

RISK: A Sociological Theory

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Moreover, we must note two modes of drawing distinctions. The first indicates something as distinct from everything else, without specifying the other side of the distinction. What is specified by this manner of distinction we shall for the purpose of our investigations refer to as *objects*.³³ In observing objects, indicating and distinguishing the object coincide; these two operations can only be performed *uno*

³² See: *Laws of Form*, quoted from the reprint (New York, 1979).

³³ There are, of course, many other usages of the concept of object. What is important is that we do not proceed on the basis of the distinction object/subject; for in choosing this form (let us call the subject form) we would leave ourselves no room for what we wish to refer to in the text as 'concepts'; the form would consequently have to accommodate concepts as instruments for the observation of 'subjects', thus leading us into the trap of the insoluble problem of 'intersubjectivity'. It would no longer be possible adequately to describe the observation of observers and we would probably lose our way in the labyrinth of suspected ideology, relativism, pragmatism, pluralism discourse theory, etc.

actu. The other mode of making a distinction restricts what can constitute the content of the other side of the distinction, for instance women/men; justice/injustice; hot/cold; virtue/vice; praise/blame. The condensate of such a process of drawing distinctions shall be referred to as concepts. Both objects and concepts are distinction-dependent constructs of the observer. Concepts, however, keep the observer at a greater distance than do objects, because they separate to a greater degree the drawing of distinctions and the making of indications as observation operations, and require that distinctions be distinguished.

The late appearance in history of circumstances indicated by means of the new term 'risk' is probably due to the fact that it accommodates a plurality of distinctions within one concept, thus constituting the unity of this plurality. It is not simply a matter of a description of a universe by an observer of the first order who sees something positive or something negative, who establishes the existence or absence of something. It is rather a matter of reconstructing a phenomenon of multiple contingency, which consequently offers different observers differing perspectives.

Future loss may occur – or not, as the case may be. Seen from the vantage point of the present, the future appears uncertain, although it is already apparent now that future 'presents' will be either the way we want them to be or quite different. At the present moment we cannot know how they will turn out. But we can know that we ourselves or other observers will in a future present know what the situation is, and will then judge differently from the way we do now – although differences of judgement among us might arise.

On the other hand – and in addition to what has just been said – what can occur in the future also depends on decisions to be made at present. For we can speak of risk only if we can identify a decision without which the loss could not have occurred. It is not imperative for the concept (although this is a question of definition) whether the decision maker perceives the risk as a consequence of his decision or whether it is others who attribute it to him; and it is also irrelevant at what point in time this occurs – whether at the time when the decision is made or only later, only when the loss has actually occurred. For the concept as we intend to define it, the only requirement is that the contingent loss be itself caused as a contingency, that is to say that it be avoidable. Here, too, differences in observer perspective are con-

ceivable, offering a variety of opinions on whether a decision should be made despite the risk thereby incurred or not.

In other words, the concept indicates a highly hierarchical contingency arrangement. Following the Kantian concept with its time reference, we could also speak of a contingency *schema*. Or with Novalis we could speak of the 'Alleseinheit des Schemas'.³⁴ Thus the fact that two temporal contingencies, event and loss, are firmly coupled as contingencies (not as facts!), although this is not imperative, makes it possible for observers to differ in the way they see things. Temporal contingencies provoke social contingencies, and this plurality, too, cannot be cancelled out by an ontological formula. One can, of course, reach agreement on whether to make a decision or not; but this is then a matter of communication not of knowledge. Once dissolved into temporal and social differentiations there is no return to the innocence of primary observation. The gate to paradise remains sealed by the term risk. What we have just referred to as a contingency schema strains the medium of meaning in which all experience and communication must find forms. Meaning can be defined as a medium that is generated by a surplus of indications of other options.³⁵ In the final instance all meaning thus resides in the distinction of actuality versus potentiality.³⁶ The actual is always the way it is; and in the world it is always simultaneously present with other actualities.³⁷ Since all systems carry out (or do not carry out) their

34 'The all-oneness of the schema.' See 'Philosophische Studien 1795/96' in the compilation of the edition by Hans-Joachim Mähl and Richard Samuel, *Werke, Tagebücher und Briefe*, Vol. 2 (Darmstadt, 1978), p. 14. Loc. cit. also: 'Das Schema steht mit sich selbst in Wechselwirkung. Jedes ist nur auf seinem Platze, was es durch die andern ist.' 'The schema interacts with itself. Each thing in its place is what it is only by virtue of every other thing.'

35 For more detail see Niklas Luhmann, *Soziale Systeme: Grundriß einer allgemeinen Theorie* (Frankfurt, 1984), p. 92 ff.

36 Which is in its turn a distinction that can enter into itself. For, in the mode of the possible, what is actual is in its turn possible (and not impossible), while within the possible other possible actualities are indicated.

37 See Niklas Luhmann, 'Gleichzeitigkeit und Synchronisation.' In Niklas Luhmann, *Soziologische Aufklärung*, Vol. 5, *Konstruktivistische Perspektiven* (Opladen, 1990), pp. 95-130.

operations in actuality, arbitrariness can never be given free rein.³⁸ But in the meaning-constitutive field of the possible, the plurality of perspective may increase and it might become correspondingly more difficult to give it form. We can already recognize this in the growing possibilities for negating risk – whether in the direction of security, when one asserts the impossibility of a future instance of loss, or in the direction of danger, when one denies the attributability of loss to a decision, or with the aid of secondary distinctions such as known/unknown risks or communicated/non-communicated risks. As in modal logic problems, the use of negations must thus be specified.³⁹ But all this happens – and it shows the practical effect of this switch to a second or third level of observation – on condition that the negation of a risk – of any sort whatsoever – in its turn also constitutes a risk.

All this, however, does not yet sufficiently explain the operative use of the concept of risk. What does this word indicate? Which side of which distinction? What negation option (which other side of which distinction) does the concept imply if we wish to define it for scientific use? If we want to know what an observer (of the second order) means when he refers to an observed prospect as risky, we must be able to state within the framework of which distinction the concept of risk indicates the one (and not the other) side. In other words, we ask for the form that guides an observer when he refers to an observation as a risk; and by 'form' we always understand a boundary, a severance separating two sides requiring us to state which side we are selecting as the point of departure for the following operation.

It is clear that the rationalist tradition sketched above, although offering us a form, does not provide a concept of risk. It translates into calculation injunctions the problem of how loss can be averted to the highest possible degree despite exploitation of the options of rationality. We then have the form optimal/nonoptimal, and thus a whole cascade of secondary distinctions to be calculated in different ways. In brief, the significance of the problem and its specific modernity

38 Risky decisions are also decisions, are observable as actual occurrences, take place under the condition of simultaneity with other events. And all this happens the way it happens.

