

Andrzej Szczeklik

Catharsis

A summary by Agnieszka Kołakowska

This is a rich and many-sided book, on a wealth of interconnected subjects. One might, if pressed to provide a concise description, describe it as the thoughts and reminiscences of an eminent cardiologist after a lifetime's practice. Reminiscences and anecdotes are interwoven with case-histories, sketches from the history of medicine, and, of course, aspects of cardiology in particular. But Dr. Szczeklik also reflects on ancient medicine, on language and science, on magic and art and myth; he finds intriguing connections – historical, mythical, scientific and philosophical – between these things and the practice of medicine. He juggles with a variety of subjects in both the arts and the sciences, playing with them, following the thread of his associations and unearthing unexpected links; he explains, entertains, philosophises and instructs. But some of his most interesting anecdotes are about his own clinical cases.

The book is divided into twelve chapters. The first, *Threads*, begins with a reference to the three Fates, spinning the thread of necessity and life, and explores – through a metaphor from physics, of the „entangled” elements of the quantum system – the various interconnections in the universe, but most specifically the particularities of the link that binds doctor and patient. It explores the idea of medicine as a way of discovering the relations and connections between things; it insists on the importance of “anamnesis” – the first conversation between doctor and patient, to learn the latter's history. The idea is taken from the Platonic idea of anamnesis, where it meant the knowledge we have before perception. Szczeklik compares this Platonic sense to the current medical sense: doctors, when they listen to a patient's history, are in a way getting the patient to reach into his

memory and remember; they are entering the world of the patient. “At difficult moments,” writes Szczeklik, “the doctor will reach for the most secret arcana of his art in order to weave a thread of understanding and reveal the bond that links these two people – doctor and patient.”

Chapter two, *Constellations*, is about the common roots of medicine and art, especially the art of magic; about medicine as magic and the healing power of the word. From the most ancient times, Szczeklik writes, people attributed to words the power to restore order and harmony in the universe, and to cure – for sickness was considered a disorder, a rupture of harmony, a kind of dissonance in the universe. Szczeklik sketches the history of ancient medicine and talks in particular about Hippocrates’ view of what constituted a cure – and a diagnosis. He reflects upon the essence of an illness, and takes asthma as his example of a disease that is difficult to define. “And yet,” he says, “a practising doctor usually has no trouble diagnosing asthma. Sometimes he can even diagnose it before he has put his stethoscope to the patient’s chest”. He talks of the problems of diagnosis and the world of “signals and signs” which the doctor enters when examining a patient; the particular awareness and alertness the physician must cultivate in order to be receptive to them and understand them. It is this “constellation” of symptoms which can, sometimes in a flash, nudge him towards a diagnosis. It is, he says,

“like a constellation of stars in the sky which show the sailor the way into port. It defines his location on a map; it disperses the gloom and assuages uncertainty. As in a dream where a stranger suddenly turns out to be someone well known to us. That moment – that flash of insight where the unknown is suddenly revealed as the familiar – is the moment of diagnosis”.

Szczeklik provides examples of diagnosis from myth and ancient literature, and talks about one of his own clinical cases, the baffling case of a young girl who, after lengthy treatment in a number of hospitals, was finally revealed to be suffering from Münchhausen syndrome. He describes the helplessness doctors sometimes feel when confronted with a baffling case, and the awe in which a specialist can be held – the great doctor, the magician who appears to solve a problem where the ordinary doctor is stumped. “Fortunately,” he adds,

