SESSION I:

SCIENTIFIC THINKING IN MEDICAL EDUCATION
- GENERAL ASPECTS -

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Concept and Relevance for the Physicians's Practice

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Summary

The physician's practice is the marrow, the quintessence of medicine. Medical practice is to act in particular cases, is the interaction between the physician and an individual person, who asks the physician for advice or help. Finally all systems of medical research, science and technic, all social efforts of medical education, health-organization and health-insurance are aimed at the physician's capability to act in an individual case. On that account the physician needs medical thinking, medical knowledge, medical activity, medical behaviour, medical attitude. The capability to use all these in the individual case is the medical art.

For two thousand years medicine was taught and learned as an art. But for more than a hundred years medicine has been taught and learned as a science. The old medical art has been superseded, omitted and forgotten. The result: scientific thinking is wasting medical thinking. E.g.: for the scientist the patient is an object, inevitably an object of examination, of inquiry, of investigation, an object of treatment, a participant in experiments. For the physician the patient is a subject, an individual, a person with his history in his social context, he has personality with human rights.

Medical education has to contain scientific thinking within the area of science, has to train the psychomotoric abilities, has to educate a medical attitude, has to bring up a moral sense for the relation to the patient. A new concept of Medical Education has to consider that scientific knowledge is only one of the three pillars which bear the medical art. The others are: exercise in medical action (diagnostic-therapeutic process) and medical ethics.

My subject is "Concept and relevance for the physician's practice". I am afraid that I shall frustrate your expectations, because I brush my theme the wrong way. I want to speak about "The art of Medicine" or medical art and therefore of medical thinking as opposed to scientific thinking.

A certain joke among students of medicine, quite advanced in years and therefore circulating in many variations, says in its simplest form: An internal specialist knows everything and is not capable of doing anything, a surgeon does everything and knows nothing, a practitioner is not capable of doing anything and does not know anything: therefore he is a good doctor, just that is the trick, the art. The youthful sarcasm of this joke tells more about our topic "medical art" according to its conception and its reality than I would be able to comment upon in many hours.

No doubt. Modern medicine is science. But there is no criterion that allows us to define medicine as a unity. Medicine is an omniumgatherum of sciences: from mathematic and physics to biology and psychology to social sciences and humanities like philosophy. No systematical, no historical, no methodical criterion is able to unify medicine to one science. Only the purpose of medicine, its telos, establishes the unity of medicine: what serves its purpose belongs to the medical sciences. Therefore the aim and the purpose of medicine also decide the concept and relevance of scientific thinking in medicine. Medical education has to consider that fundamental fact, but medical education is far away to do so. Let me explain that systematically and historically.

The action, the behaviour, the conduct of the physician in his/her relations with the patient, is the centre of medicine: medical practice is its task and duty. The physician's practice is the marrow, the quintessence of medicine. Medical practice is to act in praticular cases, is the interaction between the physician and an individual person who asks the physician for advice or help. Finally all systems of medical research, science and technic, all social efforts of medical education, health-organization and health-insurance are aimed at the physician's capability to act in an individual case. On that account the physician needs medical thinking, medical knowledge, medical activity, medical behaviour, medical attitude. The capability to use all these in the individual case is the medical art.

"De singularibus non est scientia" Aristotle said and it holds true today. The physician is not concerned with generality but with singularity. Medical practice does not consist in applying science but in pursuing the medical art. The physician has to include the particular case in the universal rules. During the long diagnostic-therapeutic process he/she has to make the right decisions, find correct information on the condition of the patient and take the right consequences in the individual case.

In principle, he/she must do it with incomplete information, mostly within a short time, always under compulsion to decide. The function of the medical art is to enable him/her to do so. The methodology of medical proceeding is neglected by medical sciences, it is a domain of the medical art. That teachable and learnable art is grounded in knowledge and experience, in skill in medical proceeding and handling and in the moral law of the medical profession. It needs instruction, training and education to become a master of the medical art.

The present doctors in medicine show us the strange two-sided face of a modern Janus. Even through they have a purely scientific education, they live during practice from the medical art, although it has been pushed into the background and has been neglected. As a result, physicians find themselves in a remarkable crisis of identity. Now and in the near future the doctors' workday routine is based on medical art as much as the application of science may influence their medical actions.