39 On corresponding problems and the necessity of a multivalued logic to handle them see Elena Esposito, 'Rischio e Osservazione,' MS (1990).

should not be underestimated, but on the contrary should be emphasized. But it does not supply the form that will provide us with a concept of risk.

It is widely held that the concept of risk is to be determined as a counter-concept to security.⁴⁰ In political rhetoric this has the advantage that if we speak out against all ventures deemed to be too risky, we also appear to lay great store by the generally appreciated value of safety/security. This rapidly (much too rapidly) gives rise to the idea that one really desires security, but that, given the state the world is in (formerly one would have said: beneath the moon), one has to accept risks. The risk form thus becomes a variation on the distinction of desirable/undesirable. A somewhat more refined version is to be found among safety experts. Their professional experience teaches them that absolute safety cannot be achieved. Something can always happen.⁴¹ For this reason they use the concept of risk mathematically to specify efforts to ensure safety and the measure of what can reasonably be achieved.⁴² This corresponds to the transition from deterministic to probabilistic risk analysis. Much the same is also true with respect to the literature on consumer protection.⁴³ This confirms the widespread tendency to define risk as a measure for mathematical processes. One can then, with an eye on the sociologists, concede that the concept of security indicates a social fiction and that one can inves-

40 See Lola L. Lopez, 'Between Hope and Fear: The Psychology of Risk,' *Advances in Experimental Social Psychology* 20 (1987), pp. 255-259 (275 ff.). It should be noted that the German term 'Sicherheit' used by the author is a very broad term that can be translated as 'safety', 'security' or 'certainty' as the case may be (RB).

41 From this point of view one then often likes to say, due to human shortcomings.

42 Thus, e.g., E. N. Bjordal, 'Risk from a Safety Executive Viewpoint.' In W. T. Singleton and Jan Hoven, eds., *Risk and Decisions* (Chichester, 1987), pp. 41-45. See also Sylvius Hartwig (ed.), *Große technische Gefahrenpotentiale: Risikoanalysen und Sicherheitsfragen* (Berlin, 1983).

43 See Peter Asch, *Consumer Safety Regulation: Putting a Price on Life and Limb* (Oxford, 1988), e.g., p. 43: 'The prevention of all consumer accidents and injuries – 'zero risk' – is neither a realistic nor a useful goal.' Quite right! But what then?

tigate what in social communication is treated uncontroversially as certain and how stable these fictions are in the face of contrary experience (for example, announced connection times at airports).⁴⁴ Security as a counterconcept to risk remains an empty concept in this constellation, similar to the concept of health in the distinction ill/healthy. It thus functions only as a reflexive concept. Or also as a safety-valve concept for social demands that, in proportion to the variable level of demand, affect risk calculation. In effect the risk/security pair provides us with an observation schema that in principle makes it possible to calculate *all* decisions from the point of view of the risk involved. As a result, this form has the incontestable virtue of universalizing risk awareness. Thus it is not by chance that since the seventeenth century the topics of security and risk have matured in a process of mutual interaction.

These considerations induce us to pose the question of whether there can be situations where we can choose between risk and security, between risky and safe alternatives, or even whether we must choose between them. This question requires bringing the conceptual approach more accurately into focus. Such an option is frequently put forward.⁴⁵ The apparently 'safe' alternative then implies the double certainty that no loss will occur and that the opportunity will be lost that one would possibly have been able to take via the risky variant. But this argument is deceptive, for the lost opportunity was in itself no certainty. It thus remains uncertain whether by forgoing the opportunity one has lost out on something or not; and what remains is an open question of whether one ought to regret preferring the 'safe' variant or not. However, this is a question that will frequently be im-

44 Adaptation to the sensibilities of public opinion is meanwhile also playing a role. See, e.g., Chris Whipple, 'Opportunities for the Social Sciences in Risk Analysis: An Engineer's Viewpoint.' In Vincent T. Covello et al., eds., *Environmental Impact Assessment, Technology Assessment, and Risk Analysis: Contributions from the Psychological and Decision Sciences* (Berlin, 1985), pp. 91-103.

45 For example, on managerial decisions see Kenneth R. MacCrimmon and Donald A. Wehrung, *Taking Risks: The Management of Uncertainty* (New York, 1986), p. 11 and throughout. And this despite the fact that the authors are familiar with the concept of opportunity loss (see *10 et alibi*).

possible to answer if the opportunity is not taken up at all, and the risky causal proceeding is not even set in motion. The risk of the one variant nevertheless colours the entire decision making situation. It is not possible to forgo an uncertain advantage with absolute certainty because the sacrifice might possibly not be one (but one cannot know this at the time). One can refuse to be guided at all by risk-related distinctions – for instance in the context of primarily religious or otherwise 'fanatical' ventures. But when one does take risks into consideration, every variant in a decision making repertoire – that is to say the entire alternative – is risky, if only with the risk of not grasping certain opportunities that could possibly prove advantageous.

Safety experts, but also all those who accuse them of not doing enough for safety, are first-order observers. They believe in facts; and when they cross swords or negotiate, it is typically on the basis of differing interpretations or differing claims in relation to the same facts (the same 'niche', as Maturana would say).⁴⁶ One demands more information, better information, complains about the information being withheld by those who wish to prevent others from projecting other interpretations or making greater demands on an objectively given universe of facts⁴⁷ – as though there *were* 'information' available that one could *have* or *not have* as the case may be. And, as we have said, the first-order observer takes this to be the real world. But the observer of the second order faces the problem that what different observers consider to be the same thing generates quite different information for each of them.

This is not true for the second-order observer who is observing another observer to see what the latter can and cannot see.

To do justice to both levels of observation, we will give the concept of risk another form with the help of the distinction of risk and danger. The distinction presupposes (thus differing from other distinctions) that uncertainty exists in relation to future loss. There are then two possibilities. The potential loss is either regarded as a conse-

46 Impressive material on this field in Dorothy Nelkin, ed., *The Language of Risk: Conflicting Perspectives on Occupational Health* (Beverly Hills, Cal., 1985).

47 See, e.g., Michael S. Brown, 'Disputed Knowledge: Worker Access to Hazard Information.' In Nelkin op. cit., pp. 67-95.

quence of the decision, that is to say, it is attributed to the decision. We then speak of risk – to be more exact of the risk of decision. Or the possible loss is considered to have been caused externally, that is to say, it is attributed to the environment. In this case we speak of danger.

