

1. Views on medicine

Medicine is a paradigmatic example of an interdisciplinary field. There are people who study medicine in order to be able to practise it – to help people stay or get healthy again – and they face tasks and problems of a most varied nature. As a discipline medicine is based on biology, psychology, statistics, chemistry, genetics, and many other sciences too; medical problems give rise to social, political, juridical, and ethical questions. There are also others who look at the many dimensions of medicine from the outside, as sociologists, historians and philosophers do. Unlike practitioners, they have very little to do with actual diseases or with the pressure of urgent cases, but their interests often arise from or are influenced by present concerns. Contagion, for example, a central biological and medical issue, seemed outmoded at the beginning of the 1980s after having played an enormous role in the 19th and 20th centuries. Because of the outbreak of AIDS, however, scholars have begun to study contagion once again over the last 20 years from a historical and philosophical perspective.

But there is another *urgent* reason why medicine should be studied from various intellectual

perspectives. Medicine strongly influences our lives. As the most cited critic of modern medicine, Ivan Illich, stated 30 years ago, our life is already medicalised. We are born and die in a hospital and the tendency to look for a medical solution to every personal discomfort is increasing. The turn to “other” types of medicine confirms this phenomenon, even if in “other” forms.

It is *urgent* to understand why scientific medicine is as powerful as it is at the practical and at the symbolical level and to describe the ways some of our existential decisions are influenced by it (for example our reproductive life or changes in our lifestyle). In addition, and more importantly, it is important to study to what extent medical concepts and thinking are influenced by decisions made at the political and economical level.

2. A look on risk

One powerful way to examine the field of medicine and health is to make it interact with the concept of risk and the practise of risk assessment. *Risk* (in Latin *risicum*) is associated, in the economical language of the Mediterranean countries, with an underwater cliff. If no ship navigates in that area, it

is just a cliff (possibly no being apart from the fishes will even know that it is there). But when a ship arrives, it becomes a danger, an invisible one. Or more accurately: it becomes a danger for other ships once it has damaged the first one, or caused a shipwreck. Then seamen begin to fear it and other possibly dangerous rocks, but they cannot simply give up navigation. Everyone, not only the seaman, takes risks. Everyone knows that injuries and losses are possible and fears them, but to avoid every risk would be equivalent to living in a stalemate condition. Fear is closely associated with health issues, which in turn carry deep symbolical and moral meanings. And health is associated with medicine, although not exclusively. You can be healthy without medicine, but hardly anyone who is (or simply feels) unhealthy fails to turn to medicine. The third possibility is that healthy people turn “unhealthy” just because of laboratory parameters.

Patients – or patients *in fieri* – visit physicians and talk with them, more or less explicitly, about their fears. They hope to gain sympathetic words, concrete help and also predictions. How high is the risk of being seriously ill? What is the chance of getting better soon? At this point, what they are



told is a percentage. This is the outcome of a history that started towards the middle of the 19th century, the history of the quantitative method in medicine.

Risks are assessed, estimated and evaluated; they are compared with benefits and possible harms; risks are imposed and managed. Each of these verbs describes undertakings in different disciplines: risk crosses fields of life, or even all of them. But to confine the discussion to our *topos*, it is necessary to turn to the ways in which the interaction between risk and scientific medicine takes place. Obviously, not only in the patient–doctor relationship are risks associated with fears, but also in other contexts, like exposure to potentially harmful substances. In this latter case, the relation between risk imposition and risk victimisation is a very remote one, although the consequences of emissions on health are of the most material type.

3. A look at interactions: Valuable parts of a philosophy of medicine

Sven Ove Hansson addresses the primal terminological issue in the expression “risks and benefits”: risks are something uncertain, or, better, they are uncertain damages, while benefits are certain positive effects. On the other hand, there are two more terms that emerge in risk discussions: chances and harms. Chances are uncertain positive effects, while harms are certain negative effects. Hansson points out that it would be more rational to compare risks with chances, since both are on the uncertain level. But the received

terminology is too influential to get rid of and we continue to speak of risks versus benefits. Hansson addresses three formulations of the risk-benefit principle and links them to the issue of therapeutic experiments. The first and basic formulation states that a risk is acceptable to the extent that it is outweighed by a greater benefit. The collectivist risk-weighting principle specifies that a certain option is acceptable to the extent that the sum of the individual risks it causes is outweighed by the sum of all individual benefits. In this case, another unexpressed principle plays a role, namely interpersonal compensability: benefits for one person or one group can outweigh harms for another person or group. If interpersonal compensability does not hold, risk-weighting occurs at the level of one individual and the principle (individualist risk-weighting principle) is formulated as follows: an option is acceptable to the extent that the risk to which each individual is exposed is outweighed by the benefits for the same individual. If a medical researcher is aiming to achieve an overall benefit for the whole of society, he or she thinks it justifiable to experiment with individuals without evidence of benefit for them or even with risks, because the possible benefit that will derive from the study concerns the whole society, or at least all potential patients in the future. On the other hand, a medical researcher who supports the individualist principle includes a person in a study only if participation entails a concrete benefit for his or her health. Medical research is dominated by the individualist principle, while risk

