SOME SPECIFIC FEATURES OF THE MEDICAL WAY OF THINKING [1927] *

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Medical science, whose range is as vast as its history is old, has led to the formation of a specific style in the grasping of its problems and of a specific way of treating medical phenomena, i.e. to a specific type of thinking. In substance such separateness of the way of thinking is nothing extraordinary. One has only to realize the difference between the way of thinking of a scientist and that of a humanist, even if the subject in question is the same: for example, how great is the difference, and how great is the impossibility of a direct juxtaposition, between psychology as science and as a branch of philosophy. Even the very subject of medical cognition differs in principle from that of scientific cognition. A scientist looks for typical, normal phenomena, while a medical man studies precisely the atypical, abnormal, morbid phenomena. And it is evident that he finds on this road a great wealth and range of individuality of these phenomena which form a great number, without distinctly delimited units, and abounding in transitional, boundary states. There exists no strict boundary between what is healthy and what is diseased, and one never finds exactly the same clinical picture again. But this extremely rich wealth of forever different variants is to be surmounted mentally, for such is the cognitive task of medicine. How does one find a law for irregular phenomena? – this is the fundamental problem of medical thinking. In what way should they be grasped and what relations should be adopted between them in order to obtain a rational understanding?

One begins to look for types among the phenomena which at first appear to be atypical. For instance, the normal, typical action of the heart has such and such characteristics. There exist individual differences as regards the duration and intensity of each component of that action and the sequential rhythm of these components. However, these differences are physiologically

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minute. It is only the morbid action of the heart that yields a tremendous wealth of pictures which are more and more different. It becomes unavoidable that we broaden the observations to include peripheral vessels, capillary vessels, skin, the endocrine glands, the vegetative system, the development relations, etc.

A tremendous wealth of material is produced. It is the task of medicine to find, in this primordial chaos, some laws, relationships, some types of higher order.

In principle, this goal is attained. We know, from the calculus of probability, that even an accidental case, even events lacking mutual relations, can be embraced in certain laws, and so one should not wonder that even these abnormal morbid phenomena are grouped round certain types, producing laws of a higher order, because they are more beautiful and more general than the normal phenomena which suddenly become profoundly intelligible. These types, these ideal, fictitious pictures, known as morbid units, round which both the individual and the variable morbid phenomena are grouped, without, however, ever corresponding completely to them – are produced by the medical way of thinking, on the one hand by specific, far-reaching abstraction, by rejection of some observed data, and on the other hand, by the specific construction of hypotheses, i.e. by guessing of non-observed relations. In this case we use the statistical juxtaposition and comparison of many such phenomena, i.e. that which I would call simply statistical observation, which is the only method of finding the type among a number of individuals. The role of statistics in medicine is immense. It is only numerous, very numerous, observations that eliminate the individual character of the morbid element, and in such abstruse fields as pathology and sociology the individual feature is identical with an event and ought to be removed. However, the statistical observation itself does not create the fundamental concept of our knowledge, which is the concept of the clinical unit.

There come into play here many elusive – as far as logic is concerned – imponderable factors which enable one to foresee (in a way to forebode!) the course of problems which determine the development of a given field of thought and create its style peculiar to the epoch. I venture to call this factor the specific intuition. I am unable to dwell here in more detail on the problem of intuition, as this only becomes possible in the light of the history of science; however, I have to stress here that, without this concept, i.e. if we admitted that the development of science is only a matter of time, technical possibilities and accident, we would never understand science; in the first place we would be unable to grasp why the developmental stages possess

a specific style of thinking, why a phenomenon which is accessible to everybody had been observed at the given moment for the first time, and even almost simultaneously by several researchers. Thus, in a certain developmental stage, there arise certain definite clinical units, and this way of their genesis explains some of their specific features. Nowhere outside medicine does one find so many qualifications, pseudo- and para-, e.g. typhoid – para-typhoid, psoriasis – para-psoriasis, vaccine – para-vaccine, anaemia – pseudo-anaemia, paralysis pseudobulbaris, pseudo-croup, pseudo-neuritis optica, pseudoptosis, pseudo-sclerosis, pseudotabes; next, meningitis – meningismus, Parkinson – Parkinsonism etc.. These specific names are found in medicine, because, with the progress of medical knowledge, it became necessary to single out, in the definite idealistic clinical type, the individual sub-types, e.g. typhoid-para-typhoid which sometimes proved to be completely unrelated: tabes – pseudotabes. The further does medical knowledge progress the more such definitions, such proofs of departures from the original way of dealing with a situation, do and will arise, since the original approach is found to be too abstract, too ideal.

As regards the role played in medical thinking by intuition, even in simple diagnosis, this can be seen best from the fact that we really lack almost always a pathognomic symptom which, by itself, would suffice to determine the clinical state: even the typhoid bacillus cultivated from feces does not prove that the given individual suffers from typhoid fever; the individual may be only the germ carrier. It is only the combinations of symptoms, the habitus, the entire *status praesens* of the patient that is conclusive. Why even the best diagnosticians are most frequently unable to give a specific basis for their diagnosis; they only explain that the entire appearance is characteristic of such or another disease.

