

The Quantum before Christmas

In search of the sanity clause.

Henry Gee

Dear Children,

Thank you for your kind letter. A DVD of *The Polar Express* and the latest Gorillaz album should present no problems. We shall see what can be done about getting your father to take part in *The X-Factor*, especially given the sonorous quality of his bath-time rendition of *Unchained Melody*, although there are, as you will appreciate, issues related to surface-area-to-volume ratio. A viable velociraptor might be more problematic, especially as you already have two cats, who might object.

As to your other inquiries of a more personal nature — despite the fact that these are somewhat off-topic, these are questions that many people such as yourself ask at this time of year, and answers can (of course) be provided.

First: whether I exist. Ah, existence. This is one of those things concerning which everyone ties themselves up in horrible topological incongruities — everyone, that is, except me, if indeed it is 'me' to whom I am (self-referentially) addressing this comment. For what is 'existence' but the shadow of an impression of collapsed wave-functions? Long experience suggests that individuality is related to sentience, and with that, pain and the fear of death. At this point all inquiries can be referred to Keats' *Ode To A Nightingale* (ask your father to read this to you when you are older). Anyway, if there is no 'me', how can 'I' exist such that 'my' absence would mean anything to...er...'me'? And what do 'I' get for indulging in such existential crises? Here's what — *bupkes!* Or as the Good Book says, if there is no self, whose arthritis is this? In ignorance lies happy immortality.

In any case, if the Gorillaz CD is to be secured, let alone the velociraptor, there's no time to waste, not that 'time', like individuality, is a topic worth wasting 'time' to discuss. So let's get on with it. Oh all right, if you insist. The great thing about there being no 'me' is that people can ascribe all kinds of properties to the entity with which I am congruent, without this entity,

whoever it is, minding in the least. So let's let you into a secret — the hat and the boots are real (not that 'reality'...oh, never mind), but the reindeer are fairly recent inventions. Simple aerodynamics dictates that reindeer of the size of the conventional ungulate cannot get airborne. It's all a matter of Reynolds numbers, apparently.

Your second point — whether it is possible to visit all the good children of the world in just one night — the answer is an emphatic 'yes'. The reason is related to your first question, for the facility to achieve this involves necessary compromises in the fields of existence, individuality, time and reality. No need to discuss hypersonic shock waves and the inevitable problems of squeezing down non-existent chimneys in centrally heated houses, for it is possible to be in an arbitrarily large number of places simultaneously, because, as your father has no doubt explained, 'I' am a macroscopic quantum object. Please don't feel badly that you didn't believe your father when he explained this to you, for more experienced minds than yours have grappled with this selfsame concept. In the words of Newton: "Be here now, be someplace else later: is that so complicated?" to which can be added Einstein's corollary: "Wherever you go, there you are. Your luggage is another story."

So much is clear, but the Universe is a harsh mistress, and exacts a price for such facility. Or, rather, two. The first is that one must remain rather chilly — for at temperatures any greater than the achingly frigid, one loses even the capacity to discuss such concepts as individuality, whether or not such things apply to one's own state. You will no doubt have wondered — or if you hadn't, you should have — why you addressed your letter to the North Pole in the middle of winter, and not (for example) Florida, a place with manifest attractions to one such as 'myself' (in my traditional jolly-white-haired-grandfather avatar), and in which individuality is, in any case, neither here nor there. Ah! Even the existentially dissipated can dream. But the mince pies will be very much appreciated. And the sherry.

The second cost is loneliness. Aha, you might say, how can one who lacks individuality suffer from such a malady? 'I' don't know the answer to that either, except that after several eternities, the lack of decent conversation rather gets one down, which is why answering letters such as yours is so therapeutic. But it goes with the job — it is not something that can be shared, because it must be carried out in absolute secrecy. The consequences were anyone to blunder in on 'my' operations would be utterly disastrous, by virtue of Heisenberg's uncertainty principle. Not to put too fine a point on it, my wave-function would collapse, a sensation which

(despite all the caveats above) is probably best not experienced, and would in all probability cause a great deal of inconvenience to everyone. From this it should be clear why you must be tucked up in bed and sound asleep well before midnight on 24 December.

With the compliments of the season,
Sincerely,
pp Santa.

P.S. Don't tell your father you received this. I have already bribed the postman.

Henry Gee is a senior editor of *Nature* and wears woolly socks, size 11...just what I always wanted,

no, you shouldn't have.



JACEY