

The modern intellectual framework and its limits in medicine

Professor Herbert Pietschmann, Emeritus Professor at the Physics Faculty of the University of Vienna, Austria

The origin of systematic thinking

To understand the meaning of scientific thought and action, we have to go back to the beginning of systematic thought. The current form of thinking was first established in all so-called advanced civilisations around 500 years before our calendar system was introduced. Karl Jaspers¹ calls this “axial period” the transition from the age of myth to the age of logic, in which the direct unity with creation is lost and man had to come to a new form of community through reflective thought. Plato² has Socrates ask:

“Should we say that the blind power of the unreasonable and pure chance reigns over the universe of things and the world as a whole or, in contrast, that reason and an admirable realisation organise and direct them?”

Nowadays this ancient question could

perhaps be rephrased: “Are we placed blindly at the mercy of the laws of nature or can we help shape them?”

In the widest sense this also means, are we at the mercy of our genes, our predispositions, our physical constitution, etc. or can we shape ourselves? I should like to warn you against answering this question rashly one way or the other.

In the search for the essence of the world Parmenides and Heraclitus had already adopted opposing viewpoints before Socrates proposed his theory: Heraclitus viewed “becoming” as the actual essence of the world. Since however change can only be observed if at the same time something remains the same (something changes, the same is now different!), Parmenides regarded change as pure appearance and saw the essence of the world in unchanging being.

I should like to portray this in a chart as follows:

BEING	BECOMING
PARMENIDES (Elea)	HERACLITUS (Ephesus)
Clarity	Everything flows
Freedom from contradiction	Struggle the originator of all things

Socrates and his pupil Plato were the first to try to unite these two viewpoints (dialectically) to a bipolar world view. However, through the significant work of

Plato’s pupil, Aristotle, this magnificent attempt was later pushed back into the shadows again.

¹ Karl Jaspers: Einführung in die Philosophie [Introduction to philosophy]. Munich (1953)

² Plato: Philebus 28C1-29A8

Aristotelian logic

Aristotle is regarded as the founder of Western science, although some of the finer points of his approaches were incorrect, particularly when describing nature. Nevertheless his system of theories which, for the first time, undertook to describe the world as a whole, has remained fertile ground for Western thinking to this day. His axioms of logic, in particular, have formed our thinking.

Aristotelian logic is basically a reshaping of Parmenides' approach, although in a much more differentiated form. Aristotle is content with three axioms and this is perhaps one of the reasons for the success and effectiveness of Western thinking.

The axioms of logic (according to Aristotle):

1. Principle of identity:
Requires concepts to be unambiguous.
2. Principle of contradiction:
Requires statements to be free of contradiction.
3. Principle of the excluded middle:
One side is right in the case of outright contradiction.

The principle of contradiction can also be formulated as follows: "At least one of two contradictory statements is wrong!" They may both be wrong however! Consequently the effect of the contradiction in the 3rd axiom is reinforced! In the case of outright contradiction arising through negation, *one of the statements must be right!*

Unlike other cultures the West always stakes everything on one chance. It does not strive for many different forms of thinking, instead the most suitable form at any one time should be universal. As a result, Plato's dialectics have almost completely disappeared from official thinking and official organisation of human social existence. I should like to stress however that we don't suffer due to the shortcomings of Aristotelian thinking, I believe we suffer instead because it is so unbelievably

effective and successful! For, due to this success, we still believe today that all other forms of thinking should be replaced by Aristotelian thinking and I feel this is one of the reasons why holistic medicine now has difficulty being officially recognised. For the primacy of Aristotelian logic for science has already led to the scientific rigour of psychoanalysis, for example, being denied as it postulates the fundamental ambivalence of feelings. And logic says: *Everything* can be deduced on the basis of a contradiction, which means falsifiable predictions are impossible!

On the distinction between "correct" and "true"

The axioms of logic certainly enable general validity in man's understanding, yet do not guarantee that these statements apply in reality. Even invented stories must follow the axioms of logic, if they are to be understood at all, yet they are pure invention.

