Interactive Destiny

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Abstract: Mitra demonstrates that specific memory erasure causes the individual to be in a different sector of the multiverse, one with a different destiny: events in the future, remote to any possible influence of the individual, having radically different probabilities. The concept only applies to an individual defined by a structure of information, so cannot apply to a human observer as usually defined, as the physical body-mind. However, when Everett's formulation is taken literally it is found that the functional identity of a human observer is the state of the memory, defined as the record of observations. Moreover, this structure of information defines the sole determinacy of the effective physical environment, including the body-mind of the individual. It is thus the only effective identity in the quantum-mechanical reality. Therefore in principle Mitra's effect applies to human observers.

Although this is a phenomenon effectively resulting in a change to the physical environment, it is not a physical phenomenon; but then neither is the apparent collapse of the state vector which it effectively reverses. In Everett's formulation, as in Mitra's, the individual is defined solely by the the record of observations. In both cases, the record of observations, i.e. the record of correlations with the environment, defines the sole determinacy of the effective physical environment. Thus when this record alters, with the addition of each new observation, the quantum definition of the physical environment effective for the individual alters also. The same principle operates when the individual deliberately alters the record of observations by deletion, as Mitra demonstrates.

While human observers cannot deliberately delete memories, as in Mitra's example using artificial intelligence, a similar phenomenon is constantly at work in the effective physical environment. Expectations give rise to confirmation bias, resulting in observations being filtered and edited before being added to the record of observations. If we accept Mitra's logic, this means the individual is in a different sector of the multiverse than if the observation had not been modified. In this case, the folklore of the 'law of attraction' is found to have a logical explanation in the hard science of the new physics.

1 Introduction

Mitra (2009) shows that if the record of an observation is deliberately deleted from the memory of an observer, the observer is thereby defined as existing in a different version of the world, one in which the events observed are not determinate facts. Thus in effect it is possible for observers to deliberately alter the destiny of their reality.

Mitra's demonstration of this principle is straightforward; but an obvious difficulty with this idea is that the individual is part of a physical reality. On the ordinary view of physical reality, it seems utterly absurd to suppose that physical reality can change in this manner, simply as a result of an individual performing an internal change on the record of observations. This, however, is not what is proposed. There is no change to physical reality, just as there is no change to physical reality on the making of the observation in the first place. As Everett states:

> *... it is not so much the system which is affected by an observation as the observer, who becomes correlated to the system*. (1973, p. 116; emphasis in original)

As a consequence of making an observation, it appears to the individual as if the physical world, the system, has changed. In fact, however, it is simply that the individual is now correlated with a different version of the physical world: one in which this observation has been determinately made. This is the *appearance* of collapse Everett describes.

The appearance of collapse Everett describes is in essence an information process ± the addition of the observation made to the record of observations ± and the physical attribute of the theory only comes in with regard to the correlations established, as that information process is enacted. Mitra's concept describes the reversal of that process, and the concomitant "undoing" of the correlations established with the environment. One naturally assumes that such an information process can only take place when instantiated in a physical system which undergoes the transition represented in the information process. This is basic to the current scientific worldview. This, however, runs smack into the problem of how the collapse, of which the individual witnesses the appearance, can possibly take place, in a universe where all possibilities are existing actualities "already" Here it is proposed, following Bitbol () that the only possible way for the appearance of collapse to be witnessed in such a universe is for the frame of reference of observation to pass from one actuality to another.

Mitra applies his concept to an observer defined solely by a structure of information because a physical observer is permanently entangled with the environment that gives rise to the observations made. So it would appear this cannot apply to human observers. However, taking Everett's formulation at face value, human observers are in fact of this nature.

Many minds theories address the interpretation of the appearance of collapse by identifying observers as minds. However, taking Everett at face value, it is solely the state of the memory, defined as the record of observations, that is the key identity. As Page suggests, the correct approach is

... a "many-perceptions" framework but not a "many-minds" framework. (2011, p.1).

It may seem strange that just the record of observations should form the complete identity of the individual. However, as will be shown, the implication of taking Everett literally is that all else is indeterminate, even including the body-mind of the observer. This kind of individual is simply instantiated in physical reality but not entangled with it. When the record of observations is altered, either by the making of observations or their deletion, the individual is defined as existing in a different version of the environment, determined solely by the correlations directly defined by the record of observations.