“sometimes the diagnosis is given to you on a plate, together with the obvious steps to take. One beautiful spring day we opened the new intensive care ward. [...] We stood there, the three of us, on the first-floor landing, three doctors waiting for their first case, bursting with youth and strength and energy. We felt invincible; we felt nothing was impossible. Above all there was the sense of expectancy, of waiting for the event that would allow us to display our extraordinary abilities. A man appeared on the ground floor. He began to climb the stairs towards us, slowly, wearily; the hospital was an ancient and decrepit building, and none of the lifts were working. He was dressed in

black from head to toe. One of us said, “Well, he certainly prepared for the occasion!” But he was on his way back from his mother-in-law’s funeral, where he had begun to feel unwell, so he had decided to stop off at the nearest hospital. Out of breath, he plodded his way to the top and collapsed at our feet. He was dead. This was what we had been waiting for. What luck! We threw ourselves upon him. Two weeks later, when our first patient was being sent home, with flowers from the nurses, he remarked as he was leaving, “Well, my mother-in-law, wherever she is, will drop dead all over again when she finds out what a lucky bastard I’ve been!”

The chapter ends with some reflections on the difficulties of prognosis, and remarks that while for centuries, from ancient times, the physician has been treated as an oracle, today our real oracles are in our genes.

Chapter three, *The Elixir of Life*, begins with the myth of Asclepius – his death swallowed up by fire, struck by a bolt of lightning by Zeus for bringing the dead back to life – and reflects on our continued dreams of immortality. It sketches a history of plant medicine and of the search for the elixir of life – the philosopher’s stone; it traces the history of that search through alchemists, with their secret knowledge, and Faustian pacts, and mentions the tragedy of the Cumaean Sybil, who had asked for eternal life but had neglected to ask also for eternal youth. It talks of the various ways in which the heart stops, and gives a historical overview of ways of trying to bring the dead back to life, from beating then with willow twigs to rubbing them with herbs to modern methods heart massage. It reflects on the persistence of old myths: our eternal obsession with youth, our fear of aging, the prospects for halting the aging process through the search for a “youth gene” and, most recently, the illusion that immortality can be achieved through cloning. Patient and doctor, he says, are linked by same myth, the same ancient search, the same dream – to find the elixir of life.

Chapter four, *Snakes Intertwined*, once again goes back to the myth of Asclepius and the snakes, and discusses the history of Asclepius’s rod – the symbol of two snakes wound around the rod of Hermes. It talks about the ancient belief in the healing magic of snakes, of the discovery of snake serum, and of the myth (confirmed by the manifold uses to which snake serum has indeed been put) according to which snakes were often believed to be endowed with two opposite powers: that of killing and that of healing. Snake serum has contributed to the discovery of some extraordinarily effective medicines:

“In the mid-60s, a Brazilian student called Sergio Ferreira appeared in John Vane’s London lab. He made no attempt to conceal the fact that his presence there was owing entirely to happenstance and convenience: he had a scholarship to Oxford, but his wife wanted to study for a PhD at the LSE, and Vane’s lab was nearby. So that was where he stayed. Soon the lab was filled with his deep,

infectious laugh and the aromatic smoke from his cigars, which seeped into every cranny. Sergio had brought with him, casually, almost in his pocket, an extract from the venom of the poisonous snake *Bothrops Jaravaca*, which he had begun studying in Brazil. Using a new experimental technique developed by Vane, called the bio-essay, his group showed that the extract of venom Sergio had brought from Brazil blocks the activity of a certain enzyme, called convertase, which produces a substance in the lungs that greatly narrows the artery. John Vane thought the venom might be a source from which a drug for high blood pressure could be developed. He convinced the American pharmaceutical company Squibb to isolate an active substance from the venom; this substance turned out to be a short peptide, composed of nine amino-acids. When given intravenously to patients with high arterial pressure, it caused the pressure to drop. Shortly afterwards versions of this peptide were synthesised and introduced in pill form, so that they could be taken orally. This is how the class of drugs for hypertension was born: convertase inhibitors.”