This distinction between risk and danger plays no significant role in the voluminous literature on risk research.⁴⁸ There may be a variety of reasons for this. We have already mentioned carelessness in concept formation. Linguistic reasons may also play a role. In the largely English-language literature the words risk, hazard, and danger are available and are usually employed almost synonymously.⁴⁹ There is indeed an awareness that it plays an important role in perceiving and accepting risk whether we venture voluntarily or involuntarily into dangerous situations⁵⁰; or also whether we believe that we have the consequences of our own behaviour under control or not. But this describes only variables that one assumes, and can possibly demonstrate, to influence risk perception and the willingness to take risks. In

48 Frequently the terms risk and danger are used synonymously or overlapping in meaning. Lopez, op. cit. (1987), p. 265, writes for example: 'Risky choices are choices that have an element of danger.' Nicholas Rescher, in *Risk: A Philosophical Introduction to the Theory of Risk Evaluation and Management* (Washington, 1983), although distinguishing between running a risk and taking a risk (p. 6), himself makes hardly any further use of the distinction. Explicitly rejected by Anthony Giddens, *The Consequences of Modernity* (Stanford, Cal., 1990), esp. p. 34 f., on the grounds that risk is precisely the danger that future loss could occur; it does not depend on the consciousness of the decision maker. And indeed, it should not depend on consciousness as a purely psychic phenomenon. Nevertheless, we must differentiate between whether a loss would occur even without a decision being taken or not – whoever it is that makes this causal attribution.

49 In Ortwin Renn, 'Risk Analysis: Scope and Limitations.' In Harry Otway and Malcolm Peltu, eds., *Regulating Industrial Risks: Science, Hazards and Public Protection* (London, 1985), pp. 111-127 (113), we find in a context where we would expect conceptual clarification: 'Risk analysis is the identification of potential hazards to individuals and society'.

50 A subject of debate since the publication of Chauncey Starr, 'Social Benefits versus Technological Risk.' *Science* 165 (1969), pp. 1232-1238.

this respect it is not a matter of determining the form of the risk concept. This has to be tackled following the methodology proposed here by determining the counterconcept, and thus by distinguishing distinctions.

Like the distinction risk/security, the distinction risk/danger is constructed asymmetrically. In both cases the risk concept indicates a complex state that, at least in modern society, is a normal aspect of life. The other side acts only as a reflexive concept with the function of elucidating the contingent nature of the states covered by the concept of risk. In the case of risk/security, this can be recognized in the problems posed by measurement; in the case of risk/danger in the fact that only in the case of risk does decision making (that is to say contingency) play a role. One is exposed to dangers. Of course, the behaviour of those concerned also has its part to play, but only in the sense of it placing people in a situation in which loss or damage occurs. (If A had chosen to walk down a different street the tile would not have fallen on his head.) Another borderline case is that of choosing between very similar alternatives, for instance, between two airlines serving the same route – and the aircraft one has decided to fly with crashes. But in this case, too, one will hardly regard the decision as a risk, since no risk has been accepted in exchange for certain advantages, but a choice has simply been made between two more or less equivalent solutions to a problem, because it was possible to take only one of them. Thus if a risk is to be attributed to a decision, certain conditions must be satisfied, among which is the requirement that the alternatives being clearly distinguishable in respect of the possibility of loss occurring.

When risks are attributed to decisions that have been made, this leads to the taking of a number of consequent decisions, to a series (or a 'decision tree') of bifurcations, each in its turn offering risky decision making options. The first distinction is whether the loss remains within the usual cost bounds (that is to say within the 'profits wedge'), only raising the costs that have to be accepted; or whether it brings about a situation in which one retrospectively regrets having made the decision.⁵¹ It is only for the purpose of dealing with this sort

51 Recently one has come to speak of 'postdecision surprise' or 'postdecision regret' and to characterize bureaucratic behaviour as an attempt to

of decision that one might subsequently have to regret that the entire mechanism of risk calculation has been developed; and it is abundantly clear that this form of rationality serves to generate a paradox, namely the demonstration that a wrong decision is nevertheless right.⁵²

In the schema of risk and danger the interest in security (or risk aversion, or avoidance of danger) is still presupposed but, being self-evident, is not 'marked'.⁵³ The distinction of risk and danger permits a marking of both sides, but not simultaneously. Marking risks then allows dangers to be forgotten, whereas marking dangers allows the profits to be forgotten that could be earned if risky decision are made. In older societies it was thus danger that tended to be marked,

anticipate and under all circumstances to avoid postdecision surprises (which, as we have noted above) leads to a less than optimal exploitation of opportunities for rationality. For the mathematical procedure see David E. Bell, 'Regret in Decision Making Under Uncertainty,' *Operations Research* 30 (1982), pp. 961-981; David E. Bell, 'Risk premium for Decision Regret,' *Management Science* 29 (1982/83), pp. 1156-1166; J. Richard Harrison and James G. March, 'Decision Making and Postdecision Surprises,' *Administrative Science Quarterly* 29 (1984), pp. 26-42 and the following discussion. We shall be coming back to this.

52 We could object that this formulation takes no account of the time difference between the taking of the decision and the occurrence of the loss. This is true, and it is also true that the asymmetry of the flow of time in its turn resolves the paradox. For the more finely tuned decision calculation typical of organizations this is, however, insufficient, since it may be required that the time difference be reflected in its turn. In other words, one would like to be sure *now* that *at the point in time when the loss occurs* one will be able to say that one had made the right decision although from the point of view of the loss, the decision is to be regretted. In other words, we are dealing with a complex of meta-rules guaranteeing the consistency of decision evaluation despite inconsistencies. A functionally equivalent mechanism is, of course, professional tenure.

53 For the linguistic meta-distinction of marked/unmarked in relation to the sides of a distinction see John Lyons, *Semantics*, Vol. 1 (Cambridge, England, 1977), pp. 305-311. In this discussion we imagine that the presumably preferred side remains unmarked and does not therefore need to be indicated in particular. Marking is then a means of directing attention to where the problem lies.

whereas modern society has until recently preferred to mark risk, being concerned with optimizing the exploitation of opportunity. The question is whether this will remain the case, or whether the present situation is not characterized by the decision maker and the individual affected by the decision each marking the respective other side of one and the same distinction, thus coming into conflict because each party has his own way of seeing things and his own expectations about the way others see them.