In this context, deletion of an observation means that those attributes of the effective physical environment of the individual which it defined as determinate are no longer so defined. This alters the probabilities of events in the future because those aspects of the future defined by that observation are no longer defined as determinate attributes of the effective physical environment of this individual. In this way, therefore, the individual can interact with, and deliberately alter, the apparently immutable future of the reality, the destiny, even with regard to remote events which the individual could not possibly influence directly.

For all that, deliberate deletion of of memory is still not possible because the brain stores information in a distributed holistic manner with a high level of redundancy. What does take place in the human observer, however, is modification of observations before they are experienced and added to the record of observations.[1] This results in the individual being defined as existing in a different sector of the multiverse, one in which this observation was ©genuine© These modifications are produced by confirmation bias, with the result that the observation is edited to be more in accord with expectation. Thus observations confirming expectations are added to the record of observations, and form part of the definition of the effective physical environment of the individual. The net result is that the expected situation, or type of situation, becomes increasingly likely to be observed in reality.

Visualisation of desired outcomes increases expectation of the visualised situation. If we accept the logic as presented thus far, we are forced to concur that in effect, visualisation of desired outcomes results in the visualised situation being more likely to be observed in the reality of the individual. As will be shown, the net effect of persistent visualisation is to induce a strange attractor for the objects of the visualisation. Thus it would appear that the myth of the ©law of attraction©is not without foundation, however tarnished the idea may have become by the many ludicrous explanations offered for its efficacy.

2 The Quantum Concept of Time

Mitra©concept readily makes sense in the light of the quantum concept of time, as explained by Deutsch (1997, pp. 258-287). The quantum state of the physical environment defines what Deutsch refers to as a snapshot, a definition of the physical state of the universe. The unitary

1 As long established in psychology, the unconscious is an active information processing structure, which carries out high level prioritising and many other functions, including displaying a type of intelligence (Lewicki et al. 1992), outside of conscious awareness. Such phenomena have been clearly demonstrated in psychology (Hasher & Zacks, 1984) and even neuroscience (Hirsch et al. 2004).

wave function defines all possible such snapshots, all possible versions of the universe, each one defined by a specific quantum state. As he explains, given that a snapshot is one version of the physical state of the universe, the multiverse is something akin to the totality of all possible snapshots.

The central point is that all such snapshots simply exist: nothing moves, nothing changes within a snapshot, and nothing passes from snapshot to snapshot. The multiverse is a static array of static snapshots. Everett's formulation, however, defines the effective transition of the frame of reference from one snapshot to another.

With respect to the individual in Everett's formulation, each snapshot is defined solely by the record of observations. The addition of a new observation to the record defines the individual as existing in a different snapshot, on in which this observation has been determinately made. One of the philosophical conundrums of the quantum concept of time is that the entire system is static, which means that such an addition cannot possibly take place. However, a transition of the frame of reference from one snapshot to the next gives rise to exactly this effect, in experience. Thus there is the appearance of collapse exactly as Everett proposes, even though the multiverse is static.

The mechanism for such a 'movement' in the frame of reference is not addressed in physics because it is literally, by definition, meta to the physical. It is for this reason that Bitbol holds that 'Mind', the "... pure knowing subject" (1990, p. 6) has to be added to our epistemology. Supporting evidence for this position is presented elsewhere (Soltau, ¼)

3 Undoing Observations

In this context, the making of an observation can be effectively 'undone', as Mitra (2009) demonstrates. He considers an individual seeing the news of the unavoidable, impending arrival of a hitherto highly improbable global catastrophe, a huge asteroid hitting his planet. This correlates the individual with the version of the world in which this is the destiny. He defines the individual as a machine intelligence, so that deletion of the record of this observation from memory is straightforward.

The deliberate deletion of the record of this observation alters the definition of the individual, who is thereby defined as existing in a different sector of the multiverse, a different snapshot, one in which this observation has not been determinately made. In effect this is an 'undo' of the observation. As a result, the terrible destiny of the impending global catastrophe returns to background probability. This does not mean that the passage of time runs backwards or that any physical property of the environment changes. It means simply that the correlations record of the individual returns to a state in which this specific observation has not been determinately made: thus the individual exists in a sector of the multiverse where the catastrophe has only a background probability. As Mitra states:

> ... memory erasure can cause one to end up in a different sector of the multiverse (2009, p. 1)

This is oversimplified[2] but the key point is that the two different sectors of the multiverse are two different snapshots, two different quantum mechanical states of the universe, with different destinies. The making of the initial observation changes the definition of which snapshot the individual is defined as existing in, to the one with the catastrophic destiny. Deliberately deleting the observation is effectively an undo of the observation, resulting in a return to the original snapshot and the original destiny defined by that quantum state, with a very low probability of catastrophe.