analysis is dominated by the collectivist one, with its assumption of compensability. An example is the NIMBY (“Not-In-My-Back-Yard”) attitude, which is criticised by supporters of the collectivist risk analysis. They equate refusing to have a road or a factory or another type of facility built “in my back yard” because it is personally inconvenient or dangerous with refusing a benefit for the entire society.

In medical experimental practice the individualist principle prevails, and today cases of research based on collectivist principles often are rejected as unethical (the Tuskegee syphilis experiment, that involved 400 uninformed men for 40 years, is a known example). But the beneficial effect for the individuals involved in a therapeutic comparative experiment is flawed by a major problem: how can it be assessed that two or more therapies are in fact equivalent? The equipoise principle, an oft criticised one, is the premise for assigning study participants randomly to one or the other group. This means not only that benefits outweigh risks, but also that there is uncertainty as to which treatment is most beneficial for every single patient enrolled in the study. If equipoise “is” in the mind of the doctor, it can border on ignorance, but paradoxically it cannot be defined as ignorance, because of the uncertainty premise. The equipoise principle stresses the necessity of not sacrificing present individuals for the sake of future ones. In other words it stresses the necessity of not imposing risks on individuals.

On the side of occupational medicine a third formulation of the risk-weighting principle is used.

According to it, an option (e.g. exposure to a substance) is acceptable only if the risk for every individual is reasonable compared with the total benefits. This principle is called the hybrid risk-weighting principle due to the combination of individual sphere and collectivity. Again, however, who assesses the risk? In the occupational field limits are often set by negotiation among social, economical, and political powers and the medical-scientific position is just one factor among others. In the area of atmospheric pollution, instead, a collectivist model prevails.

Throughout the history of medical trials, risks have been seen first in a collectivist way and, just as reaction against abuses, an individualist attitude has gained importance. What is constant is the necessity to deal with risks. In this sense it can be said that medicine and risk are closely intertwined, and even more than in other disciplines, because medicine is related to health and to fear. Most importantly, risk victims are not always involved in risk assessment.

Risk is overall and many risks are known. Some of them are even accepted. But is an unknown risk a zero risk? In other words, is absence of evidence identical with evidence of absence? Kristin Shrader-Frechette makes an epistemological point on the problem of screening possible victims of exposure, particularly nuclear fallout victims, but also victims of occupationally induced illnesses. In this sense, risks are possibly strongly manipulated by power. In a strong form of comparativism, two or more theories can be compared only in relation to their

problem-solving ability. A theory which states that a nuclear fallout has caused just few casualties (and is supported by political powers) and a theory which, on the contrary, claims that the fallout caused thousands of deaths are not equivalent in a comparativist view. An extreme comparative view, in fact, allows only a comparison between fully formulated theories to assess which of them better solves a certain problem. But in our example the suspicion that fallout caused many more casualties than stated by the political authorities is just a suspicion and not a fully developed theory. This concurring theory may not be developed simply because an administration decides not to fund the appropriate studies, and then the "absence" of evidence can be used to invalidate the suspicion as well. Extreme comparativists keep dominant theories from being criticised, because the competing theory is not present. Avoiding research, perhaps by automatically assuming that the accepted theory is correct, allows the extant theory to win by default. The problem of estimating casualties is related to time. Many casualties result immediately after a nuclear or another accident, but further ones often follow, even decades later.

In the real world theory building is influenced by social and political factors and it is impossible that choices are made only on rational grounds. If a political or social bias in a theory were sufficient ground for refuting it, even in the absence of a "better" one, people might be more trusting of their governments when it came to health risks.

Arguing from the perspective of the general practitioner, Fernando Rosa points out that risk-factors medicine is in a sense a non-medicine. It has to do with non-patients, or not-yet-patients. But what happens when a physician tells asymptomatic patients that they belong to a risk group? For common sense, disease and symptoms are interconnected: "no disease without symptoms". Psychologists and anthropologists have analysed this issue by using the concept of body feeling. If "health" means the "not-consciousness of the body" or the "quietness of the organs", then disease is the perception of an alteration in the body and the concept of risk, with its ancestor "fear", refers to such alteration. Fear of plagues, for example, induced most people to flee from infected towns. Plagues can also be seen as collective risks and towns as collective individuals. Indeed, individuals can be compared to towns since both of them have "doors", or orifices, through which impurities can enter or exit.