Among the older European generation of doctors the art of medicine, however, is still existent. Friedrich Curtius begins his book "About medical thoughts and opinions", which appeared in 1968, with the chapter: "is medicine art or science?" His answer, however, is significantly contradictory. On the one hand he says that the alternative is wrong, medicine is both art and science because the doctor needs "knowledge of nature, knowledge of the human being and skill". On the other hand he claims: "Medicine is an experimental science" which "must submit itself to the same rules of thinking" as every other "science solely serving cognition".

By that point I enter the field of history. In whatever way one tries to define medical art, the difficulty remains to relate medical art and science to each other. This difficulty apparently emerges only when this relation is searched for as being possible, meaningful and necessary. The historian asks by rights when and where this relation arose and when it became a problem and - as far as it is possible to ask - for what reasons. Is it a change in the conception of medical art or a change in the conception of science which makes a definition of the relation possible or necessary? The establishment of a professional practice of medicine is one of the most outstanding achievements of classical antiquity.

In Corpus Hippocraticum medicine is established primarily and paradigmatically for all arts as techne iatrike, as ars medica. Art is the well-planned creating of a thing or an effect, a practice which differs from the common way of living, whose most important characteristics are mentioned in the writing "de arte". Within a certain field of activity limited by natural possibilities, competence, experience (transmitted or own experience), regularity, the capability of learning and teaching, practice, purposiveness and effectiveness (meaning the success which excludes Tyche, chance and fate) are the characteristics of art. Art cannot be known, it can only be practised and therefore only be learned by practice in the imitatio magistri, by imitating the master.

The authoritative relationship between teacher and student, the personal structure is constitutive for art. This conception of art covered in Antiquity and in the Middle Ages not only that completely, which one knew, thought and did in medicine but at the same time integrated medical thinking, knowledge, practice to an inseparable unit. The definition against antique-medieval

conception of science therefore presented no serious difficulties, not only to Aristotelian tradition. Medicine was not a system of common, abstract truths, not science but as an art it was an action directed towards the single, special and crucial case.

It is the goal-oriented practice aimed at healing in a highly complicated, conditionally determined situation. Forced by the necessity of acting and the pressure of time, doctors must always make decisions even if they possess only fundamentally inadequate information. The situation in which they act cannot be theoretically deduced. It is never completely clear nor can it be completely reproduced at a later time. Therefore the doctors' actions can only be legitimized and defended by empirical success. The medical knowledge and rules of medical practice which govern the art of medicine developed from the sum of medical experience, individual as well as collective, diachronic as well as synchronic. Because medical knowledge is a balance sheet of positive and negative experience, individual negative experiences must be expected.

In exceptional cases of medical practice for which neither clear-cut analyses of the situation nor definitive prescriptions for treatment exist, failure is more readily attributed to the practitioner than to the perceptual system applied, i. e., the art of medicine. The practicing doctor is blamed for having made a mistake or for having acted irresponsibly, even accused of being a deceiver or criminal. The uncertainty of the art of medicine is evident in failure. Every medical act shows itself as an "experiment" in the true sense of the word, a trial insofar as its result is uncertain and only predictable within the boundaries of certain probability. In a malpratice suit, the disappointed and offended patient necessarily meets a doctor who is supported by a phalanx of colleagues who are prepared to describe and explain the principal uncertainty of the art and to demonstrate to what extent the boundaries of scientifically and ethically defensible medical practice are open-ended. The doctor's act can only be judged according to whether he/she has proceeded "lege artis" or not. This uncertainty inherent in the practice of the medical art led doctors to develop a theory of duties and behaviour whose goal is to win and maintain the confidence of the patient. Only if the patient has good reasons and a basis for his faith that a doctor would never willingly act against his interests does failure lose its consequences for the doctor. The confidence of the patient was founded on the ethical dependability of the medical art, not on the dependability of the practicioner's knowledge. Innumerable victims of medical healing attempts which were completed lege artis et bona fide have, however, never principally shaken the trust in doctors and their art.

