



<http://www.salon.com/books/review/2007/08/08/humors/print.html>

Blood and bile and phlegm, oh my!

Before germ theory, humoral medicine -- based on magical thinking and ignorant of human anatomy -- dominated for 2,000 years. So why are today's doctors guided by some surprisingly similar principles?

By Andrew O'Hehir

Aug. 08, 2007 | What if a physician from, say, the late Roman Empire were transported to the 21st century and asked to treat patients? Historian Noga Arikha performs this thought experiment in her new book, "Passions and Tempers: A History of the Humours."

Most obviously, he -- and he'd definitely be a he -- would be clueless about modern medical technology. He wouldn't know how to take your blood pressure, and he'd never have heard of viruses or bacteria. Cancer, to him, would be a constellation and a sign of the zodiac (as well as the word for "crab"). For certain ailments he might want to bleed you, and you'd be right in suspecting that was a bad idea. If you complained of a cold or a fever, on the other hand, he might define your illness in unfamiliar terms but he'd also be full of suggestions for herbs, poultices and potions, some of them no worse than those developed by the last 2,000 years of medical science.

This Roman doctor would probably subscribe to the humoral theory of human physiology, meaning that he believes physical and mental health are governed by the relative balance and temperature of four "humors" or fluids that flow through the human body: blood, choler (yellow bile), melancholy (black bile) and phlegm. This theory is completely discredited today, and for good reason: Those humors either do not exist or do not do what the ancients thought they did.

Intriguingly, however, our visiting specialist would find the allopathic principle that underlies modern medicine -- the idea of treating through "contraries," or opposites -- completely familiar, since it was humoral medicine, the tradition of Hippocrates and Galen, that first advanced that principle.

Even more intriguingly, some medical concepts that seem relatively new to us would also strike him as normal, like the idea that stress can cause physical ailments, or that mental illness might result from a chemical imbalance in the body. Once he figured out what you meant by "depression," for instance, he'd want to treat it with herbal remedies, probably using plant products still employed for that purpose today.

In short, this Caligulan doctor would possess what we'd now call a holistic conception of the human body and human health, along with an impressive body of empirical knowledge about treatments and cures. He would understand the body as a carefully balanced organism full of invisible essences, and his own role as a cautious recalibrator who intervenes only as necessary to restore that balance. He would know almost nothing, by our standards, about human anatomy, but he'd be a highly cultured fellow who had read more Aristotle than any doctor you're likely to meet today.

Arikha's book is often fascinating and sometimes frustrating, but her rambling odyssey through the checkered history of humoral medicine -- which was practiced for something like 2,000 years, while modern medicine has yet to reach 200 -- challenges us to consider the value, and the meaning, of a discredited theory. Scientific progress, of course, depends on flawed ideas, on propositions that can be (and often are) proven false. As Arikha puts it, mistakes are necessary in order "for correct theories to exist at all."

But what about a theory that governed culture for millennia, yet turned out to be completely fanciful? No doubt it serves archaeologists and historians well to remember that for most of human life on this planet we have assumed that the sun revolved around the earth and that the earth was flat, and the rest of us might occasionally reflect that there's a moral in that history, something to do with arrogance and certainty.

As Arikha's book makes clear, humoral theory is not quite in the same category. No one, as far as I know, officially believes in the validity of humoral medicine today (whereas there remain tiny subsets of Christians who believe in geocentrism and even a flat earth). But it remained the principal underlying concept of the Western medical tradition from classical Greece right up to the Industrial Age and has never, Arikha thinks, quite left us. While the humors came under attack from the late Renaissance onward, and were formally abandoned with the arrival of germ theory in the 19th century, she argues that they have never lost their linguistic and metaphorical hold on us, that they retain an "explanatory power" not directly related to scientific validity.

As an intellectual historian, Arikha's turf is the philosophical and cultural connections between the classical world and the modern age. She is principally interested in the way humoral theory continues to shape our thinking, and she claims no scientific expertise. She does, however, float the more ambiguous and controversial notion that humoral medicine possessed an "intuitional" insight into the chemical workings of the body, an insight modern medical science is beginning to confirm at the microscopic level.

Many of us still understand what it means to call someone sanguine (cheerful, confident and optimistic) or phlegmatic (calm, moody and reserved), even if we do not literally believe that those temperaments are caused by a predominant bodily fluid. (In his 2005 novel "Divided Kingdom," British satirist Rupert Thomson eerily imagines a nation partitioned along humoral lines.) Melancholy, purportedly caused by an excess of black bile, was an obsession of medieval and Renaissance Europe; depending on its severity it could lead either to poetic and philosophical ferment or to self-destructive madness. In melancholy's contemporary guise as the neurological disorder called depression, it remains just as potent a symbol and signifier today.