4 Everett©Functional Identity

The process Mitra defines cannot apply to a human observer as usually defined, as physical body-mind. However, Everett obliquely defines the functional identity of the observer as the state of the memory. He defines the state of the memory as the record of sensory data and machine configuration ie the record of observations of the external world and the internal state. He defines observers as:

> ... automatically functioning machines, possessing sensory apparatus and coupled to recording devices capable of registering past sensory data and machine configurations. ¼ If we consider that current sensory data, as well as machine configuration, is immediately recorded in the memory, then the actions of the machine at a given instant can be regarded as a function of the memory contents only, and all relevant experience of the machine is contained in the memory. (1957, p. 457)

It is thus the content of the memory which alone defines the decision-making capability. This, therefore, constitutes the functional identity of the observer.

Naturally, we take this to be simply one attribute of the physical entity that is the observer, the body-mind. However, if we follow the logic of quantum theory all the way, it is only that which is defined by the record of observations that is determinate; and this includes the body-mind. The multiverse of all possible versions of the universe includes a very large number of identical copies of the record of observations of a specific individual: there are many slightly different versions of the world that include a specific version of the record of observations of an individual. All these versions are coincident, existing in the same space-time. Thus one can sell consider that there is only one such structure of information, which exists simultaneously in all of these versions of the world. From the perspective of the frame of reference of this structure of information alone, all these worlds are therefore superimposed. This is an intuitive form of this concept; a formal argument based on the work of Mitra (2012) is given elsewhere (Soltau, 2013).

Following this line of thought, each individual is defined solely by the record of observations, the state of the memory. Thus the functional identity is effectively the only operational identity that truly exists. It is important to note that this structure of information is not just an important

2 The intervening period would have to be defined. However, if the AI adds by *replacement*, over-writing the record by that of a bland intervening period, the simple example presented is effected exactly.

part of the mind of the individual, but is in fact the experiential reality of the individual. The human observer formulates the record of observations as a holographic field of information representing the real world, that is projected out onto the space of the world. Thus the record of observations is in fact the known world of the individual. This ©world hologram© is what each individual knows as reality. The self-concept is also part of this world hologram, this is the avatar figure one knows oneself to be, at the centre of the perceived world. This is described in detail elsewhere ().

The record of observations is the functional identity of the individual, and this is formulated as the holographic representation of reality with which each individual is deeply familiar, including at the centre the representation of oneself, the self-concept. The functional identity will be referred to as the individual, while the term observer will be reserved for the physical apparatus, in humans the body-mind. The functional identity is a structure of information, and thus Mitra© concept applies to the individual defined in this way.

5 The Inside View

In one sense it is completely impossible for a human being to utilise Mitra© principle: it is not possible to deliberately delete a specific memory. Thus it is not possible to neatly remove one observation from the record of correlations. However, the basic principle of interacting with destiny is in operation all the time, in a manner of which we have been completely unaware. Every observation adds a new correlation to the definition of the determinacy of the effective physical environment. However, because of the way the reality of the individual is defined, when observations are distorted or edited there is a corresponding distortion in the definition of the effective physical environment of the individual.

Confirmation bias is the manner in which observations are distorted in the mind, so to mitigate or eliminate dissonance, the discomfort that arises when observations clash with expectation. From the ordinary point of view, this simply induces a distortion in how this person views what has happened. However, with respect to the reality of the functional identity, the result is astonishing because the distortion is effected before the observation is experienced and added to memory. Thus it is the distorted observation that defines the correlation with the effective physical environment.