To prevent diseases, ancient medical authors wrote *Regimina* (diet and hygiene handbooks), which addressed symptomatic persons in order to prevent them from getting worse. In the modern medical science of risk factors, especially in the area of cardiovascular diseases (CVD), there are no more risk groups. Instead, everyone is at risk. Therefore drugs like the "polypill" have been developed which combine several medicines to prevent the onset of CVD.

Medical experts and common people do not share the same risk concept because they do not share

the mechanistic model of disease. How people believe themselves to be at risk for a disease (including over- or underestimating the risk) has to do with emotional and qualitative issues which are often quite different from calculated probabilities. The public often overestimates the impact of genetically caused diseases because genes have become the modern form of the stars and constellations that determine human destiny in fatalistic visions of the world. Likewise, the patient refusing treatment because he or she "is well" demonstrates a behaviour that can be explained with the use of a Cartesian model: the *I* is the mental self, while the body (as *res extensa*) is not perceived as part of this self.

The general practitioner has to play the role of a mediator in making patients acquainted with the risks they run without disturbing too much their everyday life.

There are invisible risks, like radiation or substances in the atmosphere, which strongly resemble ancient or medieval contagions. And there are risks, treated here by Stefano Canali, that are invisible in another way, namely the psychological risk factors for somatic diseases. These risk factors embody and even exaggerate all the difficulties involved in defining the concept of risk: they are active only in particular conditions, are associated with different pathological conditions, are extremely difficult to isolate, and act according to a dose-response pattern which is not always known. They represent a *microscopium naturae* of the concept of risk. Psychosomatic

medicine is as old as medicine itself. Hippocratic authors had sketched personalities as risk factors for certain diseases, and this implies a primacy of the mind over the somatic sphere; but the concept of risk allows even a reversal of perspective and of causal determination. Psychosomatic pathological conditions, in other words, might result from the translation of somatic conditions into psychological terms: risk might show in such cases a double direction. The psychosomatic case casts light on another trait of risk, which is found in other cases as well, namely its variable and problematic relation to time. Between the risky condition and the onset of disease a long time may elapse; as a result, it is no longer possible to speak of a causal or etiological factor, but of relation or association. The example of the association between depression and CVD demonstrates the very particular way in which it is possible to speak of risk. Depression is associated with change in behaviour, like smoking or feeding habits. These changed behaviours again are associated to the onset of CVD. Risks in medicine are, as the example of psychosomatic illness clearly shows, of a very indirect nature. They are not one to one and not always associated with a pathological condition. The psychosomatic case, in which a particular factor may become a risk for a particular individual in a certain condition (although this is extremely difficult to assess), can be seen as the opposite of the exposure case, where a generalised, environmental factor affects a community with different intensities. To overcome the internal dif-

ficulties of the risk conception in psychosomatic medicine a genetic approach is proposed. In this view, the linkage between the somatic and the psychic sphere is genetic regulation through environmental and social stimuli, which in turn influences in a circular fashion the behaviour of individuals in the environment.

Genetic risks and their communication are the subject of Gilberto Corbellini's contribution. In particular, his contribution raises the issue of the public understanding of genetics and of genetic risks in the setting of genetic counselling. Genetics is the medical discipline in which currently risks are most often perceived in both an internal and an external way. Genetics studies risky genes and is often seen as socially dangerous itself. An at-risk patient in the genetic sense is a person who must avoid the meeting between his/her genetical predisposition and certain environmental risk situations; he or she is a not-yet-ill person, or an *unpatient*. Paradoxically, genetics is partly perceived and used by medical professionals and laypersons (above all journalists) within a mechanistic paradigm (an accurate prediction is demanded), while it has the potentiality of revolutionising medicine and medical education thanks to its insistence on the interplay of genes and environment and due to the possibility of making of the prevailing mechanistic medicine an evolutionary medicine.

The example of genetic counselling for late-onset diseases like Alzheimer demonstrates communicative difficulties linked to genetic testing. The predictive test for AD is discouraged on the basis

of ethical grounds (distress for the counselled and their family), but it offers the possibility of indicating useful changes in the behaviour of the at-risk person, for example, avoiding dangerous sports in order not to trigger the illness through head injuries. If risks are seen as particular to a single patient and related in an unique way to his or her biological and social history, then it is natural for the practitioner to take into consideration every aspect of the patient's life (i.e. social life) and inscribe it in a wider environment and population context. On the other hand, if such medical professionals inform patients, the latter will abandon a view of genetics (in part spread by public media) in which "gene X causes disease Y" for a view in which genetic risks can be steered.