These few points already clearly indicate some of the advantages to be gained from substituting the risk/security schema for that of risk/danger. The most important advantage is, however, in the use of the concept of attribution, for this concept relates to second-order observation. The concept has a long prehistory, especially in jurisprudence and economics. In these fields, however, it has always been concerned with the problem of correct attribution – for example of offence to offender or of growth in value to the production factors land, labour, capital, or organization.⁵⁴ It is only the investigation of sociopsychological attribution undertaken since the World War II⁵⁵ that has attained the level of second-order observance, without itself having this concept and its epistemological and methodological consequences at its disposal. It is now possible to observe how another observer makes attributions, for example, internally or externally in relation to himself or to others, and either to constant or to variable factors, to structures or to events, to systems or to situations. In this tradition of research, the type of attribution is thus itself seen as contingent, the attempt then being made to discover the factors correlating to types of attribution (personal traits, stratification, situational charac-

54 For a survey see Hans Mayer, 'Zurechnung', *Handwörterbuch der Staatswissenschaften*, Vol. VIII, 4th edn. (Jena, 1928), pp. 1206-1228.

55 Stimulated above all by Fritz Heider, and via Heider related both to juridical and economic methodological problems (in this connection Max Weber should be mentioned) and with Gestalt psychology research on the perception of causal relations. See especially Fritz Heider, *The Psychology of Interpersonal Relations* (New York, 1958), but also Felix Kaufmann, *Methodenlehre der Sozialwissenschaften* (Vienna, 1936), whose valuable treatment of attribution (p. 181 ff.) was not included in the English edition (1944), thus exerting no influence. (Heider will have been acquainted with it.)

teristics, role constellations such as teacher/pupil). The final step would be the *autological consequence*, i.e., the insight that these correlations, too, are attributions correlating to conditions characteristic of the second-order observer. For he, too, is an observer, and thus himself falls within the scope of what he observes.

The fact that the distinction of risk and danger is made to depend on attribution does not mean that it is left to the whim of the observer to label something as a risk or as a danger. Some borderline cases have already been mentioned – especially the fact that at present no criteria for differential decision making are in evidence, or at any rate none that has to do with the variable probability of advantage and possible loss. Of greater significance is another instance, that of damage to the environment. A given threshold being passed, an irreversible shift in ecological balance or the occurrence of a disaster is often not attributable to any particular individual decisions. Observers may well continue to fight about ‘shares’, for example in the question of whether and to what extent automobile exhaust fumes are responsible for the death of forests; but even then it would not be possible to classify starting up a car engine as a risky decision. We would, so to speak, have to invent decisions to accept the attribution – for example, a decision not to prohibit motoring. In other words, in the accumulation of the effects of decision making, in long-term consequences of decisions no longer identifiable, in over-complex and no longer traceable causal relations, there are conditions that can actuate considerable losses or damage without being attributable to decisions – although it is clear that without decisions having been made such detrimental effects would never have occurred.⁵⁶ For an attribution can be made to a decision only if a choice between alternatives is conceivable and appears to be reasonable, regardless of whether the decision maker has, in any individual instance, perceived the risk and the alternative, or whether he has overlooked them.

If within the context of these limitations we accept this concept of risk, the concept does not indicate a fact existing independently of

56 Wolfgang Bonß, ‘Unsicherheit und Gesellschaft – Argumente für eine soziologische Risikoforschung,’ MS (Nov. 1990), speaks in this connection of second-order dangers.

whether and by whom it is observed.⁵⁷ For the moment it remains open whether something is to be regarded as a risk or as a danger. And if we wish to know which is which, we must observe the observer and if necessary develop theories on the conditioning of his observing. Both sides of the distinction can be applied to every still uncertain loss, albeit with varying degrees of plausibility in given societies; for example, to the possibility that an earthquake will destroy houses and kill people, that we can be involved in a traffic accident, that our marriage will not continue in harmony, or that we study a subject we have no use for in later life. For an economically trained eye, the loss can also consist in the failure to materialize of an advantage or benefit in expectation of which one had carried out an investment: one buys a car with a diesel motor, and shortly afterwards the tax on it is raised. In principle we could avoid every loss by making a decision, thus classifying every loss as a risk – for example, we could decide to move from an earthquake-prone area, to give up driving, or not to marry. And if the failure of advantages to materialize counts as loss, then the entire future as future must be seen to fall under the dichotomy of risk and danger. Therefore we can treat these concepts as being *generalizable at will*. There may be certain borderline cases. The danger of a meteorite striking with catastrophic consequences is one example, the probability of which is underestimated only because there is nothing one can do about it. This example teaches us, moreover, that modern society considers danger from the point of view of risk and takes it seriously only as risk. Any interest may be dichotomized in this way provided it is observed. The problem with which the topic of risk confronts us thus appears not to lie in the material dimension. As we shall seek to demonstrate at greater length, it is rather to be found in the relationship between the time dimension and the social dimension.

Finally, if we once again compare the two forms risk/security and risk/danger, this comparison alone provides us with an important insight, which – if respected – would cool down considerably the un-

57 At this stage we mention only in passing that, in the field of epistemology, this has led not to idealistic positions but to constructivist ones. See Niklas Luhmann, *Erkenntnis als Konstruktion* (Bern, 1988); Niklas Luhmann, *Die Wissenschaft der Gesellschaft* (Frankfurt, 1990).

necessarily heated public discussion on risk-related topics, and allow a more moderate tone to prevail. It is true to say for both distinctions that *there is no risk-free behaviour*. For the first form this means there is no absolute safety or security.⁵⁸ For the second this means one cannot avoid risks if one makes any decision at all. Anyone following advice and not overtaking in a blind curve runs the risk of not getting along as fast as he could if there were no oncoming traffic. We may calculate any way we wish to do so, and in many cases we may arrive at unambiguous results. But these are only aids to decision making. They do not mean that if we do make some decision or other risks can be avoided.⁵⁹ And in the modern world not deciding is, of course, also a decision.

If there are no guaranteed risk-free decisions, one must abandon the hope that more research and more knowledge will permit a shift from risk to security. Practical experience tends to teach us the opposite: the more we know, the better we know what we do not know, and the more elaborate our risk awareness becomes. The more rationally we calculate and the more complex the calculations become, the more aspects come into view involving uncertainty about the future and thus risk.⁶⁰ Seen from this point of view, it is no accident that the risk perspective has developed parallel to the growth in scientific specialization. Modern risk-orientated society is a product not only of the perception of the consequences of technological achievement. Its seed is contained in the expansion of research possibilities and of knowledge itself.

58 Exceptions must be allowed. Death is one such exception. For this reason there is strictly speaking no risk of death, but only the risk of your life being shortened. Whoever considers 'life' the highest value would thus be well advised to say: 'long life'.

59 For detailed treatment see Aaron Wildavsky, *Searching for Safety* (New Brunswick, 1988).

60 On this countermovement of rationality and risk see Klaus P. Japp, 'Soziologische Risikoforschung,' MS (1990).

II.

