



Book Review

The Emperor of Scent: A Story of Perfume, Obsession and the Last Mystery of the Senses by Chandler Burr. New York: Random House (2003).

Reviewed by James Vaughn Kohl

Whether or not one has built a better mouse-trap means little if the new improved model cannot be tested. There must be some proof that it works. Luca Turin has a new model for odor identification and classification. Chandler Burr, a Washington, D.C. based journalist and author of *A Separate Creation*, tells of Turin's scientific trials and tribulations as Turin attempts to prove that odor perception is based upon molecular vibration rather than upon molecular shape. Turin plays a hero's role while repeatedly attempting show and tell explanations of a very complex theoretical model of molecular recognition. The trouble is that few people are willing either to examine or to accept Turin's theory, and his understanding of how important it is to humanity.

Turin's background is exquisitely detailed; sometimes unnecessarily so. It is difficult to determine why the religious proclivities of his mother and father are meaningful to this story, though it is pertinent to know that Luca was a brilliant child, since this sets the stage for his academic pursuits and professional placement. This also allows for an excellent introduction to some rather complex science. Burr's extensive use of metaphors makes the complex science more readily understood.

How much scientific understanding is required to grasp the intent of the story? Sometimes, it seems that Burr's intent is simply to show that Turin is the best and brightest of researchers, and possibly even prove this to others. Not only does Turin understand biology and chemistry, but also quantum physics. He is reportedly the first person to apply quantum mechanics to a physiological problem: odor identification. But one need not understand science, especially not quantum mechanics, to enjoy the story's progression.

Turin also may have synesthetic abilities. To him, every perfume is like a movie with sound and vision. His descriptions of the attributes of a particular fragrance are phenomenally perceptive, perhaps because he smells, sees, and hears them. These abilities do not go unnoticed by professional perfumers, and readers are treated to knowledge about fragrance design as Turin makes a name for himself among the major perfume designers/manufacturers. While Turin's name is mud to some of the people he encounters, he is sometimes very impressive to perfumers and even to olfactory researchers. Is this because he knows more than anyone else? Competition in science and in commercial ventures may make some people unappreciative of

others' talents.

Turin's interdisciplinary approach to scientific understanding has led him to rediscover a 1938 proposal by Malcolm Dyson: our noses have the spectroscopic power to detect vibration. Based upon knowledge he has gleaned from other disciplines, Turin believes that Dyson was right, and has proceeded to try and convince others. The scientific facts are not readily recognized by others. Some people require proof that is beyond the shadow of a doubt.

Turin's attempts to prove his calculations don't lie beyond the shadow of a doubt, are exquisitely detailed by Burr. Few researchers seem to care whether or not Turin has found a new scientific truth. He is generally dismissed as was Dyson, and as was R. H. Wright, another earlier promoter of the molecular vibration theory.

In theory, our ability to perceive odor cannot be based upon shape because, according to Turin, we can perceive roughly 10 times as many different odors as there are reported to be shape-dependent receptors for particular odors. No details are offered with regard to another somewhat more prevalent theory. Many researchers believe it is the activation of several shape-dependent receptors and the brain's interpretation of the signal pattern that is generated, which allows for our exponential ability to perceive odors. Turin's failures to address other important aspects of shape theory, when compared to his vibration theory, contribute to his difficulty in publishing a peer-reviewed journal article.

Publication in a prestigious journal like *Nature*, is a lofty goal -- one that is beyond the grasp of most previously unpublished academics, despite their credentials. Turin thinks that the deck is stacked against him, personally. A pointless year-long battle between Turin, reviewers, and members of the *Nature* publication staff ensues. Ultimately, Turin publishes in *Chemical Senses*, and gains little credit for new facts. The article is presented as an original re-

search paper: largely theoretical, unsupported by testing. Publication elicits almost no reaction, and Burr later learns that virtually no one even read the paper. Meanwhile, Turin is left to wonder why he never was invited to attend an olfactory conference, where he could present his theory.

To be invited to attend and present at a scientific conference, researchers typically must be fairly well-known for their contributions to a particular discipline. Turin's work combines several disciplines with raw insight. In lieu of an invitation, most researchers would initiate an application to present findings, either through a lecture, slide presentation, or poster session (similar to the way school science projects are presented). Minimally, submission of an abstract is required to get approval for any presentation.

Turin published an article in a journal for olfactory researchers, but never bothered to follow the path towards conference presentation, which nearly every other researcher follows. Nevertheless, to his credit, he was subsequently invited to present his theory at an olfactory conference in 1998. Minimally, his presentation was interesting, possibly even well-received, but not necessarily understood. Perhaps if there had been more time for questions and answers, but time limits are set in advance. Perhaps if Turin had more experience with the preparation and delivery of such presentations, or if he had already better advanced his position through publication of additional journal articles, or in any way to help others make more sense of what he was saying... We will never know.

Turin was disgusted by a tentative invitation to another olfactory conference, and expresses his contempt for other researchers. "These people have these pathetic lives where they go from one meeting, one conference, to another, trading postdocs and trading gossip and figuring out what the next microscopic little step is going to be." (p. 281) Appropriately, the end of Luca Turin's story ends somewhat abruptly. "Scientists are human. Vested interests beat out

new ideas. Egos smother creativity. Personalities clash. Corruption is as common as the survival instinct." (p. 302) But, in this case Turin never attempted to work within the system. Perhaps a future proponent of molecular vibration theory will manage better than Dyson, Wright and, most recently, Turin. Truly this theory may be years ahead of its time. It also may be a theory that cannot be sufficiently supported by scientific fact.

Chandler Burr tells this story well; it is an excellent representation of how science works, and how it sometimes doesn't work. A comment, by Turin, that smell is not about sex at all, because if you lose your sense of smell, sex will still be terrific not only seems out of place, but inaccurate. (p. 258) Animal and human studies have shown that sexual interest gradually declines after loss of the ability to smell. Similarly, I wonder why comments about racial differences in natural body odor are included. Human studies have shown that we can sniff out genetically determined differences in natu-

ral body odor, but that this is not done consciously. Therefore, such perceptions seem to fall outside the realm of Turin's vibration theory for odor recognition (which he indicates occurs at a conscious level).

More than a century ago, in 1900, Max Planck, one of the greatest physicists of all time, announced his revolutionary new scientific theory of an energy constant in quantum mechanics. Eighteen years later he was awarded a Nobel Prize. As Luca Turin waits for his rewards/award, he and others may benefit from knowing more about Planck's attitude: "...a new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it."

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