Intuition and the Quantum Nose

"***Our sense of smell could rely on the tunnelling of electrons within "receptors" in our*** *noses, claim physicists in the UK. Marshall Stoneham and colleagues at University College London have performed calculations that suggest our noses detect odour by converting molecular vibrations into an electrical current — in addition to recognizing the shapes of odour molecules.*

Now, the UCL researchers have calculated that electron tunnelling could provide the link between smell and molecular vibrations. Their work builds on a theory first proposed in 1996 by Luca Turin, who was then at UCL. Turin suggested that a receptor acts like an electrical switch that allows a current to flow when bound to a molecule with specific vibration properties. He also suggested that the switching mechanism is electron tunnelling, which is a purely quantum effect that is known to be affected by vibrations in a process called phonon-assisted tunnelling."

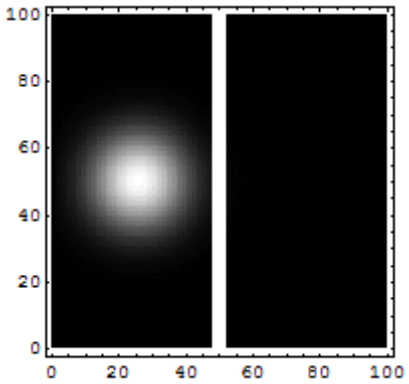
Quantum tunneling

"*What is true is that it is sometimes mathematically convenient to treat particles as behaving like points, particular in the context of Newton's Second Law and classical mechanics generally. In the past, people thought that the success of classical*

mechanics meant that particles could always and in all circumstances be treated as if they were located at points.

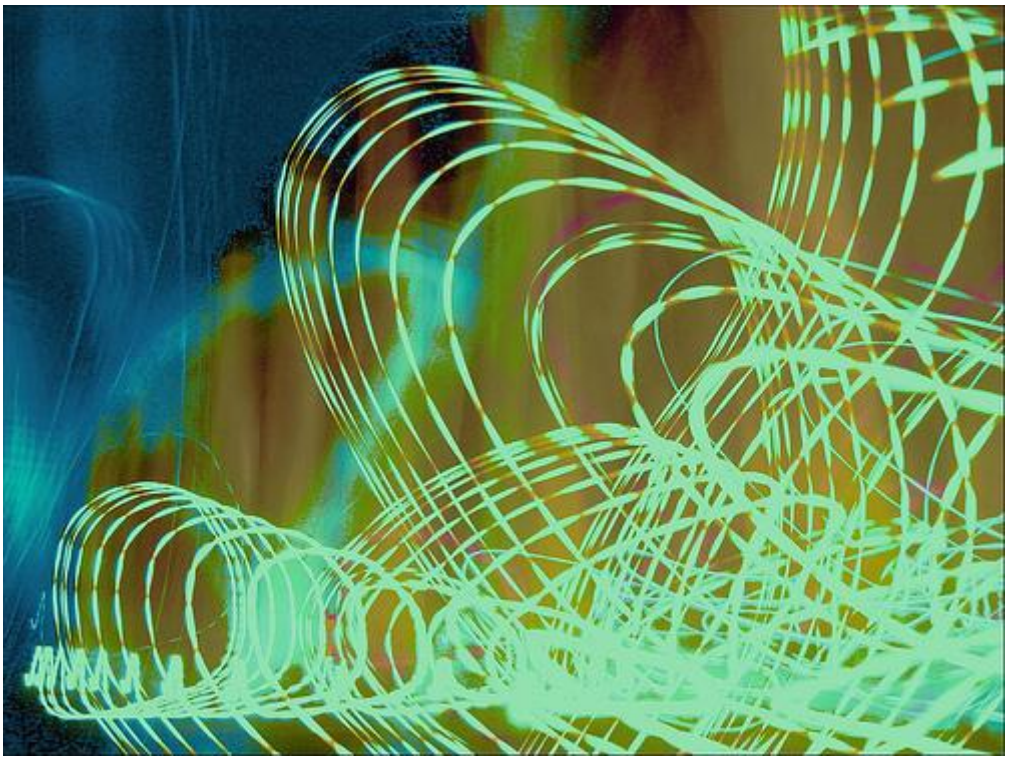
But there never was any convincing experimental evidence that this was true when very small objects and very small distances are involved, and we now know that this viewpoint was mistaken.

However, because it is still traditional to teach students early in their careers that particles behave like points, it sometimes comes as a big surprise for people to discover that it is well established that traveling physical particles always physically obey a wave-equation (even when it is convenient to use the mathematics of moving points). Clearly, a hypothetical classical point particle analysed according to Newton's Laws could not enter a region where its kinetic energy would be negative.
But, a real delocalised object, that obeys a wave-equation and always has positive kinetic energy, can leak through such a region if conditions are right. An approach to tunneling that avoids mention of the concept of "negative kinetic energy" is set out below in the section on "Schrödinger equation tunneling basics"."



Virtual Particle

"*In physics, a virtual particle is a particle that exists for a limited time and space, introducing uncertainty in their energy and momentum due to the uncertainty principle. Because energy and momentum in quantum mechanics are time and space derivative operators, then due to Fourier transforms their spans are inversely proportional to time duration and position spans, respectively.*
Virtual particles exhibit some of the phenomena that real particles do, such as obedience to the conservation laws. ***If a single particle is detected, then the consequences of its existence are prolonged to such a degree that it cannot be virtual.*** *Virtual particles are viewed as the quanta that describe fields of the basic force interactions, which cannot be described in terms of real particles. Examples of these are static force fields, such as a simple electric or magnetic field, or any field that exists without excitations that result in its carrying information from place to place.*"



Quantum entanglement

"*Quantum entanglement, also called the quantum* ***non-local connection****, is a property of a quantum mechanical state of a system of two or more objects in which the quantum states of the constituting objects are linked together so that one object can no longer be adequately described without full mention of its counterpart—even if the individual objects are spatially separated. The property of entanglement was understood in the early days of quantum theory, although not by that name. Quantum entanglement is at the heart of the EPR paradox developed by Albert Einstein, Boris Podolsky, and Nathan Rosen in 1935. This interconnection leads to non-classical correlations between observable physical properties of remote systems, often referred to as nonlocal correlations.*"

Nonlocality

"*In physics, nonlocality is a direct influence of one object on another distant object, in violation of the principle of locality. In classical physics, nonlocality in the form of action at a distance appeared in corpuscular theories and later disappeared in field theories. As action at a distance, nonlocality is incompatible with relativity. However, with quantum physics nonlocality re-appeared in the form of entanglement, where its physical reality has been demonstrated experimentally together with the absence of local hidden variables.*"

Conclusion

A good intuition or "*to have a good nose*" could also mean to that humans or animals use the above described well know phenomenas in quantum physics, like quantum tunneling, quantum entanglement, non-locality and the appearance of the virtual particles, to "smell" things from a very distant location. Intuition is not knowing, but a subconscious process to achieve information that goes beyond the normal "materialistic" five senses.

There is no contradiction to the mainstream science. As you can see, I have only quoted well known sources of mainstream science. But why do so many mainstream scientist ignores the facts? Well, scientists are only humans. And to be a scientist doesn't mean to be open minded and very talented in assembling all pieces of the puzzle.