

THE SECRET OF SCENT: ADVENTURES IN PERFUME AND THE SCIENCE OF SMELL Read Free



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Luca Turin
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The science writing started to get a bit over my head, but Luca Turin does such an incredible job with beautifully-written and sometimes a bit ridiculous analogies that my brain was able to grasp most of it. He's the best sassy biophysicist perfumery nerd grandpa. May 24, Ariel rated it really liked it Recommends it for: anyone who likes science. Perhaps it's not a good book combination, perfume and the science of smell. Obviously, they fit together quite neatly, but how many people are at least mildly interested in hearing about the beauty of perfume and the detailed science of smell. Well, I heard about it on NPR and it worked for me. The Author is a biophysicist who has an immense obsession with perfume and believes he has figured out how we smell the molecules we do apparently that is still very much not understood. Unfortunately or Perhaps it's not a good book combination, perfume and the science of smell. Unfortunately other scientists don't believe him so now he has a smell producing company that accurately makes molecules that smell a certain way 1 in 10 times instead of the industry's 1 in 1000. The book is divided into these sections- why perfume is so cool, what we know about how the science of smell works and what is up for debate, various scientists who have worked on the problem in the past and why they screwed up even if they were on the right track and then his own personal experiences.

I guess it's a manifesto about why he is right for the general public and I bought it. The science part is quite detailed for laypeople like me, but I got through and enjoyed it, plus I feel smarter for it. Jan 01, Igor Korousic rated it really liked it. I wish that schools taught children the way Turin explains chemistry. This book offers a little bit of Poetry of Scent i wish there was more of that and some chemistry to make his Vibration theory more convincing. From this book i learned much about his fascinating theory of olfactory processing in animal brain.

More importantly for me, he reminded me of interesting art which modern global trends have gradually converted into just another somber industry. Feb 08, Jessica rated it it was ok. This book is about smell. Which i LOVE. Yet the most generous i can be with it is that it was bizarre. The second half was better, but still not super well written. Aug 08, Elizabeth added it. If you're a science numbskull like, um, me, the last half of the book will be difficult to follow.

Also, I would have liked to have known how Turin became interested in perfume in the first place--don't know why he couldn't have devoted a few pages to that. Finally, there were lots of diagrams of smell molecules. That would have helped. I mean, really. Aug 23, Milou Van rated it it was ok. Pompous with irrelevant comparisons and descriptions. The endless stream of unnecessary anecdotes and references makes this book a bore, half the time I was unsure how the paragraphs had anything to do with each other, and completely goes by the point of explaining to the reader how odours and smell work.

Interesting concept, badly executed. Most of my life, I didn't pay so much attention to my senses, to the point that in high school food didn't have taste, then at the end of high school my senses started to "awaken". I started to love food and tasting it and guessing the ingredients, started to love listening to music and learning the genres and reading about Music Theory and so on. Then my smelling, my mom always claimed that I have good tasting and smelling I liked to guess by smell what ingredients she's cooking downstairs se Most of my life, I didn't pay so much attention to my senses, to the point that in high school food didn't have taste, then at the end of high school my senses started to "awaken". Then my smelling, my mom always claimed that I have good tasting and smelling I liked to guess by smell what ingredients she's cooking downstairs senses, but it was mostly smelling food.

When I graduated from college and got a job, I started to use perfumes and dress nice at least the first few months, I suddenly realized that there are perfumes in the world, as if I had eyes since I was born but only later I noticed vivid colors! I would just sniff around and discuss with people how sweet or how sharp or how fruity or how stingy their perfumes were. I needed to know the science behind it. Reading this book if you love perfumes is like learning music scales if you like music! I adore how poetic this scientific book is, Luca Turin is an artist who happens to have a PhD in Biophysics. The secret is this: though we now know almost everything there is to know about molecules, we don't know how our noses read them Every time it is an absolute mystery what each molecule is going to smell like What is this chemical alphabet that our noses read so effortlessly from birth?