The solution to this problem is not trying to cope somehow or other, getting it right in spite of everything, or somehow obtaining security or ensuring safety. This would require supernatural help, and we would then have to know where and how to go about getting it. The solution appears to lie in the opposite direction. It is based on the acceptance and elaboration of the problem, on a multiplication and specification of the risks. In other words, we have to collaborate with distinctions, not combat them. The relevant model can be found in the binary codes of modern function systems, especially in cases where they are highly technological, where they function almost like logically symmetrical exchange relations, hence offering a practically safe option on the present. What is not true is – with the certainty science can provide – false.

In binary coding, modern society possesses a highly specific form for heightening, normalizing and contextualizing risky behaviour. By attributing observations to certain coded systems, we can recognize which risk network we are operating within – and which one we are not operating within. Whenever a matter is dealt with in the context of a binary code, the implication is that not only the positive value but also the countervalue could be assigned validity. A business deal can be profitable, but it can also create a loss; a piece of research can produce results that are true or false, that either enhance reputations or are unhelpful in this respect. A binary code virtualizes its scope of application in relation to *both* possibilities. From the standpoint of the

code alone, one would have to assume an equal distribution of chances, since there are no third values, which, capable of associating with one or other of the two sides, could shift the weighting. However, as soon as a code is institutionalized and operations start being attributed to it, this equality of distribution becomes disturbed. An imbalance arises. The systems thus formed tend to take up options that primarily favour the positive value. Money is then invested only in predictably lucrative projects. Experience gathered in the process is then held in reserve for future use in the form of programmes determining the correct attribution of the values of the code. The system begins to learn – indeed, with the help of what has already been learned, it begins to learn more efficiently. However, all efforts of this type continue to depend on the code. Being the precondition for experience in application, such efforts presuppose a coded system. They cannot be transferred from one system to another any more than can the programmes themselves.

Breaches in symmetry permit the emergence of irreversibilities. This simply means that they lead to further breaches in symmetry between past and future.⁸ It is only on this condition that the future can differ from the past, and only thus are risks conceivable. With the progressive differentiation of society and the coding of language, this regularity permits the development of a societal history determined by whether language is used to accept or reject the meanings proposed. If within the societal system binary coded function systems are further differentiated, this process repeats itself in frequently divergent and accelerated form. The option for the positive value of the code, for legality, truth, property, for institutionalized power positions, engenders a capacity for connectability and thus for history. The option for the respective countervalue reflects the pertinent conditions, engenders contingency, and thus keeps the future open. The system thus exposes itself fundamentally and continuously to the risk that it can

8 Thus the well-known central thesis of Ilya Prigogine, *Vom Sein um Werden: Zeit und Komplexität in den Naturwissenschaften*, (German translation Munich, 1979). See also Ilya Prigogine, 'Order out of Chaos.' In Paisley Livingston, ed., *Disorder and Order: Proceedings of the Stanford International Symposium* (Sept. 14-16 1981), (Saratoga, Cal., 1984), pp. 41-60.

operate only with the preferential value, but can do so only under conditions that require the countervalue to be always able to impose itself. There is then no longer any guarantee that what is past will be preserved and that the future will be like the past – despite irreversibility!

A further characteristic of coded systems is that they never come to an end. They are fundamentally ateleological. For every individual operation produced in the recursive network of its autopoiesis, the option for either the positive or the negative value remains open, and this decision can be made only with an eye to subsequent future operations. They are systems in which every end is simultaneously a beginning – they are nontrivial (historical) machines in Heinz von Foerster's sense of the term.⁹ However, this means that there are no established time horizons for risk evaluation. The future of closed systems is an open one, and the risks they have to deal with are basically incalculable.

Codes are abstract and universally applicable distinctions. Although formulated in terms of a distinction between a positive and a negative value, they contain no indication of which attribution is correct, the positive value or the negative one. Truth, for example, is no criterion for truth, and property is no criterion in the question of whether it is worthwhile acquiring or retaining it. It is only under the condition of openness towards both the positive and the negative option that a social system can identify with a code. If this occurs, it means that the system recognizes as its own all operations that are guided by its own code – and rejects all others. The system and the code are then firmly coupled. The code is the form with which the system distinguishes itself from the environment and organizes its own operative closure.

On the other hand, this openness imposes decisions – and inevitably – the taking of risks. The system cannot remain neutral in the question of which of the two values is to be selected, for this decision is instrumental in producing the connectability of its own operations.

9 See Heinz von Foerster, 'Principles of Self-Organization – in a Socio-Managerial Context.' In Hans Ulrich and Gilbert J. B. Probst, eds., *Self-Organization and Management of Social Systems: Insights, Promises, Doubts, and Questions* (Berlin, 1984), pp. 2-24 (6).

It is only when a decision has been made on whether something is just or unjust, true or false, ill or healthy – or whether such a decision is at least possible – that the system can determine the consequences and make use of the security thus gained within the system. This is the only way it can learn, the only way it can create order, which then includes and excludes what is to continue to be possible in the system. Again, in view of an environment that cannot be controlled by the system, this will always remain a risky decision.

VI.

We have hitherto assumed that the political system reacts to risky situations in its environment by making decisions to provide remedies or at least to reduce risk-related dangers. However, the political system has in fact two possibilities – for it would otherwise not be a matter of decisions – namely to intervene or not to intervene. Both possibilities involve politics assuming a risk in its own right.

Externally, politics is presented as a more or less successful – at any rate purposeful – attempt to reduce the dangers that can result from risky behaviour. Politics presents itself as a system of societal control. This alone may dispose it to action rather than inaction. We seldom find mere inaction entered on the credit side of governmental balance sheets. This version modifies with the growth of scepticism about the feasibility of control. We could then conclude that from a realistic point of view, a political system subject to constant perturbation from risk only has the opportunity to transform – as it were on the off-chance – external risks into internal ones, into risks incurred by its own decisions. Its own risks then take two forms: one can decide to regulate the matter in question and thus to take the responsibility for the consequences, or one decides to wait and see, to commission further expert opinions; and then one either witnesses a dedramatization of the situation or is confronted by progressive degradation, by growing costs, by less time for manoeuvre.

The double option to act or not to act corresponds to the dependence of political decision making on time, on favourable moments (*kairós*) with the risk of reacting too early or too late. This was once taught under the name of *prudentia* as an individual virtue of the prince and examined in its moral complexity. Today, too, there is at least consensus that this problem cannot be reduced to a matter of rational decision making, since identifying the conditions for rationality alone requires far too much time (and in principle infinite time), thus amounting to postponement. Rationality cannot be attained without taking the temporal aspect into account. In such circumstances of dependence on time and opportunity, it is only a form for representing the intention not (or at least not for the time being) to decide. Instead one interrogates experts or seeks consensus. It would nevertheless be just as wrong to conclude that politics is in principle irrational, i.e. to

cross to the opposite side of the form. The question is rather whether the form schema rational/irrational is at all suitable to deal with this condition of time dependence, which turns back reflexively into itself. And there are good reasons for observing political decision making as risk *instead*. And also to do so precisely when politics, as we have suspected, is not in a position to present itself as risky decision making.

