

DISCUSSION

Give truth a chance

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As a curious undergraduate studying Ayurveda, the first concept that intrigued me was Sushruta's take on foetal sex determination. At the time of conception, if the man's semen is in excess, a male foetus results; if the woman's menstrual blood is in excess, a female foetus results; if semen and menstrual blood are in equal measure, an intersex is formed [1].

Having studied and understood the chromosomal basis of sex determination in class 12, this concept appeared weird and I lost no time in searching for an explanation. A professor suggested that I read Ghanekar's celebrated commentary on the *Sushruta Samhita*. I discovered there that Arunadatta, a 12th century commentator on another Ayurveda text, interprets the aphorism differently. According to him, excess semen does not mean quantitative excess only; it also connotes a qualitative excess in its strength to bestow maleness.

Instead of solving the problem cogently, Arunadatta's interpretation had made things even more complicated. If a male foetus results from a supposed situation of seminal excess, Sushruta's aphorism gets straightaway validated. If a female foetus results from exactly the same situation, Arunadatta's interpretation comes to rescue the aphorism! In short, if Sushruta and Arunadatta are read together, the Ayurvedic idea of foetal sex determination becomes unfalsifiable.

Such tautological statements obviously lack the cogency needed to warrant experimental verification. It became clear to me from a few more similar instances that biological information contained in ancient Ayurvedic texts is mostly conjectural and quite understandably so. After all, *Sushruta Samhita* appeared in its first avatar at least 2500 years ago when the methods of data collection and evaluation were very nascent. While my respect for Sushruta's scientific adventurism at such an early date in human history deepened, I also became aware that truth and patient welfare require that I approach his assertions with a healthy scepticism.

A brief interlude now to acquaint the reader with the state of

my mind then. Why did I busy myself in finding out the "real meaning" of Sushruta's aphorism? Why did I not decide at once that Sushruta's concept is an ancient speculation that needs a respectful burial?

Ayurveda is an ancient science with its theories rooted in Indian philosophy. I had, in my pre-ayurveda days, hungrily browsed through the works of Swami Sivananda, the well-known populariser of the subject. He was also a respected doctor trained in modern medicine. So, I had two good reasons to value his writings on ayurveda. "The physiology of Ayurveda begins where the physiology of modern science ends," this doctor-monk had written in one of his books [2]. The remark stayed deep in my mind. I would therefore not dismiss any Ayurvedic view without careful scrutiny.

Indian philosophy has a peculiar character. Rightly understood, it strengthens the faculty of critical thinking. Improperly understood, it pulls one into the quagmire of the occult and the mystical. Until I studied and understood the more authentic works of Indian philosophy, I was subconsciously under the spell of the occult and the mystical. Once I gained a mature perspective on the subject, the spell was gone and evidence-based reasoning became the dominant habit of my mind.

With this intellectual transit, Ayurvedic texts became more approachable. I understood that these ancient classics contain several verified and valuable observations on health promotion as also on illness-management. But, alongside these observations were strewn implausible conjectures on the biology of health and illness.

These milestones in my understanding of Ayurveda ran through my mind when I read Karthik and Shajin's article amusingly titled "Deluded confession" [3]. There need be no unanimity between ayurveda concepts and their modern analogues, they say. This is, of course, a perfectly valid view for anybody who is credulous enough to believe that the afore-explained Sushruta's concept of sex determination can be just *as true as* the modern chromosomal basis of the same. This equivalence might also be rewarding in its potential to generate new research questions of mighty impact: Does a high volume of the ejaculate indicate a preponderance of Y-carrying sperms?! Was Sushruta subtly pointing at this truth when he said that excess semen engenders a male foetus?!

Fortunately, common-sense and straight thinking help the human mind see such fantasies for what they are. When

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incomplete learning — especially in Indian philosophy — smothers these mental abilities, absurd equivalences replace a clear grasp of truth. It is then that learning evidence-based modern anatomy and physiology begins to appear as a “setback for the Ayurveda student.”