Chapter five, called *Between Science and Art*, reflects on the status of medicine. It begins by discussing the history of anatomy, Galen and his enthusiasm for dissection, the development of pathology and of vivisection. It recalls other great anatomists, reflects on the implications of Rembrandt’s anatomy lesson, charts the history of dissection theatres from their beginnings and wonders about the extent to which dissection, and anatomy in general, makes medicine into a science. Szczeklik talks about the discovery and significance of prostacyclin, and goes on to ask what kind of a science medicine is, or if it not really – or not strictly – a science at all, but rather an art that draws on many different sciences: biology, biochemistry, genetics, pharmacology and others. He goes on to discuss developments in molecular biology, reflecting on the so-called selfish gene, recalling Crick and the discovery of DNA, and wondering at how complex a system the body is: could the laws which govern living organisms, including the human body, really be simple enough to allow us to discover and formulate them by the methods of physics? If this ever happened, Szczeklik says, there would then be no doubt – even in the minds of physicists – that medicine truly deserves the status of a science. But in the meantime, the physician remains in the realm that lies between science and art.

Chapter six, *Heart Rhythm*, is about the rhythms of the universe and their source, and, on a smaller scale, about the rhythms of our hearts. The heart was once considered to be the seat of life; and although today it has been superseded in that function by the brain, in poetry, in myth and in religion it is still seen as the seat and source of all things. Szczeklik talks about the heart as our biological clock: how independent its rhythms seem to be, and how it seems to possess a mechanism of its own which rouses it to work. He discusses the significance of irregularities in heart rhythm (and reminds us that today, heart rhythm is still one of basic signs a doctor must check in a patient, as it was centuries ago) and about the history of the ECG. “When I was a young doctor,” he writes,

“and Wroclaw stood frozen in one of the worst winters of the century, they brought in a frozen man, at three o’clock in the morning. He’d been found on the banks of the Oder, where temperatures could go down to minus 35 Centigrade. He was stiff and cold as an icicle; he wasn’t breathing and his heart wasn’t beating. His ECG was flat. At that time resuscitation was only beginning to be talked about, and we had no equipment for it. There were two of us there, plus a nurse. I began heart massage; the nurse began mouth-to-mouth resuscitation. With every breath the room filled with the fumes of methyl alcohol. After about half an hour of massage the heart kicked into action; breathing returned after two hours. The next day the patient was already up and about, cursing us because he had lost a packet of cigarettes somewhere along the way. We wrote up the case and sent it to “The Lancet”, though we were unable to answer the editor’s question about the man’s body temperature when he was brought in. Over a quarter of a century later, “The Lancet” published a paper describing the case of a Norwegian woman, a professional skier who, while skiing somewhere in the far North, had fallen into a deep crevasse, from which she was rescued two hours later, dead, with a body temperature of 13.7 degrees Centigrade, and flown by air ambulance to Tromsø. Her heart came back to life only after several hours of pumping her blood through external circulation warmers. She stayed in hospital five months, recuperating. Similar cases have recently led to the idea of using cooling apparatus – methods of cooling the body temperature by several degrees at least – in intensive care wards, for patients such as these, in the hope that in this way irreversible brain damage might be avoided, and pulse and heart rhythm will be more quickly and more easily re-established.”

Chapter seven, *Purifying Power*, is about how doctors work, what they do and how they cure. It begins with Petrarch’s opinion that if you took a thousand people with the same illness and entrusted half of them to the care of a doctor and left the other half to their fate, the latter would have more of a chance of getting better. For centuries there were good grounds for the persistently popular saying that the difference between a good doctor and a bad one is enormous, but between a good doctor and none there is no difference at all. The Harvard biochemist Henderson thought that it was not until about 1910 that the average patient, if he went to a doctor picked at random, had a chance higher than 50% of deriving some benefit from the visit. But if this was so, Szczeklik asks, then how could medicine have functioned all these centuries? And how are we to explain the recoveries that did take place? Were they not due to doctors, perhaps with the exception of the most incompetent?