In these circumstances, the rationality of specifically political risk management could consist in weighing the risks of deciding one way or the other, and being careful to consider the protest potential of side-effects and the electoral power of those affected. And depending on the solution chosen, it may be advisable to stress the possibilities or the difficulties of intervening for the purpose of control.

An organization that finds itself exposed to risk – and under modern conditions this will be the rule rather than the exception – could react by differentiating between leadership and execution. The task of leadership would then, also when seen from an internal point of view, consist in weighing up opportunities against risks and transforming the result into preconditions to be taken into account by the organizational machinery when making decisions. In fields where no opportunities worth mentioning occur, for example, in many areas of government administration, the problem would lie rather in discovering risks, in insisting that the decision making context be examined for even the most remote of politically scandalous negative consequences that would have to be dealt with. This does not constitute recommending a preference for safety first. It is rather a matter of seeing risks and providing security, of 'uncertainty absorption' in a sense of the term going beyond that of March and Simon.¹⁸ And leadership achievement would then be measured not in terms of the extent to which risk is avoided but in the relation of risks seen and accepted to those not seen.

This particular exposure of the leadership level brings with it particular possibilities of dealing with risky decisions.

It is primarily an empirical question whether the leadership of organizations tends to make risky decisions itself or to delegate them (perhaps on the assumption that the organization and thus the behaviour

18 See James G. March and Herbert A. Simon, *Organizations* (New York, 1958), p. 165 ff.

of subordinates is under control).¹⁹ At any rate management has, in addition to competence in deciding substantive matters, the power to decide on staffing questions, and it is in this area that risk perception among subordinate personnel is concentrated. Subordinates do not want to be dismissed and do want to be promoted. They place value on working conditions in line with their conceptions. In all these respects their expectations can be fulfilled or disappointed. In this sense Ortmann *et al.* identify 'a hierarchical order of two zones of uncertainty' in enterprises having to decide, without adequate assessment of the consequences, whether or not to introduce computer-aided information and planning systems. Thus it becomes possible 'to transform the risk and transport it to another zone of uncertainty that is under control'.²⁰ Secure in possession of the personnel manager's powers of hiring and firing, the leadership of organizations can depend on subordinates being risk-averse at their work. It thereby assumes the risk involved in choosing staff; but in this respect it will hardly be possible to criticize them afterwards for having disregarded alternatives. As far as this risk is concerned, leadership can thus feel relatively safe. Subordinates can pass the buck by shifting the risk upwards. The result will be that leadership must perceive its risk in success or failure, whereas subordinates perceive theirs in acceptance or rejection by the leadership.

In the real life of organizations there is probably more deviance from this standard model than there are exact realizations thereof. This is because participants behave 'strategically' in their relations to one another and reflect the attitude to risk of the other side, perhaps even exploiting it. However, it is precisely strategic behaviour that requires perceptible structural distinctions. It is only in a secondary

19 According to a study by Kenneth R. MacCrimmon and Donald A. Wehrung, *Taking Risks: The Management of Uncertainty* (New York, 1986), p. 91, 23-38% of managers tend to delegate decision making regardless of the problem area.

20 Günther Ortmann, Arnold Windeler, Albrecht Becker, and Hans-Joachim Schulz, *Computer und Macht in Organisationen: Mikropolitische Analysen* (Opladen, 1990), p. 446 ff. (quote p. 447).

sense that, given good mutual knowledge of one another, psychological differences in risk perception and readiness to take risks might play a role.²¹

21 Scepticism about the explanatory value of 'a priori attitudes to risk' in organizational contexts is also expressed by Ortmann *et al.*, *op. cit.* p. 446. Awareness of the unacceptability of such generalizations of quite different situations can in the meantime be regarded as the rule. See also MacCrimmon and Wehrung, *op. cit.* (1986), p. 99 ff.

Such confusion makes it advisable to define the concept of observation relatively formally, to place it, as it were, above the battlefield of opinions. Observation shall thus be understood to mean the use of a distinction to indicate one side (and not the other), regardless of which empirical reality the operation performs, so long as it is capable of drawing a distinction (and thus of seeing two sides simultaneously) and of making an indication. With George Spencer Brown we thus presuppose that distinction and indication form an indivisible whole, since only what can be distinguished can be indicated, and distinctions can be used only for the purpose of indication (which includes the possibility that will lead us to second-order observation: indicating the distinction itself with the help of another distinction).⁷

In these terms observation is the operative use of distinctions. If we wish to observe observation we must be able to draw distinctions between distinctions. However, it is not simply a matter of drawing up a list of the type: there are big things and small ones, blacks things and white, my house and other houses, and so on *ad libitum*. With such 'there ares' we remain first-order observers. We treat distinctions as objects, and we would always choose what interested us.⁸ Observation of the second order occurs only when we observe an observer as observers. 'As observers' refers to the manner in which we observe. And this in its turn refers to the distinction we use to indicate the one side (and not the other). Or in Spencer Brown's terminology, it refers to the form underlying our observation.

This theoretical outline already contains more elements but also more difficulties than is apparent at first sight. In the first place, the base operation of observation is *itself* the guarantee for its own reality (and, as we shall see, is so in recursive cross-linkage with other observations). It draws its own reality not from *what* it observes not – in

7 'We take as given the idea of distinction and the idea of indication, and that we cannot make an indication without drawing a distinction. We take, therefore, the form of distinction for the form': thus George Spencer Brown introduces his investigation *Laws of Form*, quoted from the reprint (New York, 1979), p. 1. We note that the concept of form conceals the paradox that consists in the concept of distinction being applied to itself as distinction between distinction and indication.

8 In which 'niche' one observes, as Maturana would put it.

the case of second-order observation – from the observer it observes. It thus does not depend on consensus, but has in itself the same reality value when it ascertains dissent. It is sufficient that the operation be actually carried out.⁹ In other words it must succeed as an operation. But how is this possible?

In the terminology of Heinz von Foerster,¹⁰ we would have to reply: the operation is not possible as an isolated result. It is constituted by the recursive calculation of calculations. The calculation of calculations produces intrinsic values of such stability that they can no longer be abandoned. The operation can of course fail, but then observation becomes lost in untenable perspectives. But how is this primarily mathematical formula to be interpreted?

