or at least more urgent. People in the nineteenth century had to learn, on penalty of economic ruin, to subject themselves to the conditions of industrial society and wage labor. In just the same way, they also have to learn today as in the future, under the shadow of an apocalypse of civilization, to sit down at a table to find and enforce

solutions to the self-inflicted endangering that crosses all borders. Pressure in this direction can already be perceived today. Environmental problems can only be solved in an objectively meaningful way in border-spanning negotiations and international agreements, and the way to them accordingly leads to conferences and agreements crossing military alliances. The threat from the storage of nuclear weapons with unimaginable destructive power upsets people in all military spheres and creates a community of threat, whose viability must still prove itself.

The Political Vacuum

But such attempts to gain at least a political meaning from the terror that cannot be understood, cannot blind us to the fact that these newly arising objective commonalities of danger have so far been floating in thin air in the political and economic sense. On the contrary, they collide with national-state egoisms and the prevailing intrasocial party, industrial and interest organizations of industrial societies. There is no place in the jungle of corporatist society for such global risks that span groups. Here every organization has its clientele and its social milieu, consisting of opponents and allies, who are to be activated and played off against one another. The commonality of dangers confronts the pluralistic structure of interest group organizations with almost insoluble problems. It confuses the mutually worked out and well worn compromise routines.

It is true: the dangers grow, but they are not politically reformed into a *preventive* risk management policy. What is more, it is unclear what sort of politics or political institutions would even be capable of that. An incomprehensible community emerges corresponding to the incomprehensibility of the problem. But it remains more an ideal than a reality. At the same time as this gap, a vacuum of institutionalized political competence, or even of ideas about it, emerges. The openness of the question as to how the dangers are to be handled politically stands in stark contrast to the growing need for action and policy-making.

Among the many questions concealed behind this is also that of the *political subject*. Theoreticians of the class societies of the nineteenth century chose the proletariat for this role with good reason. They had their difficulties with it and still have them today. The social and political obviousness of this assumption is retrograde, precisely because it was so right. The achievements of the workers' political and trade union movement were great, so great that they have even undermined its former role as leader into the future. It has become more a preserver of what has already been attained and is being eroded by the future, than a source of political imagination that seeks and finds the answers to the hazards of the risk society.

What corresponds to the political subject of class society – the proletariat – in risk society is only the *victimization of all by more or less tangible massive dangers*. One need not be a Freudian to believe that such

overwhelming anxiety can be easily repressed. Everyone and no one is responsible for it. In classical industrial society, everyone is engaged in the struggle for *his* job (income, family, little house, automobile, hobbies, vacation wishes, etc. If those are lost, then you are in a tight spot in any case – pollution or no). But can intangible, universal afflictions be organized politically at all? Is 'everyone' capable of being a political subject? Is this not jumping much too casually from the global nature of the dangers to the commonality of political will and action? Is not globalized and universal victimization a reason *not* to take notice of problem situations or to do so only *indirectly*, to shift them onto others? Are not these the roots that lead to the creation of scapegoats?⁴

From the Solidarity of Need to Solidarity Motivated by Anxiety

Even if the political expression is open and the political consequences ambiguous, in the transition from class to risk society, the *quality of community* begins to change. Schematically, two totally different value systems are expressed in these two types of modern society. Class societies remain related to the ideal of *equality* in their developmental dynamics (in its various formulations from 'equal opportunity' to the variants of socialist models of society). Not so the risk society. Its normative counter-project, which is its basis and motive force, is *safety*. The place of the value system of the 'unequal' society is taken by the value system of the 'unsafe' society. Whereas the utopia of equality contains a wealth of substantial and *positive* goals of social change, the utopia of the risk society remains peculiarly *negative* and *defensive*. Basically, one is no longer concerned with attaining something 'good', but rather with *preventing the worst*; *self-limitation* is the goal which emerges. The dream of class society is that everyone wants and ought to have a *share* of the pie. The utopia of the risk society is that everyone should be *spared* from poisoning.