There is a difference therefore between "correct" and "true". We call those sentences which agree with the axioms of logic "correct". We also call this *formal proof*. We only want to use the term "true" for sentences which apply (whereby the question which statements actually apply can only be answered on an individual basis). For a statement to be true it must be personally endorsed by the person asserting it. Correct statements are valid, irrespective of who makes them.

With the exception of the theoretical science of mathematics, scientific statements obviously cannot be reduced purely to what is correct. An additional criterion is required to ensure the validity of statements in our world. Of the three possible forms of conclusion – "induction", "deduction" and "analogy", – only one, "deduction" (concluding from the general to the specific) can be acknowledged to be just as universally valid as what follows from logical axioms. Aristotle therefore proposed that science should be based on logic and

deduction. He provided the following conclusion as a typical example of deduction:

All human beings are mortal
Socrates is a human being

Therefore Socrates is mortal.

If the premises (the first two statements of the conclusion) are accepted, then actually nobody can reasonably object to the final outcome. Of course we had to assume that the premises are accepted. And this is the only remaining weak point in the Aristotelian system: it had to assume general statements which are universally acknowledged.

Modern age

We set the end of the Middle Ages and the start of the modern age as 1492, the year of Columbus' discovery of America. What makes the discovery of America so important that it marks the beginning of a new era? In my view it was neither the fact that a new continent had been discovered nor that this demonstrated the earth was a sphere but a completely new means of approaching the question of truth.

Anyone doubting the valid truth in scholarly discussions ran the risk of being burnt at the stake (just like Giordano Bruno in 1600). Columbus didn't answer the question "Is the earth round or flat?" by scholarly discussion but by action! And this seems to me to be the characteristic of the modern age that the concept of truth is created by combining thought with action.

This is also the basic idea of science which was accomplished around one hundred and fifty years later. For the essence of science lies in the interplay between theory and experimentation and this corresponds to the combination of thought and action. The experiment is a certain type of action. It is experimentation and not a theoretical consideration that determines which general statement can also claim general validity.

The new method of science does not achieve "truth" in the aforementioned sense of distinguishing between what is "correct" and what is "true", it achieves something completely new. In the 16th century truth, which had remained untouched up to the end of the Middle Ages, began to falter in two regards: on the one hand through the wars of religion where religious truth was at stake and, on the other, through the fact that the calendar "had got out of control" so that the eternal validity of the Aristotelian world view had to be reconsidered. To this end the guardian of truth, the Church of Rome, made a fundamental distinction: it distinguished between *truth* and *hypothesis*. Truth applied only to that which related to the whole while, in the now complex world, in order to overcome concrete problems it was to be permitted to create hypotheses for parts of the whole which should be judged simply by their expediency and which should not make any claim to truth. (This distinction seems especially significant to me with particular regard to the relationship between holistic medicine and analytical medicine.)

The Church initially had no problem with the Copernican world view, merely demanding that it be presented as a hypothesis. It helped in the creation of the new calendar which was finally introduced in 1582 by Pope Gregory.

In his quest for truth René Descartes discovered the *method of doubt*. His idea was as follows: if something could not be doubted, he wanted to recognise this as truth.

No doubt Descartes could not doubt that he himself doubted! "I doubt, therefore I am" or "I think, therefore I am" (cogito, ergo sum) was the truth he discovered. In order to come to an inter-subjective truth however, Descartes maintained a distinction had to be made between thinking and extended being (res cogitans and res extensa, *mind* and *matter*). This distinction

has become a fundamental element for the intellectual framework of the modern age.

Science

We trace the beginning of scientific method back to Galileo Galilei. He took up the Church's distinction between truth and hypothesis, yet left truth untouched: "I am inclined to believe the authority of the Holy Scriptures is intended to convince people of those truths which are necessary for their salvation ...".

But he claimed that hypotheses were not entirely random and were only to be evaluated on their usefulness; Galileo spoke of the "nuova scienza" with which he could examine hypotheses to determine the extent to which their predictions were correct. These predictions do not relate to the world in which we live, which we can describe as world of experience, but to a concrete form of action, *experimentation*. Today we describe "nuova scienza" as science and experimentation must be defined by specific requirements to be able to strive for universal validity. I describe these requirements as axioms of experimentation (by analogy to logic) and summarise them here:

The "axioms" of experimentation

1. Reproducibility
Test results must be "inter-subjective", i.e. independent of the experimenter!
2. Quantification
Science attributes all qualities to quantities!
"Measure everything which can be measured."
3. Analysis
The method can only be applied to "simple" (simplified!) systems!