It seems obvious to identify the intrinsic values of observation with the invariance of its objects.¹¹ In Spencer Brown's calculus the repetition of an indication leads to the 'condensation' of identity.¹² If, however, we wish to guarantee the stability of objects or identities, we must avoid confusing the different, historically never identical states of the operating system with its objects (even where these are states of itself that can recur). In other words, a recursively organized, anticipatory, and retrospective sequence of operations has to be able to observe itself as a system, to distinguish itself from an operatively inaccessible environment. It must be able to observe the sequence of operations as the drawing of a boundary, as the fencing in of what belongs

to it and the shutting out of what does not. It must be able to distinguish between self-reference and external reference. The intrinsic value of intrinsic values – this is what constitutes the system: the system as boundary, as a form with two sides, as a distinction of system and environment.

At the same time this clarifies what observing an observer means. It means observing a system that for its part is carrying out operations of observation. Another system can be involved; but in the case of self-observation of the second order this can be the observer system itself. We are still leaving open the question of what sort of operation the system carries out. It may be a living system (for example, a brain), a psychical system (a consciousness), or a social system that performs only communicative operations. Thus observation of the second order can be performed on the basis of various operations. We cannot in this context go into greater detail about how this is possible. It must suffice to say that an observer system will always be involved and the intrinsic values of the recursive cross-linkage of second-order observations always presuppose the system form of observer. It is thus a necessary condition for observation of the second order that an observer be presumed to be able to draw a distinction between himself and his environment – regardless of whether, in any particular instance where he is being observed, he is observing himself or his environment.

We thus discover that second-order observation is always also first-order observation. From the vantage point of its own system it has to decide on reference to a particular system, that is to say it has to be able to draw distinctions between both systems and objects. We decide to observe a person or a political party, to observe the world economy or to observe the French legal system. We have to find our bearings in the world if we wish to direct our attention towards something in particular; for this purpose first-order observation suffices. And in many cases that will be the end of it. Second-order observation occurs only where we understand the system we are ourselves observing as an observer system – that is to say as a system that draws a distinction between itself and its environment, and which in the process produces intrinsic values and uses distinctions of its own to observe something within itself or in its environment.

9 On this 'constructivist turn of events see, for greater detail Niklas Luhmann, *Erkenntnis als Konstruktion* (Bern, 1988); Niklas Luhmann, 'Das Erkenntnisprogramm des Konstruktivismus und die unbekannt bleibende Realität.' In *Soziologische Aufklärung*, Vol. 5 (Opladen, 1990), pp. 31-58; Niklas Luhmann, *Die Wissenschaft der Gesellschaft* (Frankfurt 1990), esp. Ch. 2.

10 op. cit. (1981.), esp. the contribution 'On Constructing a Reality,' p. 288 ff.; also in Heinz von Foerster, *Sicht und Einsicht. Versuche zu einer operativen Erkenntnistheorie* (Brunswick, 1985), p. 25 ff. See also Heinz von Foerster, 'Erkenntnistheorien und Selbstorganisation.' In Siegfried J. Schmidt, ed., *Der Diskurs des Radikalen Konstruktivismus* (Frankfurt, 1987), pp. 133-158.

11 Thus von Foerster in the contribution 'Objects: Tokens for (Eigen-)Behaviours,' op. cit. (1981), p.273 ff. and 1985, p. 207 ff.

12 op. cit., pp. 9, 10.

III.

What help to us are these complicated and abstract reflections with their unclear logical basis when we are dealing with the topic of risks that are perceived and assumed – and controversially debated – in modern society?

They are particularly useful in casting additional light on the problems of risk communication. If the option exists, one can require that a distinction be drawn between first and second-order observation. At the level of first-order observation, participants observe one another as objects, and draw conclusions about the nature of partners or opponents on the basis of prejudices or perceptions, or on the basis of the communication of prejudices and perceptions. As Habermas would put it, this leads to a strategic orientation, eventually to a moral judgement triggering decisions on whether to attach importance to something or to disregard it. One sees *what* others see and forms one's own opinion on the same object. One lives with other observers in the same world and either fight or get along with one another. But is this also acceptable when dealing not with objects but with risks?

In second-order observation the primary question is which distinctions the observed observer uses to make indications, and how he does so. What does he regard as probable and what as improbable? Where does he locate the disaster threshold that makes him risk averse and causes him to reject all quantitative calculation? When mere liquidity problems arise? Or when bankruptcy threatens? Where his own life is at stake or already where some indeterminate person is possibly in danger? Is it important to him whether the desired advantages, which make a risk worth taking, accrue to the decision maker himself or to others? And is this distinction used reflexively, so that anyone who would like to induce others to internalize costs also sees that precisely this strategy has the effect of externalizing costs in its turn – so that it is quite impossible to reproach anyone for externalizing costs?

In the case of communication within organizations we could investigate whether participants can observe how they are observed, and whether this is equally true for both subordinate levels and for leadership. We could ask whether the attitude towards risk is a component of the respective role or whether it varies with success and failure. As

in older social psychological studies, we could ask about reference groups, i.e., we could ask by whom one prefers to be observed and by whom one fears to be observed, and which basic distinctions one attributes to these preferred/feared observers.

More examples could be cited. However, it is more important to come to grips with the communication problems to be dealt with when second-order observation has been established and can be expected. We must above all remember that at the level of second-order observation *hierarchy formation is no longer possible*, and that hierarchies switching to second-order observation, for example, in the relations between subordinates and leadership, are thereby relativized. (Hegel's famous master/servant logic had attempted to absorb this by attributing an interest in second-order observation to only one side, that of the servant, thus saving the hierarchy by means of this asymmetry.¹³) This cancels the possibility of forming an opinion about a system by observing the way in which the top echelon observes. Other, heterarchically coordinated reductions in complexity are necessary instead. Science, for example, has its publications and a highly selective reviewing system. One observes colleagues not as they observe but via their publications.¹⁴ For the economy, competition has the function of a communication barrier, which nevertheless does not prevent the observation of observations operating via the market.¹⁵ For the political system the same applies, with public opinion providing the mirror.¹⁶ Only the family (or more broadly the complex of intimate relationships) represents an exception, and here everyone with experience in this domain knows what demands in the way of atten-

13 See Georg W. F. Hegel, *Phänomenologie des Geistes*, quoted from the edition by Johannes Hoffmeister, 4th edn. (Leipzig 1937), p. 141 ff. We could follow this up by noting that in the modern world there are no more masters. For a master is someone who can deal with things, but who has no need to indulge in second-order observation.

14 See Charles Bazerman, *Shaping Written Knowledge: The Genre and Activity of the Experimental Article in Science* (Madison, Wisc., 1988).