There are corresponding differences in the basic social situation in which people in both societies live and join together, and which moves them, divides them or fuses them. The driving force in the class society can be summarized in the phrase: *I am hungry!* The movement set in motion by the risk society, on the other hand, is expressed in the statement: *I am afraid!* The *commonality of anxiety* takes the place of the *commonality of need*. The type of the risk society marks in this sense a social epoch in which *solidarity from anxiety* arises and becomes a political force. But it is still completely unclear how the binding force of anxiety operates, even whether it works. To what extent can anxiety communities withstand stress? What motives and forces for action do they set in motion? Will the social power of anxiety actually break individual judgments of utility? How capable of compromise are anxiety-producing communities of danger? In what forms of action will they organize? Will anxiety drive people to irrationalism, extremism, or fanaticism? So far,

anxiety has not been a foundation for rational action. Is this assumption no longer valid either? Is anxiety – unlike material need – perhaps a very shaky foundation for political movements? Can the community of anxiety perhaps even be blown apart by the weak draft of counter-information?

Notes

- 1 *Modernization* means surges of technological rationalization and changes in work and organization, but beyond that it includes much more: the change in societal characteristics and normal biographies, changes of lifestyle and forms of love, change in the structures of power and influence, in the forms of political repression and participation, in views of reality and in norms of knowledge. In social science's understanding of modernity, the plough, the steam locomotive and the microchip are visible indicators of a much deeper process, which comprises and reshapes the entire social structure. Ultimately the *sources of certainty* on which life feeds are changed (Etzioni 1968; Koselleck 1977; Lepsius 1977; Eisenstadt 1979). In the last year (after the third edition of this book in Germany) there has been a new wave of modernization theory. Now the discussion centers on the possible post-modern problematization of modernity (Berger 1986; Bauman 1989; Alexander and Sztopka 1990).
- 2 For more sophisticated distinctions between risk in industrial society and risk in risk society see Beck (1988) and (1992).
- 3 Political strategies against this 'organized irresponsibility' are discussed in Beck (1988).
- 4 This argument is incomplete; it denies the reflexive politicization of risk conflicts. See Beck (1988: Part II, 1991; and 1992, p. 113ff).

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THE POLITICS OF KNOWLEDGE IN THE RISK SOCIETY

Anyone moved by these questions must be interested in the *social and political dynamics* of the risk society – alongside its technical, chemical, biological and medical expertise. That is what will be pursued here. An analogy to the nineteenth century offers itself as a starting point to that end. My thesis is that in the risk society we are concerned with a type of *immiseration* which is comparable to that of the working masses in the nineteenth century, and yet not comparable at all. Why 'immiseration' and in what sense?

Immiseration of Civilization?

Both in the nineteenth century and today, consequences experienced by the bulk of humanity as devastating are connected with the social process of industrialization and modernization. With both epochs we are concerned with drastic and threatening interventions in human living conditions. These appear in connection with definite stages in the development of productive forces, of market integration, and of the relationships of property and power. There may be different material consequences each time – back then, material immiseration, poverty, hunger, crowding; today, the threatening and destruction of the natural foundations of life. There are also comparable aspects, such as the amount of danger and the *systematic nature* of modernization with which it is produced and grows. Therein lies its internal dynamic – not malevolence, but the market, competition, division of labor, all of it just a bit more global today. Just as before, the latency (side effects) can in both cases only be broken through in conflict. Then as now, people went into the streets to protest, there was and is loud criticism of progress and technology, there was Luddism – and its counter-arguments.

Then came the gradual admission to the problems, as can still be observed today. Systematically produced suffering and oppression become more and more visible and must be recognized by those who have denied them. The law sets its sails to the prevailing wind, by no means voluntarily, but with the powerful support of politics and the streets: universal suffrage, social welfare laws, labor laws and codetermination. The parallels to today are obvious; harmless things, wine, tea, pasta, etc., turn out to be dangerous. Fertilizers become long-term toxins with worldwide consequences. The once highly praised sources of wealth (the atom, chemistry, genetic technology and so on) are transformed into unpredictable sources