Szczeklik then turns to Hippocrates’ notion of the physician as a producer of catharsis (although, as he says, the physician was considered a kind of “purifier” well before Hippocrates’ time): a practitioner who knows how to use the healing power of nature and can use it to restore “harmony” to the body. This was seen as the physician’s main function, and it is why his cardinal rule was (and remains, in the Hippocratic oath) “above all do no harm”. Szczeklik analyses the concept of catharsis from Aristotle to the present (remarking, along the way, that there is still considerable controversy over what exactly Aristotle meant by catharsis: did he mean purifying the body of emotions, i.e., getting rid of emotion, or purifying the emotions themselves, i.e., making them pure?), considers its sources and concludes that perhaps catharsis is one of those concepts, or

theories, that have no definite answer or solution, like some theorems of mathematics. In this context he reflects upon Fermat's last theorem, so long unproved, on Godel's incompleteness theorem (which says that in every system there must be some things which cannot be proved) and on incomplete systems in general. He then turns to music and its cathartic power, and reflects on the many benefits of music as therapy – again, a type of therapy that goes back to ancient Greece. He mentions Pythagoras's discovery of the mathematical nature of musical intervals and wonders to what extent the way we hear music is innate to the human mind. He ends by invoking case studies testifying to the healing power of music – its benefits on circulation, heart, weight (especially in newborns), and a large number of other things.

Chapter eight, *Suffering*, begins with the remark that we have entered the era of post-genomic medicine. Szczeklik considers the significance and consequences of this development – one of them being our hope that gene therapy will cure all ills and allow us to forget entirely about sickness and suffering. Alas, he says, that day seems unlikely to come any time soon. In the meantime, great hopes have been placed in the science of proteomics, the newest exciting field, which studies the structure of our protein. But however much progress we make in the treatment of disease, pain and suffering themselves are not so easy to eradicate, and they remain something of a mystery. Szczeklik traces the history of the first analgesics, salicylates and opiates, remarking along the way that opium was already being used as an analgesic by the Sumarians. He goes into some detail about the history of aspirin, and shows how far back its use went: a papyrus from almost four thousand years ago recommended the application of extract of myrtle leaves on the back and stomach for rheumatic pain; Hippocrates applied infusions of poplar in diseases of the eye, and juice made from willow bark for fever and labour pains. All these plants are rich in compounds derived from salicylic acid (even the name is taken from the Latin for “willow” – *salix*) and for centuries have helped to relieve pain, reduce fever and combat inflammations. “The English,” Szczeklik writes, “pride themselves on the fact that the first “clinical trial” of these drugs was done in the mid-eighteenth century by a parish priest from rural Oxfordshire, the Rev. Edward Stone. By accident he tasted the bark of a willow tree and was startled at its bitter taste, which reminded him of quinine, used in the treatment of malaria.” The Rev. Stone believed that wherever an illness spreads, a cure for it must exist *in situ*. He therefore collected a pound of willow bark, dried it for three months in an oven and then gave it to fifty patients suffering from rheumatism. The results confirmed his theory. Throughout the nineteenth century attempts continued to purify salicylic acid of plant residues and then to synthesise it chemically. The

first synthetic form of aspirin was introduced in 1899 by Bayer, and became the most popular medicine in the world. Szczeklik describes how the success of aspirin inspired the production of other, similar medicines. He then traces the history of general anaesthesia and mentions unusual problems connected with pain, such as phantom pains and the inability to feel pain. He ends with a brief discussion of euthanasia, and comes out firmly against it, partly because of the fallibility of doctors:

“O reader, if you only knew how often I have been wrong in my medical pronouncements! If death depended on my medical judgement (mine and that of my expert colleagues, pronouncing in unison), how much smaller would be the number of people now walking the earth!”