We always need systems and theories to understand ourselves and the world, Arikha writes, and humoral theory served as a high-functioning model for many centuries, providing a "rational scheme that encompassed passions, illness, blood and guts, ordering the darkness and disorder of inner life." Yet there's no denying that this

"rational scheme" was based on a fantastic ignorance of human anatomy, and on a belief in imaginary or invisible organs.

Most humoralists thought that the purpose of the lungs was to cool the innate heat of the heart, where the rational soul was believed to reside. (Arikha expends a lot of energy on medicine's fruitless quest for the human soul, a topic that may properly belong to another book.) In turn, the heart played no role in the circulation of blood, which was caused by the independent pulsation of the arteries and veins. Nerves were hollow, and carried vital spirits called "pneuma." After digestion in the stomach, food moved to the liver, where it was converted into something called "chyle." The uterus was said to have seven chambers. One could go on, and Arikha certainly does not shirk from these and other examples.

We know about humoral medicine today mostly because of its abundant blind spots, and its inability to treat certain kinds of disease that pose little problem today. George Washington was infamously bled to death by old-school humoral physicians in 1799, and if he was among the last and most celebrated of such cases, there were surely thousands before him. (Bloodletting may have been beneficial, from time to time and pretty much by accident, in patients with high blood pressure or severe inflammation.) Hellebore, a plant prescribed from Hippocrates right through Washington's time as a cure for both melancholy and mania, is regarded today as a "violently poisonous" toxin that can cause birth defects, hearing loss and cardiac arrest.

But both as theory and practice, the record of humoralism is more mixed than those examples suggest. Arikha notes that it still seems reasonable to consume "root vegetables and 'warming' spices like mustard, ginger, pepper and cloves in the winter and 'cooling' foods like green vegetables and lemons in the summer." We have forgotten the humoral basis for such practices, but they still conform to our allopathic understanding of medicine.

In the 10th century, the influential Persian physician Ali ibn al-Abbas al-Majusi recommended the following regime for those suffering from excessive melancholy: outdoor exercise, light and gardens, massages and herbal baths, music and poetry, plenty of sexual activity and a light diet based on lamb, fish, eggs, green vegetables and ripe fruit. OK, he also suggested laxatives and occasional bleeding, but on the whole it's difficult to see how any doctor in that pre-pharmaceutical age could have done better at treating depression.

Similarly, the medical advice given to Peter the Venerable, the 12th century abbot of Cluny, when he contracted a respiratory ailment, sounds pretty close to modern drugstore remedies. Peter's doctor recommended "hot baths, inhaling medicated steam, poultices for the chest" and "lozenges to dissolve in the mouth." Even the potions prescribed -- made from "hyssop, cumin, licorice or figs steeped in wine and syrups of tragacanth, butter or ginger" -- seem oddly familiar. Is that the ingredient list for Ricola cough drops?

As Arikha sees it, humoralism was the grandfather of both modern medicine -- with its Cartesian tendency to see the human body as a machine to be fine-tuned, repaired or replaced in piecemeal fashion -- and the holistic traditions of "alternative" medicine. (She believes there's a clear connection between humoral medicine and the conceptually similar medical traditions of China and India, although the precise points of contact remain unknown.) Humoral medicine was simultaneously empirical and theoretical; it drew on herbalist lore that extended back to Dioscorides' 1st century A.D. encyclopedia "Materia medica" and on an overarching conception of human beings' relationship to their environment and the cosmos.

From its origins in the Empedoclean philosophy of Hippocrates and his disciples in the 5th century B.C. to its refinement under the legendary physician Galen of Pergamon in Hellenistic Alexandria, from its dissemination to the Byzantine Empire and the Islamic Near East and thence back to Europe, humoral theory always emphasized the unity of body and soul, man and the world. The humors were always seen as attuned to the four seasons, the four elements, the four ages of man and many other things besides. Melancholy, for example, was linked to autumn, to earth (instead of air or water or fire), to the age of maturity (instead of childhood, youth or old age), afternoon, the color black, sour flavors, the liver, the planet Saturn and the astrological signs Scorpio, Sagittarius and Libra.

Humoral balances were understood to shift with the weather, the tides, the moon and climatic conditions. Choleric had naturally hot and dry constitutions and might benefit from a cool and rainy environment; phlegmatics had naturally cold and moist bodies and might thrive in the desert. (Hence, I suppose, rheumatic retirees moving to Phoenix.) Mood affected humors and humors affected mood. Premodern medicine drew few distinctions between physiological and psychological ailments. The idea that they are frequently or always interlinked might seem newfangled to today's physicians, but it would have been axiomatic for Galen or al-Majusi.

From the time of Galen in 2nd century Alexandria -- who may have learned his anatomy by vivisectioning criminals, horrifyingly enough -- to the time of the great anatomist Andreas Vesalius in 16th century Italy, virtually no human dissections were performed. Christianity, and then Islam, were believed to forbid them, so knowledge about the actual workings of the human body remained somewhere between dim and delusional. Medical training was almost entirely a matter of reading the Hippocratic and Galenic texts and/or studying case histories, and for many years physicians themselves did not perform bloodlettings or such other minor surgeries as were possible. (Barbers did, and that's what the red, white and blue pole outside a barbershop once signified.)