Here there is a vital distinction to be made between the inside and outside views of the reality. Tegmark explains this contrast succinctly:

> I find it useful to distinguish between two ways of viewing a physical theory: the outside view of a physicist studying its mathematical equations, like a bird surveying a landscape from high above, and the inside view of an observer living in the world described by the equations, like a frog being watched by the bird.
>
> From the bird perspective, Everett's multiverse is simple. There is only one wavefunction, and it evolves smoothly and deterministically over time without any kind of splitting or parallelism. The abstract quantum world described by this

> evolving wavefunction contains within it a vast number of classical parallel storylines (ª worldsº), continuously splitting and merging, as well as a number of quantum phenomena that lack a classical description. From their frog perspective, observers perceive only a tiny fraction of this full reality, and they perceive the splitting of classical storylines as quantum randomness. (2007, p. 3)

On the outside view, the wave function is the only definition of reality. Decoherence operates within this reality to produce classical worlds, Tegmark©inside views. However, what one might term the real inside view is the reality of the world hologram. On this view, the effective physical environment is determinate only where defined by the record of observations; and thus the reality is as defined by the distorted observation. As a result, this individual exists in a sector of the multiverse where the events portrayed by the distorted observation are determinately the case.

6 Strange Attractors

If this effect is in operation, it is likely to be cumulative: the system would tend to produce a positive feedback loop. Any observation confirming an expectation is likely to increase the expectation. This is a purely psychological phenomenon, but the first knock-on effect is that confirmation bias is likely to be strengthened. At the same time, with each biased observation added to the correlations record, the effective physical environment of the individual more and more defines versions of reality in which the expectation is likely to be met. Thus, bizarrely, a tendency in the bias of the observations produces a tendency in the effective physical environment of the individual. In effect, expectations act as strange attractors in the effective physical environment of the individual. Examples illustrating the effect are given in the appendix.

If this effect does take place, it should be possible to initiate it deliberately. If one can induce an initial expectation, sufficient to cause confirmation bias, a positive feedback loop should be induced. Visualisation tends to induce expectation, thus visualisation could be used to initiate a feedback loop of this nature. Even if the initial expectation was quite muted, the positive feedback loop would tend to amplify it; and the moment the process gets started the bias on observations begins to produce a tendency for evidence from reality that supports the expectation.

Naturally, ordinary reality is a busy, random environment, thus all kinds of other effects are likely to be at work. This would explain why it is usually necessary to persevere with visualisations. The objective would be to continue to initiate confirmation bias as best one could. Once the positive feedback loop is engaged, the system would be more and more self-perpetuating until the expectation was fulfilled. It would seem that this would provide a rationale for the effectiveness of visualisation, in effect, on one©reality.

7 Conclusion

Naturally, it is not possible to change the destiny of physical reality: by definition destiny is that which is not changeable. In effect, however, on the inside view, exactly this is possible.

As Barbour (1999), Deutsch (1997) and Woodward (1996) demonstrate, the quantum universe is static: every possible space-time configuration of matter and energy exists timelessly, @already© each one a snapshot of the state of the physical universe. This is directly at odds with the subjective experience of individuals: subjectively, meaning simply in experience, the universe changes all the time. Taking the quantum theory in general, and Everett (1957) in particular, at face value, this changing, the appearance of collapse, is a purely subjective phenomenon, meaning it takes place only in experience.

The experience of making of an observation, the experience of the addition to memory of the five-sensory structure of information representing the observation of the physical environment and the internal state, is the experience of the change of the sector of the multiverse in the frame of reference of observation. This is the appearance of collapse described by Everett.

In this context, the @undoing©of an observation, and the concomitant change to the quantum state of the effective physical environment, is in principle a possibility, as Mitra demonstrates. Applied to a high functioning machine intelligence capable of performing such an operation it is straightforward. By deleting the record of an observation, such an individual is thereby present in a different sector of the multiverse. The reality of the future events it wished to avoid is now only a background probability, and the destiny of this sector of the multiverse is very much more the one it wanted. Interaction with the destiny has been effected. Naturally, this is a purely subjective phenomenon, and occurs solely in the change of the frame of reference of observation. This is not a physical process in the ordinary sense of the word, in that it is not a process in the time evolution of the physical in the linear dynamics defined by a specific quantum state. It is the transition to a different effective quantum state of the physical environment, and the resulting individual is thereby defined as existing in a different sector of the multiverse.