Antonio Maturo proposes an integration, originating in sociological studies, of the concepts of risk and trust and presents an example of community participation in the field of health care. Manufactured risks dominate industrial society and are produced by technology. Medicine itself is a risk producer. In order to act in an uncertain world, which brims with risk and negative expectations, trust in others is necessary as expression of a positive expectation based on emotional or cognitive grounds. Trust is stronger than hope, which is more related to natural events, but is countered by the concept of danger (uncontrollable risk, independent of human choices). Trust takes various forms and can be related to the way people perceive health-care systems, which, like diseases, are on their part "risky". The most striking effect is that surveyed people in

Italy possess low trust in health-care institutions but high trust in health professionals once they have come in contact with them. The perception of the risk-trust problem seems to be strongly dependent on human aspects, particularly on the quality of communication by health professionals.

At the public policy level, participation and community involvement in risk governance institutions is a trust enhancing factor in the double sense of increasing trust in institutions themselves and of making people more responsible for their health. People generally are more optimistic about their personal health than about health care at the social level. An increased public participation in health-care issues is able to re-equilibrate these two perceptions, making people aware that they run the same risks as other people.

Health-care participation aims at prevention. Prevention, as shown by Paolo Vineis and Micaela Ghisleni, is not necessarily based on the complete knowledge of disease causes. During the 19th century, many infective diseases were avoidable and avoided with correct preventive measures (based on empirical observations) long before the "responsible" microorganisms were discovered. In cases like these, waiting for scientific evidence would have dramatically delayed preventive measures. Lack of knowledge (scientific certainty) about risks makes it extremely difficult to balance risks and benefits. But in an ethically non-neutral field like health (medicine is a scientific-based humanistic discipline) it is necessary to guide the choice in favour of the greater possible safety for the people. The precau-

tionary principle says that even where there is not complete scientific certainty about an environmental risk, lack of certainty should not justify the absence of preventive measures. In other words, lack of knowledge is no neutral condition, but in itself already a dangerous one, and the precautionary principle is not only a scientific problem. For this reason, it should not be used as a substitute for quantitative risk assessment. Science (biology, medicine) cannot be paralysed by a too extended application of this principle, but it has to operate as a guideline for the necessary preventive action.

Thomas Schlich points out that risks (statistically defined) have the function of objectifying uncertainties, but their definition and perception are strongly socially and politically steered and result often from negotiations which transform discussed issues into solvable problems. For example, at the environmental level the introduction of concepts like "acceptable risk" bears a particularly ambiguous meaning, since it implies that, for example, radiation is at the same time both safe and dangerous, that it is no risk and a risk.

At the level of individual health, the case of hypercholesterolemia is presented as example of a reductionist view in ordinary medicine: Hypercholesterolemia is seen as a disease entity, and also as sufficient to trigger CVD. CVD are, however, actually the result of extremely complex interactions among physiological, psychological and environmental variables.

Moreover, medicine can itself be risky: iatrogenic conditions, i.e. pathological conditions that are

consequences of medical actions, are nowadays the subject of an increasing number of publications. Defining side effects and accidents as risk implies that they are calculable and therefore controllable. In the history of medicine, as the author shows, the dangers of medicine were mostly treated in a utilitarian way. Risks and benefits were balanced in terms of public good. On the other hand, the ability of the clinician to grasp the situation of the single patient using non-formalised knowledge still is viewed as more valuable than the use of risk estimates.

Lucia Mitello and Fabrizio Rufo observe, by means of the SARS example, that perceived risks, which trigger fear, are strictly related to symbols, values, and communication modalities. SARS produced a "media epidemic", or in other words an epidemic that exists only or mostly in the media.

The calculated risk of falling ill with SARS is extremely low, but the perceived risk and the following fear are high. This proves the existence of a deep gap between the results of science and people's perception of science. Risk is not only a calculated quantity, but it represents also the revocation of one's certainties. Today this revocation has a particularly wide import, since the consequences of modern policies in the environmental risk management reach into the (distant) future. That makes these consequences even more fear-laden.

From the present contributions emerges a confirmation of the boundary status of medicine. As many of the authors point out, risk analysis, the calculating approach to risk, is an insufficient tool to deal with the issue of health risks, which are basically linked to fear and to symbolic and ethical traits.

Medicine has the unique status of a humanistic discipline with scientific basis. A rational approach to medicine (that is, as part of a never ending philosophy of medicine) is only possible if it takes into consideration the multiplicity of disciplinary approaches that play a role in the definition of concepts central to medicine itself, including epistemology, history, sociology, and epidemiology. Their meeting on these pages gives an idea of the way in which medicine and risk interact, and this picture is perpetually in motion, according to the point of view the reader chooses to adopt.

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