Given this near-total ignorance, one intriguing question that Arikha poses is whether physicians and ordinary people understood humoral theory literally or not. Some doctors believed they could detect black bile in the stool, phlegm in the sinuses and yellow bile (what we would call pus) oozing from wounds. But the visible and tangible bodily fluids were generally understood as mixtures of the various humors, with one or another being predominant; the blood in your veins and arteries, for

instance, was not the same as the essential humor called blood. One might almost say that even at the time the humors served as explanatory metaphors, flowing through some abstracted Platonic body rather than fleshy ones.

In recounting the gradual collapse of humoral medicine across the centuries, Arikha piles up the hair-raising anecdotes of progress and regression. Herbal medicine relied on a certain amount of flat-out magic, with some potions calling for viper flesh, opium, and human blood boiled with the weapon that had caused an injury (this was the long-standing belief in curing "at a distance"). Some genuine innovations were not much better; a London mental patient named Arthur Coga became the first human recipient of a blood transfusion in 1667, receiving 12 ounces of sheep's blood. Diarist Samuel Pepys speculated that "it may have a good effect on him as a frantic man by cooling his blood." (Coga survived the experiment, although his mental condition was not much altered.)

Through such trial and error (and the great microbiological discoveries of the last 150 years), modern medicine gradually came into being, but Arikha sees it as a bastard child, torn between a quasi-humoral, more or less holistic view of the human organism and a mechanistic Cartesian rationalism. Even with its faulty understanding of disease and the body, Arikha suggests humoral medicine was well suited, as theory and practice, to a world where many illnesses were incurable and it was impossible to conceive of microbes or hormones or neurotransmitters.

To some extent the humoral tradition produced real medicine: The traditional herb foxglove is the basis of the drug digitalis, which keeps cardiac patients alive, and the spice turmeric, instrumental in Indian Ayurvedic medicine, has been found to have powerful cancer-fighting properties. As Arikha notes, Western medicine of the private-enterprise age has yet to come to grips with much of the traditional herbarium, largely because most of the plants involved can't be trademarked or rendered into profitable pharmaceuticals.

Now that the leech, the bloodsucking swamp worm that long symbolized the limitations of medieval medicine, has been revealed to have anesthetic, anticoagulant and disinfectant properties -- it was approved for medicinal use in the United States in 2004 -- modern doctors and scientists seem more willing to reconsider the abandoned methods of the humoral age. Even when humoral medicine was based on magical thinking and bewildered anatomy, Arikha suggests, it still provided a useful framework for thinking about the body and its problems. If you believed that viper flesh and sword-boiled blood will counteract the rising tide of melancholy in your body, it just might work. (Contemporary research has revealed that the power of placebos can be impressive.) Our science may be incomparably better today, but our social and cultural relationship to medicine, Arikha believes, is fundamentally the same as it ever was. Our understanding of the world, she says, always includes an "explanatory gap" between scientific theory and actual experience. Whether we believe that a cold is caused by viral infection or by an excess of cold and wet phlegm forming in the brain and descending through the body -- and one must admit the

potency of that description -- does not change the exasperating sensation of sniffing and sneezing.

As we pop pharmaceuticals and over-the-counter herbal supplements, practice yoga or shiatsu or weight training, we still seek the ideal of keeping the moist and mysterious innermost regions of our body properly balanced to engage the outer world. If we have a bad day we're likely to blame brain chemistry, hormones, nutrients and blood cells rather than black bile or phlegm. As I said earlier, Arikha believes that recent research into the complex workings of the endocrine and lymphatic systems "seems to corroborate the humoral intuition" on a microscopic level. We also classify ourselves and others in ways that ancient and medieval people might find familiar, through our astrological signs, our colors or numbers, psychological typologies in books and magazines, Internet sex surveys and so on.

Born in France and educated in England and the U.S., Arikha is an impressive polymath who draws on source materials, from early classical Greece to the Islamic Middle Ages, from the scientific hotbeds of 16th century Florence and 19th century London to contemporary pop psychology and "alternative" medicine. If anything, "Passions and Tempers" is so exhaustive that it becomes exhausting; she seems to quote anyone who had anything to say about the humors over the last two and a half millennia, and her prose occasionally bogs down into lead-footed repetition.

Here and there, though, she'll surprise you with a graceful turn of phrase. In her foreword, she remarks: "Our present is impregnated with the past." That central insight -- we are our ancestors' children, both literally and intellectually -- is central to this book and to her overall understanding of history. "Passions and Tempers" makes a strong case that humoral theory is more than a scholarly curiosity, and sheds startling light on our contemporary confusion about what happens in the dark, wet and messy world inside our bodies, and how that pertains to our minds, our souls and our selves.

-- By Andrew O'Hehir