It appears that any interactive destiny phenomenon is entirely untestable, and non-falsifiable: the operation is only successful to the extent there is no evidence. It is an alteration to the observations record which is only effective if there is consequently no record of the alteration. The undoing of the effect of an observation, for instance, is only effective to the degree there is no record of that undoing. Any record or evidence that one might have made a deliberate deletion would define one as existing in the origin sector of the multiverse, having made that deletion for some reason. As Mitra states:

> Assuming the validity of the MWI, we are forced to accept that by resetting the memory to a previous state, the reason why the memory was reset is no longer determined. (2009, p. 4)

This is, therefore, a purely philosophical proposition. Nonetheless, the properties of the reality experienced which hinge on it are perhaps as significant as can be imagined. The individual is of such significance in his reality that if a visualisation of possible events can be formulated and

maintained as an attractor, this would tend to influence the global state of the personal system to a realisation of the visualised version of reality. It seems a fruitful area of investigation, especially as attractors of this nature would account for the efficacy of non-physical healing.

Appendix

In the human observer, the formulation of observations in the mind is subject to filtering and distortion as evidenced by the effect of countless optical illusions. Additionally, in this internal system, the meaning and weight of observations is assigned with a largely subjective bias, and is variable. When an observation of a particular event or type of event has a high positive reward, the bias will tend to adapt observations to fit this mould. This is confirmation bias, and it is evidenced whenever one sees something one expects to see, which subsequently turns out to have been classified in error. The key point here is that such distortions happen within the context of the body-mind, the final measuring instrument, and only the filtered and adapted observation is added to the correlations record @upstream@ of the cut in the von Neumann chain. In this context, such a bias would tend to produce a positive feedback for such observations, not only at the psychological level but also at the level of the quantum state of the effective physical environment.

At the psychological level, a strongly anticipated future will tend to get more and more confirmation. Events which might or might not confirm this expectation coming to fruition will be biased in its favour. As a result, with each biased observation, expectation is enhanced, and this positive feedback effects an attractor. This effect, however, is purely psychological, meaning that future observations will be more and more likely to be considered to be confirmation of the expectation. This is an attractor in the psychological sense: it is attractive to think about and believe as real, and this encourages the individual to believe in it. It operates *in* the ordinary physical reality of the observer, as a result of the progression of the standard logic of ordinary psychological mechanics in the linear dynamics.

At the same time, each biased observation alters the correlations record defining the determinacy of the effective physical environment. This identity is now defined as existing in a universe superposition including both worlds in which this observation was the result of bias and filtering in the body-mind, and those in which it was unbiased. Thus the net result is a bias towards the definition of a physical environment in which such an observation was made naturally, for if the observation had not been biased, none of the worlds in which this observation had been made naturally would be included in the universe superposition.

A mild version of this kind of bias is presented by an individual who buys a new car on impulse, but then wishes to reduce the dissonance reduction of a spontaneous action subsequently seen as over-impetuous. For instance, a minor problem with the new car will not be counted as the car being unreliable, whereas with the old car that @needed replacing@ it would have been. Similarly, a report in the newspaper that new cars tend to be more reliable than cars a

few years old will be taken as evidence that this car is more reliable than the previous one would have been, which may or may not be true in fact. As a result, with each biased observation, the individual obtains more and more confirmation that the expected and wanted reality is the case. The more reliable the car turns out to be, the more the individual believes in its reliability. The wanted situation is an attractor in the mind. It is a state towards which the mental state tends to gravitate. This is all part of a perfectly ordinary psychological process.

As a result of this process, however, quite a different kind of process occurs in tandem. For instance, if this car buyer is reading an article about his kind of car in the paper, and the first part of the piece is about how well designed it is, but in the second part it is mentioned that a very peculiar and improbable blend of circumstances in the manufacture makes the car quite unreliable. Unconsciously, certain key words in the second part of the article make him feel somewhat uncomfortable, and on some minor distraction he puts down the paper and never gets around to finishing the article. Had he been looking for a reason to replace his car, the second part of the article would have drawn his attention. As it is, the opposite is the case. He puts down the paper, happy that his is one of the best designed, and thus most reliable cars ever made, because Obviously that is the implication. What is truly remarkable is that because of this, he lives in a version of the universe where his car is highly reliable. Objectively, in the reality in which that article was written, his car is liable to suffer from this problem. But subjectively, on the inside view of his reality, this specific version of reality is one of a very large number of versions of the universe in which he exists; and in most of them his type of car has a very high level of reliability. And in those versions of reality, one can well imagine, the second part of the article went on to say that it is so reliable because it is so well designed. On the inside view, he lives in the superimposed sum of all of the versions of reality in which he owns a car that looks like his. In the majority of them, it is highly reliable. Just as with the sudden change in the fate of the individual in Mitra's example, were he to have read in the second half of the article that his car was quite unreliable, he would have thereby been defined as existing in a version of the universe in which this was determinately the case.