The requirements appear understandable and straightforward however the requirement for reproducibility, for example, is not at all trivial in the practice of scientific research. (I have discussed these problems

in detail in my own textbook on scientific theory³.)

I understand *analysis* to mean the restriction to simple systems. Here's an example: unlike those of Aristotle, Galileo Galilei's laws of falling bodies are not valid in the world of experience but in an imaginary world without aerodynamic resistance. In this sense the laws of science are always approximations of the world which is much too complex to be recorded legitimately and in this sense science is always analytical, i.e. related to parts or subsystems and can therefore conflict with a synthetic or holistic intellectual approach.

Scientific results relate exclusively to matter in space and time. The mind (including all questions of meaning, wishes, hopes, etc.) must be ignored. As Carl Friedrich von Weizsäcker said⁴: "Philosophy asks those questions which it was a prerequisite of the scientific method not to have asked."

The modern intellectual framework

I prefer to speak of "intellectual framework" rather than "paradigm". The term "paradigm" was introduced by Thomas Kuhn⁵ for scientific theory. He states: "Aristotle's *Physica*, Ptolemy's *Almagest*, Newton's *Principia* and *Opticks*, Franklin's *Electricity*, Lavoisier's *Chimie*, Lyells' *Geology* – for a while these and many other works served to define the acknowledged problems and methods of a field of research for subsequent generations of specialists. They were able to do this because they had two essential

³ Herbert Pietschmann: *Phänomenologie der Naturwissenschaft* [Phenomenology of science]. 2nd edition Eur. Univ. Press/Ibera Vienna (2007), chap. 5.

⁴ Carl Friedrich von Weizsäcker: *Deutlichkeit* [Clarity]. Hanser Verlag, Munich (1978), p. 167.

⁵ Thomas S. Kuhn: *Die Struktur wissenschaftlicher Revolutionen* [The structure of scientific revolutions]. Suhrkamp Verlag, Frankfurt/Main (1973) p. 28.

characteristics in common. Their achievement was sufficiently unparalleled to attract a constant group of followers away from the competitive methods of scientific activity and at the same time they were still sufficiently receptive to leave all kinds of problems to the newly defined group of specialists to resolve.

From now on I will call achievements with these two characteristics "paradigm", an expression closely connected with "normal science".

And – to sum up⁶:

"I believe these are universally acknowledged scientific achievements which provide a community of specialists with models and solutions for a certain period."

Kuhn feels that paradigms not only define methods but also problems in a field of research.

A paradigm does not exist in the early stages of a discipline's development, but only emerges over the course of time⁷:

"Acquiring a paradigm and the esoteric type of research it makes possible is a sign of maturity in the development of each individual scientific discipline."

Thomas Kuhn⁸ goes on to say:

"To be accepted as a paradigm, a theory must appear better than those competing with it. However it does not need to explain – and actually never does – all the facts with which it is confronted."

My term "intellectual framework" goes beyond the term paradigm without contradicting it. Our intellectual framework does not just define science. Rather it is the unconscious basis of the organisation of

our social existence as well as the construction of our reality⁹.

To develop our intellectual framework we must examine the term causality in more detail. Aristotle distinguished four forms of causality which always contribute together to all events, albeit to a different degree.