Considering these victims of the medical art, it is not surprising that in the middle of the 19th century, the demand to systematize medicine became greater and the rejection of medical experiments in therapy became more determined. Josef Dietl (1804-1870) formulated the beliefs of socalled "therapeutic nihilism" most consistently: "Medicine regarded as science, cannot attempt to concoct life elixirs, to establish magic cures, or to ban death; rather it must investigate the conditions under which man becomes ill, recuperates or dies; in other words, science must develop a natural theory based on chemistry and physics and therefore scientifically founded. Because the old school concerned itself with healing rather than research, the new school must do research in order to heal... Our strength lies in knowledge not in practice." Dietl wanted to replace the empirically tested and legitimized curative practice by scientific knowledge. The clinican of Munich von Ziemssen said: "The old medical art is fallen, modern times are coming. Medicine has to be a science, not art." The use of scientific thought and the employment of scientific experiments in order to gain certain knowledge which had long been common in the basic medical disciplines like anatomy and physiology now first appears in clinical medicine. The doctor-patient relationship necessarily changes. Now, in order to acquire secure scientific knowledge, effective therapy for the individual patient was relegated to second place, in the deceptive hope that accurate, dependable knowledge would empower the physician eventually to attain a more dependable therapy. Given this goal, the advocates of scientific medicine necessarily viewed the patient as an object of observation, investigation and experimentation. Patients, special and unique individuals, became "study material" which was categorized and organized according to type of illness and which could be used to test the validity of hypotheses and theories.

This research resulted in a great deal of new knowledge, while the practical aspects of curing were still bound to the old healing arts. Experimentation helped develop a method creating intersubjective, demonstrable and

generally applicable knowledge. Even today, however, the general knowledge attained scientifically is not strictly applicable to each individual case. Then as now one has to trust the rules of the art which are based on experience. In this way the coexistence of practical experience and science is established. To heal is an uncertain art, a unique and individual act whose risk is justified only by the ethics of the doctor. Experiments on the other hand belong to medical science, and the individual patient is then seen only collectively, and thereby becomes an "object" or "thing", not insured by anyone against the risk of suffering damage to the body and soul.

For two thousand years medicine was taught and learned as an art. But for more than a hundred years medicine has been taught and learned as a science. The old medical art has been superseded, omitted and forgotten. The study of medicine has become a scientific one, scientific knowledge and scientific thinking have been brought into prominence, the training of the methodology of medical practice has disappeared and little care is bestowed on medical ethics. The desire for more practice in medical education which has meanwhile been expressed for over a hundred years is nothing else than the desire for the lost medical art, although it is seldom pronounced expressis verbis against science. The result: scientific thinking is wasting medical thinking. I repeat, for the scientist the patient is an object, inevitably an object of examination, of inquiry, of investigation, an object of treatment, a participant in experiments. For the physician the patient is a subject, an individual, a person with a history in a social context, who has personality with human rights.

Medical education has to contain scientific thinking within the area of science, has to train the psychomotoric abilities, has to educate a medical attitude, has to bring up a moral sense for the relation to the patient. Science produces scientific knowledge, no less, no more: true knowledge by the standards of the current state of science. The most reliable, the most certain knowledge the physician has. But by the probabilistic character of all assertions in biology and medicine and by the practice in an individual case the doctor is obliged to follow the medical art. Scientific thinking is one of the conditions, is a qualification of medical thinking, but never a sufficient qualification of practice. A new concept of Medical Education has to consider that scientific knowledge is only one of the three pillars which bear the medical art. The others are: exercise in medical action (methodology of the diagnostic-therapeutic process) and medical ethics.

The loss of the medical ideal of the ars medica is a subject which has not received sufficient thematic attention. I feel thoroughly convinced that this topic is the most relevant for the future of medical education.

Since science stands as a guarantee for correctness and certainty there is the dislike of practicians to be reminded of the fact that they arenot practising a science but an art. What we lack still today is the ever renewed reflection upon what the art of curing, the art of medicine, is, what it avails and is able to do, where its limits are, and how it is practised properly. It is unimportant whether I practise it as the incarnation of medical action or only as an unavoidable makeshift. It deserves attention as a practice, it deserves to become an object of a science which it is part of, object of clinical medicine.