The authors also draw our attention to the fact that the *dosha* theory has its roots in the Indian philosophical systems. Suggesting that the *doshas* are only inferable and not directly observable, they write, “In most Indian theistic philosophical schools, such variables are said to be inferred and they are considered existent.”

In this argument lies the proof to show that philosophy, when inadequately appraised, leads to erroneous conclusions. Inference has to necessarily base itself on observable realities. In the absence of observable realities, the ideas conceived would at best be hypotheses and at worst, fantasies.

Evaluating the *Vaisheshika* theory of *mahabhutas* which alludes to unseeable and merely “inferable” entities such as atoms and dyads, S Radhakrishnan writes: “The old atomic theory is unable to explain the new facts...The hypothesis was put forward as a metaphysical one, and not as a scientifically verified principle...It is a conceptual scheme adopted to explain the facts of nature...There is nothing to prevent us from rejecting the hypothesis if we find that it ceases to have explanatory value.” Quoting Gomperz, he further clarifies that “the hypothesis and its assumption of facts that lie far beyond the limits of human perception deprives it of all time of direct verification” [4]. No idea can become sacrosanct merely because it is held by a certain theistic philosophical school. After all, these schools also disagreed with one another all the time.

Much like the *Vaisheshika* assumptions about the unseeable atoms and dyads, many aspects of the *dosha* theory too “lie far beyond the limits of human perception” and are therefore mostly assumptions. Karthik and Shajin themselves supply us with a relevant example by citing the Ayurvedic view that “the cause of fever is the displacement of heat by *doshas* and undigested matter from the stomach.” If this is the case, how was the causal connect first evidenced? How did an investigator working in the 2nd century BCE, when the *Charaka Samhita* was authored, discover the happenings in the interiors of the stomach in a living body? If the authors opine that this is inferential and not based on firsthand information of the causal connect, they are unwittingly glorifying a speculation as a settled fact. Such pitfalls in reasoning can be avoided if one remembers Carl Sagan's caution that “the method of science ... is far more important than the findings of science (5).” A “finding” that is not supported by a cogent explanation of the method that found it is plainly untrustworthy.

The *mahabhuta* theory of the *Vaisheshika* system along with the *triguna* theory of the *Sankhya* are the parent theories that birthed the Ayurvedic *dosha* theory. The plausible

observational and intellectual preludes in this birthing process have been detailed in the essay that Karthik and Shajin condescendingly brush aside as a “story” [6]. Stories produce science – when seconded by evidence. And, arguments produce fiction – when they lack evidence.

All this is not to say that the *dosha* theory must be jettisoned. It is prudent to treat it as a rough-and-ready model that the ancients devised to systematise their medical experience [6]. Danger comes when rough-and-ready models are made to usurp the place of established biological facts in the diagnosis and management of illnesses.

The authors also allude to the fact that both Ayurveda and modern medicine started their anatomical studies with cadaveric dissection. They then ask “how is one of them considered a state-of-the-art form, and the other obsolete?” Ayurveda's history shows that after achieving great strides in the two-millennium period stretching from the 8th century BCE to the 10th century CE, Ayurveda suffered a very long period of intellectual and experimental stagnation [7]. There were renewed hopes of its revival in the 20th century. But these hopes were dashed, thanks to the enthusiastic misinterpreters of Indian philosophy who believed that ancient texts contain advanced science [7].

The ayurvedic ecosystem has still not recovered from this misunderstanding. Charaka's *yukti-vyapashraya bhashaja* (reason-based medicine) has degenerated to become *shabda-vyapashraya bhashaja* (authority-based medicine) in current times. ‘Professor Kishor Patwardhan's motivator’ humbly seeks a reversal of this sad trend for the sake of truth and for the sake of suffering humanity. Leaving such serious matters to a misguided cohort who claim to know “Ayurveda as it is” would only perpetuate the travesty of facts and the consequent denigration that the great medical legacy of Ayurveda has been suffering.

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