The four forms of causality according to Aristotle

Final cause	causa finalis
Formal cause	causa formalis
Material cause	causa materialis
Efficient cause	causa efficiens

Since scientific results relate only to matter in space and time, we can simply eliminate the final cause which may contradict the efficient cause. In the second half of the 17th century a fourth axiom of logic actually arose, the *principle of sufficient grounds*. It requires scientific results to be based solely on *cause-effect relationships*, i.e. *causality* (in contrast to finality). So we have developed the six requirements (I have combined the two contradictory axioms of Aristotelian logic into one) of the Western intellectual framework of the modern age:

The Western intellectual framework since the 17th century

Reproducibility	
Quantification	Action
Analysis	
Clarity	
Freedom from contradiction	Thought
Causal rationale	

Through scientific method, the interplay between theory and experimentation (thinking and acting), we obtain statements which do not fit into the conflicting area of

⁶ loc. cit., p. 11

⁷ loc. cit., p. 30

⁸ loc. cit., p. 37

⁹ see Herbert Pietschmann: *Vom Spaß zur Freude – die Herausforderung des 21. Jahrhunderts* [From fun to joy – the challenge of the 21st century]. Ibera Verlag, Vienna 2005.

correct and true but which display a completely new quality. I call this quality "certain" in the sense of *reliable*. The *content* of scientific statements is not certain, not correct and not true! They can be, and are, replaced over the course of history by better and sometimes completely different statements. When Newton discovered his law of gravity, he was able to say the force of gravity causes the stone to fall. Since Einstein's theory of general relativity however we know that the sentence should more accurately read: "The curvature of space time is the reason the stone falls." What remains "certain" here, in the sense of "absolutely reliable", is the fact that stones fall, i.e. the result of an event.

First we want to ask what the intellectual framework has contributed. Why do we all act in accordance with it? An example might demonstrate this: if we wake up early in the morning and don't feel well, we don't ask what this means for us. Instead, faithful to this approach, we take a thermometer and measure our temperature. Galileo apparently said "Measure what is measurable, and make measurable what is not so." And if the thermometer reads 37.8°C, we then say: "I thought so." And if it reads 36.8°C however, we then say: "Strange, I thought I was ill. But in reality I'm not." What we quite naturally refer to in everyday life as reality, is what we measure because it has been so useful for us. It has allowed what I refer to as "checklist behaviour".

A checklist is a list of precise instructions which, if completed correctly, will lead to an entirely predictable result. Regardless of how we feel emotionally about the issue. An airplane is not flown in the same way that a car is driven. (You get in, start the engine, drive off and then perhaps notice that the hand brake is still on.) The flight crew of a plane proceed according to a checklist. Every hand movement must be ticked off on this checklist and this has made flying incredibly safe and it's becoming even more so.

This absolute reliability of producing the result of chains of action is an achievement in the history of mankind which may seem obvious to us today but which, up to three hundred years ago, scarcely anyone on earth and, up to around one hundred years ago, scarcely anyone outside our cultural circle could dream possible. This achievement is so fundamental for the whole of mankind that we must obviously aim to extend it from science to encompass all areas of human social existence. Consequently medicine is also required to make use of this method, something it has done extensively with what is known as high-tech medicine. This is welcome and pleasing due to the positive effects for mankind! What can be criticised here, however, what we appear to have forgotten on account of this positive effect, is that this method can reasonably only be applied to matter in space and time, that man cannot be reduced to his body alone, if he is not to lose his grip on the meaning of his existence.

For this reason, the call for "paradigm change", as made by the New Age Movement for example, also falls short. We cannot, nor do we want to, abandon the accomplishments of this intellectual framework with its opportunity for checklist behaviour. What is required therefore is diversity in thinking and action, which is not based solely on one single method but which seeks out an appropriate way of thinking in each specific case and acts accordingly.

Responsibility and duty of care

If the result of a chain of action occurs with certainty, provided each individual link in this chain has been performed correctly, then there is no *responsibility* for this type of action but probably a *duty of care*. I understand "duty of care" to be that ethical attitude which takes care to perform a link in a chain of action only if the person acting is convinced they are doing the correct thing.

On the other hand, I understand “responsibility” to be that ethical attitude which is only required when it is a matter of decisions whose consequences cannot be estimated with certainty (or often not at all). Responsibility then means deciding freely on one of the options and accepting the consequences whatever they may be. This attitude is not required in the technical field

but may well be necessary in the interpersonal realm.

Before I examine this distinction more closely, I should however like to consider the intellectual framework of the modern age once more and compare the individual requirements with that which they exclude.