As soon as the medical thinking has found a certain ideal type in an finite plurality of apparently atypical morbid phenomena, it faces a novel problem: how to reduce them to a common denominator, to obtain, by way of analysis, certain common elements, some component bricks from which the observed phenomena could be reproduced. In this way elements of morbid anatomy and morbid physiology arise. However, combinations of the motifs obtained in this way and repeating themselves again and again (inflammation, degeneration, atrophy, hypertrophy, hypofunction, hyperfunction etc.) never do adequate justice to the entire wealth of the individual features of the disease. The specific, most characteristic features remain always outside such handling, and they prove that the elements of morbid anatomy and physiology are too general.

This is again the specific feature of medicine. Nowhere outside medicine, in any other branch of science, have its species so many specific features, i.e. non-analysable features that cannot be reduced to common elements. In this way the abstracting process that has been carried very far produces the notion of the species whose fictitiousness is considerably greater than in any other field of science, and a notion of the element (or property) with an equally specific generality. This results in a characteristic divergence between theory and practice in medicine. I have here in mind the divergence between book knowledge and live observations, but not the divergence between medical art and science, because in chemistry also one witnesses a certain incommensurability between science and applied art. However, there no observation can be incompatible with theory, or even be included in it. On the other hand, one can use in medicine the celebrated saying: "In der Theorie zwar unmöglich, in der Praxis kommt es aber vor."

In practice one cannot do without such definitions as 'chill', 'rheumatic' or 'neuralgic' pain, which have nothing in common with this bookish rheumatism or neuralgia. There exist various morbid states and syndromes of subjective symptoms that up to now have failed to find a place and are likely not to find it at any time. This divergence between theory and practice is still more evident in therapy, and even more so in attempts to explain the action of drugs, where it leads to a peculiar pseudo-logic. Not long ago the administration of camphor in the case of hemoptysis was forbidden – and a reason for it was found. Today camphor is recommended, and a 'logical' motivation has been found. Every therapeutic method, including homoeopathy and psychoanalysis, has a 'strict, logical, almost mathematical' motivation, mostly the more exact the shorter its life. It is nowhere easier to get such a pseudo-logical explanation than in medicine because the more complex the set of phenomena the easier it is to get a law verifiable for a short term, and the more difficult it is to reach an embracing idea. It is in medicine that one encounters a unique case: the worse the physician the 'more logical' his therapy. The point is that, in medicine, one is able to simulate almost everything, which proves that, up to now, we have indeed failed to explain anything.

Beside these fundamental notions of species and element, medical thinking possesses also the equally specific notion of the relationship of morbid phenomena. This extremely complex field presents an epistemologically unique picture. Along with the natural sciences, medical thinking recognizes causal relations (though it is generally accepted that a physician says always 'afterwards', but almost never 'because of that'). Just as in biology, the conditioning of phenomena in medicine can be developmental, correlative,

substituting, synergetic and antogonistic. A completely specific factor, which explains the morbid phenomena, one finds in medical thinking in the notion of internal disposition and of external substrate, i.e. of conditions which, as if in *potentia*, comprise the given morbid phenomenon. Besides, we have the epidemiological grasping of morbid phenomena and, by far not the last – teleology. Thus medical phenomena are mutually related by means of a tremendous number of relations, as the result of, and compensation for, their original atypical character.

However, this plurality whose elements are so multiply conditioned is irrational if we examine it as a whole and consistently from the same standpoint. We admit causal relationships, but the result is never proportional to the cause, nor is it always the same. The action of the pathogenic cause is a resultant of its intensity and disposition, i.e. to the causal relationships are added the dispositional factors which are incommensurable with the former. However, even if both of these active series are taken into account, one cannot deduce anything in medicine, since an antagonistic reaction may appear. For example, 'dermographismus albus' points, according to some, to the hyperfunction of the suprarenal gland, while, according to others (with equal logic), to the hypofunction, in view of the antagonism between skin and intestines. Schultze's law of the action of stimuli, the different action of the small and medium doses of atropine, the variable reaction of pupils in the case of anaesthetization – such are further examples of this irrationality.

Even a thorough familiarity with the anatomy and physiology of the bladder and a thorough familiarity with the tuberculor processes would not enable one to foresee the interesting phenomenon, viz. that bladder TB recedes after resection of the tuberculous kidney. Similarly, even familiarity with the physiology of speech would not enable one to deduce the fact that one can learn to speak even after the complete removal of the larynx. According to the classical theory of the Wassermann reaction one may deduce that, when working with an active serum, one would obtain more negative results, whereas in reality a contrary result is obtained. In this case medicine has its own motivation which, however, does not lie along the line of classical theory, but requires a change in mental attitude.