Chapter nine, *Exit*, is about death and life-death experiences. Szczeklik begins with some reflections on the old and once widespread obsession with being able to predict the time of one's death, and tells the story of Talleyreand's will, his meticulous preparations for death and the way he outwitted his enemies by dying at his chosen place and time. In our modern lives death has no place – we block it out, ignore it, talk about it with reluctance – but Szczeklik reminds us that in the Middle Ages, and in later centuries, death was a permanent companion in life, for everything around us was a reminder of it: epidemics, public executions, funeral processions through city centres. Szczeklik reflects on the peculiar fascination, especially for poets of the Romantic period, of the strange mid-way state between life and death, and describes a few clinical near-death cases of his own. He adds, interestingly, that among his patients reports of life-death experiences have been rare: only 15% of those who had been near death reported any memories at all from that suspended state between death and life, and those were predictable and fairly laconic: “I realised I was dying,” “I was in a a tunnel”, “I was communicating with light”, “I saw a blue landscape”, “I met some friends who are dead”, “I saw my whole life unroll before my eyes.” Moreover, he adds, the percentage of those who have something to say about their experience is close to zero in the first few weeks after their resuscitation, but increases with time. So it is possible, says Szczeklik, that the patient begins to believe in his experiences, and to talk about them, only after hearing other patients, resuscitated earlier, talk about theirs.

Szczeklik goes on to talk about the definition of clinical death and of ways of telling when someone is dead. This, again, was a subject popular in the Romantic period: there was a widespread fear of succumbing to “lethargy”, a state of apparent death sometimes mistaken for the real thing, and of being buried alive as a consequence. In the Romantic period various methods were devised of

guarding against such an eventuality: the body of the deceased, when it was laid out in the funeral home, was often attached to an ingenious system of bells, connected to the house of the undertaker, in case death turned out to be only apparent. Nicholas Chopin, Frederic Chopin's father, had a great fear of being buried alive, and returned to the subject throughout his life in his letters to his son, making him promise to have his body cut up before burying it. "Sometimes, Szczeklik recounts,

"death was feigned in order to test the true feelings of one's family, or to manipulate someone. [...] In Wroclaw, during the difficult years just after the war, one family decided to stage the grandmother's death to wheedle the money for the funeral out of their American relatives. They invited a photographer; they put the coffin, with granny inside it, on a bier, surrounded with candles; they gathered around it, looking appropriately solemn, and in the pervading hush began listing the relatives who would have to be sent a photo of the dead woman. The count was interrupted by the grandmother, who shouted from her coffin: "And one for me!" The photographer – so it is said – jumped out of the window."

The chapter ends with a consideration of the modern definition of clinical death and the historical reasons behind the need for it – a need that arose, he says, at the time of the first heart transplants, when it occurred to Christian Barnard and others working in this experimental domain that it would be a good idea to find a way of making sure that the donor was quite dead.

Chapter ten, *Chimera*, is about immunology, about epidemics and vaccines, and, most crucially, about what Szczeklik calls the "chimera" of the viruses that spark off epidemics. It begins, naturally, with Pasteur, sketches the history of anthrax and smallpox, and relates the vicissitudes of the smallpox vaccine: the failed attempt, in the 17th century, to bring it to Europe from China and Abyssinia, where a different type of smallpox vaccine already existed, long before Jenner's invention of the one we know today. Szczeklik then considers the plague, tuberculosis and Spanish flu, and the discovery of streptomycin. He reflects on the mysterious mechanisms of epidemics: how they function, why they persist, why they disappear. It is interesting, for example, that tuberculosis began to recede by itself about thirty years before streptomycin was discovered – perhaps simply because health conditions had improved. The viruses that spark off epidemics, Szczeklik says, are like chimeras; they are mutants, strange and unpredictable twists and quirks of nature. Of the mechanisms of the 1918 flu epidemic he writes:

“In 2001 a detailed analysis of the Spanish flu virus was made, on specimens taken from the corpses of three people who had succumbed to the virus in 1918. One of them was an Inuit woman whose body had been preserved after her death in the Alaskan ice. The virus turned out to be a chimera: a cross between the swine fever virus and a human virus. Its identifying sign, located on the cell membrane, as if on the windscreen of a car, derived in equal part from a human and a pig virus. And this is why, when it entered the human organism, it was invisible to the immune system, which was unprepared for such an encounter. It was an encounter with a chimera – a mutant hidden by a cloak of invisibility, invading us at will, blocking our defences and destroying its host with a terrible swiftness.