Intellectual framework	
Included:	Excluded:
reproducible quantities analysis	one-off qualities survey, synthesis, interlinking
clear free from contradiction causally based	receptive, “colourful” vibrant, conflicts wishing, creativity

Everything which is free from contradiction is dead. Hegel¹⁰ said: “Something is therefore alive only in so far as it contains contradiction within it. And moreover is this power to endure and withhold the contradiction within it.”

thinking eludes officially recognised, generally applied methods. In the private sphere and also in the area of human communication, we obviously cannot manage without this part. I want to compare these two areas – inclusion and exclusion or technomorph and social consideration – once more in another form:

What is excluded from our framework of

Duty of care	Responsibility
Laws of nature Order	Formulation of demands and objectives Decision
Experts Predicting Knowledge Science Learning	Decision makers Proving worth Conscience Ethics Practising
Heteronomy Heteronomy	Self-determination Autonomy

¹⁰ Hegel, Georg F.W.: Phänomenologie des Geistes [Phenomenology of Mind]

Now the following is true however:

Free decision in the area of duty of care is stupid!

Delegating the decision in the area of responsibility is cowardly!

But there are no sharply drawn boundaries between the two spheres. Consequently the path of the mature individual is a balancing act between stupidity and cowardice! It is no disgrace to sometimes fall from this tightrope, whether into stupidity or cowardice; but we must continually strive to climb back up onto the tightrope again. If we do not do this then we exclude ourselves from the community of mature individuals.

I have chosen the terminology partly in accordance with Immanuel Kant. Kant¹¹ speaks of the need always to understand oneself as a person (as a reasonable being) from both spheres: absolute necessity and freedom or heteronomy and autonomy. Kant also claims that, in the human sphere, everything has either a *price* or *dignity*. Whatever is replaceable (which lies within the intellectual framework) has a price, what is not replaceable by virtue of its essential uniqueness has dignity. Obviously the individual, man belongs to this latter category. In this context we can claim that healthcare and medicine must necessarily serve the achievements associated with the intellectual framework of the modern age but that they must not be reduced to this because they would injure the dignity of the individual.

In this content, the WHO (World Health Organisation) in its statutes defines health as follows: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." And it goes on: "The enjoyment of the highest attainable standard of health

¹¹ Immanuel Kant: Grundlegung zur Metaphysik der Sitten [Fundamental principles of the metaphysics of morals].

is one of the fundamental rights of every human being."

The H formula

According to my assessment of our situation, we currently find ourselves once again in a period in which a previously productive method is approaching its natural end. What is required in this kind of situation is an attempt at a new synthesis: in our case the synthesis of the two areas addressed earlier, absolute necessity and freedom. For me the implications for medicine appear to be that what is known as "conventional medicine" and "complementary methods" must overcome their mutual mistrust.

Socrates and Plato have already shown how this can take place, namely through dialectics. In order to make this frequently misunderstood concept more manageable, I have devised a simple formula¹² which I should now like to present in the last section.

I would like to explain my formula for overcoming dialectic problems by means of a relevant example which is particularly clear. No-one will dispute that the correct attitude on the part of the scientist towards anything new should be both "critical" and "receptive"! Critical so as not to fall victim to any deception, desires or even fraud; receptive so as not to overlook important new discoveries.

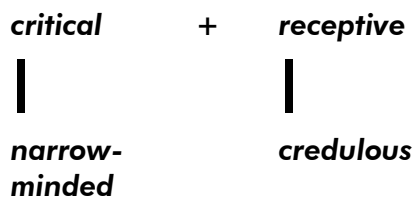
critical + **receptive**

However the two attitudes cannot easily be united in a "not only but also" relationship as they can also contradict one another.

critical ↔ **receptive**

This is precisely the characteristic of a dialectic problem. It is essential to achieve a union despite the contradiction! And here, with unfailing regularity, the following process begins which it is important to work through.