This is what one encounters in the case of any medical problem: it becomes ever and ever necessary to alter the angle of vision, and to retreat from a consistent mental attitude. Only in this way does the world of morbid phenomena, which is irrational in its entirety, become rational in its details. Just as, on the one hand, the far-reaching abstracting action enables medical thinking to find types among atypical phenomena, so also, on the other hand,

it is only the renouncing of consequences that enables one to apply a law to irregular phenomena. This results in the incommensurability of ideas which develop from the varying ways of grasping morbid phenomena and which gives rise to the fact that a uniform understanding of morbidity is not impossible. Neither cellular nor humoral theory, nor the functional understanding of diseases alone, nor their 'psychogenic' conditioning, by themselves will ever exhaust the entire wealth of morbid phenomena.

However, much as it is impossible to get in medicine an idea that would embrace the entirety, like atomism in chemistry or energetics in physics, yet one witnesses that a new methodical idea, a certain keynote for grasping medical phenomena, comes to the fore. This is a specifically temporal and dynamic grasping of morbid phenomena. The object of medical thinking – illness – is not an enduring state, but a process which changes continually, and which has its temporal genesis, its course and decline. This scientific illusion, this fiction, this individual entity created by abstraction based on statistics and intuition, the entity called the disease which is virtually irrational, elusive and undefinable univocally, becomes a substantial unit only when grasped temporally. Never a *status praesens*, but always only the *historia morbi* actually create the clinical unit. The former yields at the very most a syndrome of symptoms, such as Banti syndrome or Horner's syndrome, which modern medical thinking does distinguish carefully from the disease. This historic, temporal nature of the notion of the disease is unique. Since the disease is a change, which develops in time, of life functions which have likewise their temporal course, it is obvious that, being a *sui generis* variety of life variations, it is doubly dependent on the instant. If one may use a comparison from a distant field, the disease has a relation to normal functions just as acceleration has to velocity. Life as such has its temporal course. The course of the disease takes place within that course, being somewhat independent of it. A child develops in accordance with a known pattern. Simultaneously, its TB develops in its own tempo and according to its own laws. Thus this disease obtains its double, or practically quadruple genesis.

Thus in the first place the pathogenesis of a single definite case; its disposition, diathesis, constitution or habitus, its infection, original symptom, the origin of allergy, the development of pathological symptoms etc. I would call this the detailed ontogenesis of the disease. Next the general pathogenesis of the single TB case, i.e., for example the disposition factors and the progress of TB or typhoid or uric acid diathesis in childhood, puberty, climacteric, etc. This I would call the general ontogenesis of the disease. Thirdly, the

independent history of the disease in a certain social or geographical environment, the history of a certain epidemic or of a certain degeneration. This I would call the detailed phylogenesis of the disease. Finally, the independent history throughout the ages of the disease, its appearance in mankind and its changes. This I would call the general phylogenesis of the disease. I do not know any other field of scientific thought in which the fundamental idea would allow of so many different genetic investigations. Embryology or palaeontology, history or sociology – recognize only a development in one direction. In pathology, two developmental series are combined: the onto- and phylogenetical development of the living creature and the development of the disease. This historic formulation of the disease idea becomes more and more clear-cut.

I wish to point to two relevant, fully modern and fertile ideas: that of 'hygieogenesis' and of the latent infection ('inapparente Infektion' – Weil); and also to the idea of the latent disease, e.g. *lues latens*. The relevant processes can be numbered neither among the former ideas of health nor among the ideas of disease. In their light, health is a certain mutual attitude of the patho- and hygieogenetic processes, and any other attitude in any direction is a disease. Since the most different organs and glands can replace one another, and certain diseases compensate one another, producing a more advantageous state, one should, to all intents and purposes, define, or specify, health consistently, though paradoxically, as an illness which is the most profitable at a given moment. Thus a specifically dynamic grasping of the subject does arise, where, instead of constant causes, we have mutually influencing processes. The relations between these processes are different and incommensurable, depending upon the always necessary change of the viewpoint. If one adds to it the specific abstract nature of the idea of the clinical unit, we obtain a general picture of the medical way of the formulation of the problem.

Let me use a figurative comparison: medical thinking differs in principle from scientific thinking in that it uses Gauss's coordinate system, while the latter uses the Cartesian system. Medical observation is not a point but a small circle. It is placed not in the system of coordinate straight lines inclined to one another at a constant angle, but in a system of optional, mutually intersecting, curves which we do not know closely.

A certain correction is introduced into this picture by the fact that, strictly speaking, the multiplicity of medical phenoma can be only approximately rendered by means of Gauss's system since its points are not univocally determinable. To all intents and purposes, scientific thinking uses, for small

ranges, the Cartesian system, and for large ranges Gauss's system (as in the theory of relativity). On the contrary, medical thinking uses Gauss's system for small ranges, while in the entirety it does not find any consistent and rational way to grasp phenomena.