The Asiatic flu returned a number of times, but never again caused such terrible ravages. Each time it came from somewhere around Hong Kong, and each time it was set off by a chimera: part of the genome of the human virus came from bird viruses.”

Chapter eleven, *After the Genome*, considers modern gene medicine. It begins with the story of the discovery of DNA, the decoding, in 2000, of the the complete DNA of the fruit fly, and in 2001 the decoding of human DNA. Szczeklik explains the concept of polymorphism in gene research, and as usual instructs and entertains by spinning some interesting historical, mythological and linguistic associations:

“Polymorphism is the name we give to the mutability of the individual nucleotides (letters) of the genetic code. The name contains associations to the beginnings of the world, when things were not yet imprisoned in a fixed form, not yet solidified into their definite shapes. When, after a long pursuit, Apollo catches Daphne, her fingers blossom into leaf buds, and she herself is transformed into a bay tree.

Certain genetic variants, most often caused by polyporphisms, are jointly inherited when they lie close together. This allows us to distinguish blocks of letters within DNA – sequences of nucleotides which we call haplotypes. Biologists have been rushing off in pursuit of haplotypes, and doctors are following in their wake. In their researches they resemble the traveller who has begun to distinguish individual words, and possibly even whole sentences, in a language of which until then he had known only the letters.”

This naturally leads Szczeklik to talk of cloning and its beginnings in embryology, of the pros and cons of therapeutic cloning, of Dolly the sheep and of what will come after her. Active genes set off the mechanism of a protein-producing cell; after the genome, the next step will therefore be

research into protein, with the goal of identifying every human protein. An extraordinarily ambitious project and an undertaking on a huge scale. Decoding DNA, Szczeklik remarks, was child's play in comparison: we have between two hundred thousand and two million proteins, and they are constantly changing. Some scientists want to find out how protein "express themselves" in diseases; others want to find out how they interact. This newest field of research in genetics is called proteomics.

The gene, Szczeklik writes, is viewed as "the Bible of creation, the Book of Man, the code of Nature, the manual of evolution, the Holy Grail, the language of God." And indeed, he says, studying the history of the genome might well unveil the deepest and most fundamental secrets of evolution; while comparative studies of human genes and other living organisms should contribute to our understanding of the mechanics of evolution.

Chapter twelve, *Changes*, is about recent and less recent changes in medicine and treatment, especially in cardiology, and particularly in coronary heart disease. Szczeklik talks of new techniques like keyhole surgery, but also laments the bureaucratization of health systems almost everywhere, with their business ideology, their waste, their administrations which spawn more administration and more waste. At the same time, medicine is increasingly setting itself new goals: it wants to heal not just the individual but the whole of society. Hence the increasing emphasis on preventative medicine among risk-groups. Another change, less recent, has been the need, now that medicine is evidence-based, for stricter experimental controls – double-blind protocols, and so on. Medicine is trying, as it has always tried, to be a science; but it is doubtful about its foundations. Science, Szczeklik writes, seems to be the new religion; we expect it to come up with all the answers: cures for everything, freedom, salvation, material comfort, and of course immortality. We also seem to have accepted it as natural that science has taken over the domain of ethics and morality. Szczeklik ends by discussing, in more general terms, the link between science as religion and the secularisation of the West, the various links between medicine and art, and the connections between recent research in medicine – as always half-way between a science and a non-science – and quantum physics, brain research and neurophysiology. We are still searching, he says, for the ultimate definitions – of medicine, of consciousness, and of life itself.