15 See Niklas Luhmann, *Die Wirtschaft der Gesellschaft* (Frankfurt, 1988), p. 101 ff.

16 See Niklas Luhmann, 'Gesellschaftliche Komplexität und öffentliche Meinung.' In Niklas Luhmann, *Soziologische Aufklärung*, Vol. 5 (Opladen, 1990), pp. 170-182.

tion, circumspection, and refinement accrue from having constantly to observe how one is observed, and how difficult it is to steer communication away from the object level to that of observing observation while still managing to preserve the peace. Only love helps, and that not for long.¹⁷

The nature of modern society doubtless makes it seem obvious to presuppose second-order observation in all communication. This is true with regard to the attribution of communication to individuals, whose individuality in the modern view consists precisely in the individual observing himself as an observer and not simply living his life. But it is also true for large groups or for systems – for example, when we see educationalists tending to consider even politics as a pedagogical task; or when certain ways of observing are imputed to ‘capital’ even without reference to Marx. For sociological theory, such second-order observation is indeed an indispensable medium. Society itself has, however, already developed forms of immunization against the communication overload it engenders.

We could refer to such forms as the establishment of a basis for reaching agreement.¹⁸ In greater proximity to our subject matter, Sheila Jasnóff speaks of ‘regulatory negotiation’.¹⁹ Where therapists

are involved they speak of ‘prescriptions’.²⁰ In any case it is a question of returning second-order observations to the level of first-order observation. It is by no means the old naivety of direct common belief in the world but of finding a solution to inextricable entanglements in communication. The world of second-order observation is opaque – both for the individual consciousness and for communication. One becomes involved in drawing never ending distinctions between distinctions, which always transport the other side along with everything that is thought and said. Thus magnified, the world constitutes a gigantic black box. And for precisely this reason, precisely when one has learned this and can impute the experience to others, it might become advisable to make at least some of the structures of interaction transparent, to be satisfied once again with first-order observation, with ‘whitening the black box’.²¹

Just as in a politically corruptible bureaucracy – where one has to know someone who knows someone if anything is to be achieved – documents, files, evidence gain in importance, so it is with the establishment of a basis of agreement in a world that is constituted on the level of second-order observation. In the form of continuous extrapolation and variation of this base – the results of which can be directly observed – the system makes itself observable. It depends on the particular agreement reached – precisely because one knows that it is not ‘the thing itself’. One learns language a second time. One learns again to distinguish between sign and signified – between what is available to all first-order observers and what can be observed as their observing. This distinction splits the so-called consensus together with all traditional demands for integrity, truthfulness and contractual fidelity. The system offers ways of operating that work because they are not taken seriously. The Romantics had incidentally already taught us this

17 On this subject see the papers ‘Sozialsystem Familie’ and ‘Glück und Unglück der Kommunikation in Familien: Zur Genese von Pathologien.’ In Niklas Luhmann, ed., *Soziologische Aufklärung*, Vol. 5 (Opladen, 1990), p. 183 ff., 218 ff., and with regard to wisdom and delusion in matters of love: Niklas Luhmann, *Liebe als Passion: Zur Codierung von Intimität* (Frankfurt, 1982).

18 Alois Hahn shows great insight in ‘Konsensfiktionen in Kleingruppen: Dargestellt am Beispiel von jungen Ehen.’ In Friedhelm Neidhardt, ed., ‘Gruppensoziologie: Perspektiven und Materialien,’ Sonderheft 25 of the *Kölner Zeitschrift für Soziologie und Sozialpsychologie* (Opladen, 1983), pp. 210-233; Alois Hahn, ‘Verständigung als Strategie.’ In Marx Haller et al., eds., *Kultur und Gesellschaft: Verhandlungen des 24. Deutschen Soziologentages, des 11. Österreichischen Soziologentages und des 8. Kongresses der Schweizerischen Gesellschaft für Soziologie in Zurich 1988* (Frankfurt, 1989), pp. 346-359.

19 ‘Often leading,’ she goes on, ‘to a narrowing of the issues in dispute and a softening of positions in areas that still remain controversial’ – in *Risk*

Management and Political Culture: A Comparative Study of Science in the Political Context (New York, 1986), p. 62.

20 See Paul Watzlawick, ‘Verschreiben statt Verstehen als Technik von Problemlösungen.’ In Hans Ulrich Gumbrecht and K. Ludwig Pfeiffer, eds., *Materialität der Kommunikation* (Frankfurt, 1988), pp. 878-883.

21 In the formulation of Ranulph Glanville, ‘The Form of Cybernetics: Whitening the Black Box.’ In *General Systems Research: A Science, a Methodology, a Technology* (Louisville, Ky., 1979), pp. 35-47.

with their concepts of 'circumspection' their 'irony', with their fairy world, their magicians, mirror images, *doppelgänger*, and sceneries indispensable if texts are to function as 'poetry'; but which ought not to be confused with what is essential – historically the first mode of observation, that which focuses on the written page. And we experience the same with the demand for communication permeating all society, with the demand to ensure staves of transparency in a world that has been rendered opaque by the practice of second-order observation, indeed in a world that has in a strict sense become unobservable.²²

In a world the future of which can now only be described in the medium of probability/improbability, texts (for who knows how many readers), communications (for who knows how many observers), works of art (for who knows how many spectators) and prescriptions (for who knows how many patients) are at present the modes in which communication makes second-order observation available for observation of the first order.²³ This detour via 'the written form' (in the broadest sense) offers an alternative to direct observation of another observer. Such direct observation invites us to explain to ourselves why the other observer observes the way he observes. Affected parties thus develop theories of their own on the risky behaviour of decision makers and the decision makers produce theories on the protest behaviour of those affected by their decisions. One has experience in this field, and there are indeed possibilities to refine such explanations, to improve them, to render them more complex, and to make them more easily comprehensible. But this then raises the levels of complexity and opaqueness in the shared universe and certainly does not lead to consensus in the sense of a coincidence of system states.

It is probably advisable to cultivate parallel and quite distinct communication channels that are able to function regardless of whether and to what extent participants can mutually reconstruct the universes of their observations.

22 On the field of art see my contribution, 'Weltkunst.' In Niklas Luhmann, Frederick D. Bunsen, and Dirk Baecker, eds., *Unbeobachtbare Welt: Über Kunst und Architektur* (Bielefeld, 1990), pp. 7-45.

23 Nothing else can be meant when one speaks of the inevitable naïvety of reference to texts. See, for example, Bruno Latour, 'The Politics of Explanation: An Alternative.' In Steve Woolgar, ed., *Knowledge and Reflexivity: New Frontiers in the Sociology of Knowledge* (London, 1988), pp. 155-176, albeit with the too drastic call for 'abolishing the language of observers observing observers' (p. 175).