Part of the reason for the lack of interest in the subject must be that smell science produces little that is useful to the sober pursuits of medicine and technology. There are few diseases of smell, and those that exist are usually incurable and get little sympathy. And though it is big business, fragrance is a low-tech frivolous and fickle world. The relative neglect of smell compared to other senses may also have to do with the fact that it cannot be easily transmitted like images and sound. As a colleague of mine put it, "You still can't fax a perfume", but that applies to taste flavor too, "possibly also, it is wrongly held to be less reliable as a sensation than vision or sound.

Finally, there is a definite 'real men don't do this' side to smell and fragrance Whatever the reasons, the cipher remains unbroken. This does not mean that people do not care. Everyone has wondered about the nature of odors from antiquity onwards. Smell was rightly taken as evidence for existence of atoms and wrongly for their having different shapes, some smooth roses, some sharp-edged mustard. Modern theories are only slightly different Here I tell the story of how I think I finally cracked the code. Actually, as often happens, it had been cracked twice before by brilliant minds, but nobody took them seriously. All I did was extend their work, and this book is my tribute to their insights There is a lot of money to be made by efficiently designing new fragrances and flavors", so yes fragrance and flavor have similar aspects. The rest is packaging, advertising and margins". Captives are one-in-a-millionth chemical compounds yet they make half the smell, our noses are really sensitive that make all the difference in very successful unminikable captives are very hard to scan chemically and usually patented fragrances.

That's why the event is rare, and that's why we notice it The uniqueness goes right down to the molecular level. As I've said, there are no synonyms: no two different compounds out of the hundreds of thousands made so far have identical smells", and that what makes fragrances so unique and rare and memorable. Synthesized smells aren't bad, "natural" doesn't always mean good they too complex to give room for creativity and "chemical" does not always mean bad they are simple thus boring, but they can be improved on into very unique and new things. Nature is good, but not perfect as most people assume. There isn't a cancer cure out there in Nature that waits to be discovered. Nature has poisonous beautiful deception flowers, and deadly bears as Stephen Colbert says lol. Roughly speaking, anything more than sixteen carbons stand a good chance of being odorless Musk is exactly 16 Cs" "The shorter the word, the shorter the smell.

Every letter adds roughly a factor of two to the time. You will smell of cheap musk 16 Cs for thirty hours or more, this would be a 'bottom' or

'drydown' note" "Smelly molecules are made from only five types of atom: carbon, hydrogen, oxygen, nitrogen and sulphur, these are also the five elements that make up all life" "The molecules must be able to fly in order to reach our noses, so they should carry no charges that make them stick to each other" "They should be as unreactive as possible" "Most importantly: no two words smell the same.

Smell of musk 16 Cs when one C shorter will smell of cedar wood. There are plenty of siblings, but not exact twins in smell" Smell becomes perfume, chemical poems. Many hundreds of such words make a perfume. Short words are the first to smell and first to disappear because they are light and fly easily. Spraying fragrance in your hand speed up smelling middle and bottom tones because of the heat of your hand versus your cloths or that small paper they spray on in stores "The smell of bitter almonds is due to a compound called mandelonitrile, it falls apart in water giving an aldehyde and cyanide the famous murder novels poison.

Now here's the real killer: both smell of bitter almonds! If there is a Creator, and It has a sense of humor, this would be the sort of thing It would dream up. If you want to understand smell, this one is real enigma: there is no structural similarity between them whatsoever. Could it be that the esters are breaking down in the nose into their component parts, which are then separately smelled? If this is the case, does it apply to other odorants? It is a stealthy raw material, capable of improving the richness and depth of floral compositions out of all proportion to its actual smell. Even perfumes who cannot smell it immediately detect its presence in a formula. It almost goes without saying that this phenomenon remains a complete enigma. Esters are transparent smells, watercolors for the nose, but they have close relatives that are more akin to pastels: the lactones. Lactones, coumarin among them, must be the cuddliest smells in all perfumery: almost every one is soft and powdery, sometimes to a fault" So how do our noses work?