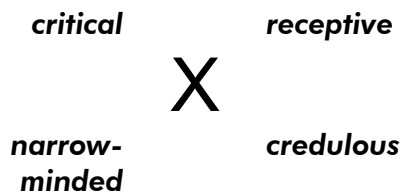
At first various groups will identify with one or other of the two sides. In any dialectic problem it should be realised that the two concepts advocated cannot be simply defined in terms of logic because otherwise one side would be right and the other wrong. Each of the two concepts has, to a certain extent, a shadow which runs into it without any boundary. We can indicate this by a vertical bar, at whose lower end stands the "shadow concept":



Now – with unfailing regularity – begins a struggle in which each side attacks the shadow concept of the other! I call this the state of

HX-confusion

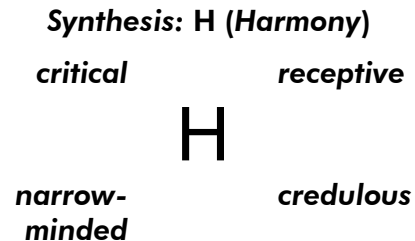
We can indicate it by a cross which also symbolises dispute:



The critical group fights against credulity and the receptive group against narrow-mindedness – and *both are right!* Consequently this struggle in HX confusion can last any amount of time! A radicalisation sets in however which leads to *both* groups, aware that they are right, subsiding into their own shadow concept! Anyone who fights credulity long enough will soon slide into narrow-mindedness and anyone who fights against narrow-mindedness for long enough will soon sink into credulity!

Consequently both sides need to realise that, when fighting the opponent, they are also fighting and possibly destroying themselves and that the actual opponents

are not on the other side but in *their own shadow concept!* Only then can new common ground, a synthesis, be reached in which both sides are linked by a vertical bar: this is intended to indicate that the threat from their own side is recognised and so an understanding is possible:

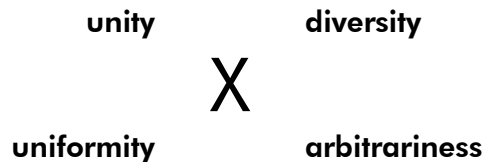


This appears very simple but there's a hitch however: this realisation must take place *simultaneously*. If only one side realises and acknowledges this, then the other side triumphs according to the motto: we told you so! Despite this realisation, this side must therefore continue the struggle until the other side has also gained understanding.

Outlook

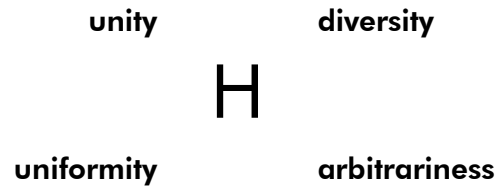
At the current time it seems to me that the state of HX-confusion still prevails in the relationship between holistic medicine and scientific medicine (also known as "conventional medicine"). I am firmly convinced however that – under pressure from those affected, i.e. the patients – it will ultimately be possible to overcome this struggle; the harmony (in the sense of "H" above) thus acquired cannot be achieved as a static solution however. Instead continuous care will be needed to ensure that we do not revert to the narrow-mindedness of rejecting everything unfamiliar or the credulousness of "anything goes". Once this continuous care is applied, we will then also have achieved a state in which no one single intellectual framework is applied to all humanity's problems and in which a further dialectic is triggered, namely that of the unity and diversity of medical methods. We can also draw up the following formula in a similar way to the H-formula earlier:

The aim is to combine unity and diversity as a dialectic synthesis. Unity has its shadow, however, namely uniformity and diversity has a shadow, arbitrariness. So, in the state of HX confusion, the struggle is represented as with "critical versus receptive" above:



This struggle can also last any amount of time because both sides are right. The struggle against arbitrariness is just as right as that against uniformity. This struggle – struggle is the originator of all things – is only over when both sides realise that they themselves fall in their own shadow if they fight the opposition and that they therefore have to fight against their own side's shadow! Only if the exponents of unity guard against uniformity and the exponents

of diversity guard against arbitrariness is it possible to reach a synthesis.



It is unfortunately a characteristic of all holistic methods that they cannot be deconstructed into their components in the same way as the logical and the rational can; the two issues described above are inseparably linked which makes the period of debate more difficult but, if synthesis is reached, several rewards can be reaped at once. Diversity of methods without disintegration and critical receptiveness can then both be features of a medicine which encompasses a holistic approach and analytical dissection and which is capable of confronting man in all his richness, without reducing him to his physicality.