For a situation of greater significance, one can consider the Krebiozen case (Klopfer, 1957). An individual swiftly recovered from advanced cancer on taking an exciting new experimental drug called Krebiozen. In retrospect this recovery turned out to be a powerful example of placebo, for when articles appeared saying that Krebiozen actually had no effect on his kind of cancer, he immediately suffered a complete relapse. His doctor, taking the previous strong placebo effect seriously, injected him with water but told him it was a newer, revised, fully working version of the drug. As a result, the patient swiftly recovered and was completely free of symptoms for several months until he heard that the drug had now been found to be completely ineffective, and he died within two days.

These events can be seen as evidence of the effect of a strange attractor in the effective physical environment of the individual. The new drug had received sensational national publicity as a cure for cancer, and the individual was absolutely convinced that it would work. This defined him as present not only in the version of the universe where the drug turned out to be useless, but also in versions where a drug of the same name was highly potent, and had received positive publicity on a sound basis.

Utilising the form set out by Mitra, in the frame of reference of the individual, or indeed any typical version of this individual, the state of the rest of the universe can be expanded in the form:

$$| U_{initial} \rangle = a \, | \text{Drug Effective} \rangle + b \, | \text{Drug (not) Effective} \rangle \qquad (7)$$

This individual had the same confirmation that the drug was effective as the machine intelligence had that a catastrophe was imminent. In the reality of the world in which this drama ended in the death of the individual, this drug turned out to be ineffective. This, however, does not mean that this is the case in the version of reality of this individual at the outset of the story. In his version of reality, given his absolute conviction that the media presentation was correct, he was defined as existing in a version of reality where the majority of the versions of reality in which he existed were ones in which this drug was, for whatever reason, effective. In effect, his absolute conviction that the drug was effective defined him as correlated with the versions of the universe in which this was the case.

Provided his conviction was sufficiently powerful that the appearance of symptoms were screened out before reaching the experiential reality, he would remain healthy not only in versions of the universe where this was the case but also in versions of the universe in which it was not, but in which minor symptoms could be filtered out in this way. Provided he continued to live in an experiential reality in which he developed no symptoms, he would remain correlated with versions of the universe in which a drug of this name was highly effective. That version of him, correlated with versions of the effective physical environment in which the drug was effective, would, in other versions of reality in which he nonetheless managed to retain a presence, be constantly making a miraculous recovery from the proto-symptoms developing in his body but not reaching conscious awareness.

On making the observation defining the drug as useless, the version of him making that observation is determinately defined as being the the version of the universe defined as

$$| U_{initial} \rangle = | \text{Drug (not) Effective} \rangle$$

and the filter previously in effect is immediately ineffective. The illness takes its course.

By injecting the patient with the supposedly ©new, revised, genuinely effective version© of the drug, the doctor provides the experiential reality of the patient with an observation correlating him once again with a version of the universe in which this drug is strongly effective. The filter is also restored. The patient enjoys good health until the observation is made that there is no effective version of the drug in his version of the universe. Determinately defined as existing in solely in versions of the universe where he has a terminal disease and with no effective cure, this version of the individual, the one in ©our© reality, promptly dies of the illness.

The obvious sceptical response is that his body was in ©our© world, in which the drug was in fact ineffective all along, thus some physical factor must have been in effect in this version of the universe. Firstly, the whole concept of ©our© world is based in the old worldview, and it is just this worldview which renders the quantum mechanics incomprehensible. In other words, there is no such thing. Every individual©s world is a unique blend of all the versions of physical reality in

which this state of the memory is instantiated. Secondly, to posit a physical placebo of such dramatic effectiveness in the absence of any trace of such an effect, despite decades of intense broad-spectrum research into the illness, is by definition somewhat unrealistic. If the concept of placebo as a strange attractor, operational on the interface between the experiential reality and the effective physical environment of which it defines the determinacy holds water, it seems a very much more scientific explanation.

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