Receptors are proteins that are half submerged in cell and they work as communication channels. And so far, it has been so difficult to understand and simulate how the sticking happens exactly. I think Alzheimer is related to this, where I think that brain cells receptors fade away. PS3 had an application that collectively million of PS3s and PCs simulate how protein folding to enter the cell happens exactly. Our noses have families of receptors. So, is each receptor responsible for a particular smell? First of all, our eyes have only 3 receptors and yet we convince millions of vivid colors, google "eye receptors spectrum" to see how it works. The author gives the analogy of writing systems where in alphabetical writing systems we have small set of characters that when arranged in certain ways they make thousands of different words just like our 3-letters eyes, or English's 26 characters, and ideographic writing systems where each character is a word Chinese has over 50, characters.

So is smelling Alphabetical like our eyes or Ideographic? This thing happens all the time in perfumery, where for example mixing a few pure molecules gives you a striking approximation to, say, a flower's smell". The same happens with our eyes, screens mix green and red and yellow results, Vsauce made an amazing video about it called "This Is Not Yellow". Anyway, to me there are two essential questions the author mixes it all up : How receptors get turned on? And how smells relate to on-receptors? The first question is the main argument of the book, is it by traditional view of shape or author's view of vibration Infrared Spectroscopy, in other word low frequency waves of the molecule? This is a very technical Chemistry problem. Oh I've just noticed something while comparing eyes to noses.

Unlike our eyes, we only smell one bit of smell at a time. We can smell two smells at the same time and that is because this bit is complex, but it is only one bit. And this makes sense because for us to smell, molecules of the thing we are about to smell need to fly up into our noses and get scattered all over inner surface of the nose, we can't tell if it came from one object or objects in the room.

And speaking of receptors, do you know why spicy food taste "hot" and mint taste "cool"? Because they trigger the same receptors as hot and cool temperatures. The first question is so technical and I can't dare to argue about it I'll need to understand it first, which I find hard so far even with the author's passionate explanation.

But few interesting stuff: there are some molecules that force the receptor to be off, they are called antagonists, such as pain killers. In many chemical groups aldehydes and others, the smell of a molecule is the sum of its parts. The first point is clear because only things which evaporate have a smell, and the second because molecules like paraffins do have a smell and are otherwise quite inert chemically". Isotopes are good test for first question, because we'll have two molecules with identical shapes and different vibrations, and they indeed smell differently!

On the other hand, different molecules different shape but similar vibration, smell similarly. Vibration it is then. Case closed. Next up: understanding flavors and how the tongue works enabling much more flexible synthetic flavors. When the author figured out that isotopes smelled differently which is contrary to long-held-yet-unsupported belief among scientists, which suggests smelling works on vibration not shape, "on the train, two young girls across the aisle were smelling perfumes on each other's wrists and I thought to myself: I know how that works".

To do that, you need a system based on general physical principles rather than the specific interactions which we commonly call 'lock and key' [like antagonist pain killers]". In other words, the nose is a general computer that take an analog signal molecule vibration, just like the eye which also takes an analog signal electromagnetic wave -light-, also a vibration.

Believe it or not, Science is filled with jealousy, much worse than reality tv shows. I think it's understandable, since these scientists spend their lives in the labs working hard yet most of the time making not so much progress. It's a tradition that new ideas get strong resistance, especially from ignorant veterans in the field. Homer explored Rage, Academia explores Jealousy. I really needed this brain-warmup, it's been almost 3 years since I graduated engineering college.

However, reading this book made me a bit sad. I like reading Art books, but imagine if those didn't come with lovely pictures of beautiful paintings discussed by the author? Even for a fine fragrance, ingredients make up only 3 percent of the retail price. This theory has been around for a number of decades but has suffered from the lack of a plausible mechanism by which it might work. The nose has this was discovered in scent receptors; these, he thinks, function as a spectroscope, each of them responding to a specific frequency of molecule, and translating them into what we perceive as a smell.

Good for him Book Review Odor Decoder. Home Page World U. He now designs scent molecules for a US startup company, Flexitral, using the scientific process described in this book. Luca Turin. Starting with a tour of the great perfumes and their gifted makers, author shows how few people have an idea of what perfume is or how it is made, let alone how smell works and what part it plays in other pleasures like food.

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