**UNBELIEVABLE similarities between Boge’s ideas (2019) and my ideas (2002-2008) on quantum mechanics**

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In this paper I investigate the UNBELIEVABLE similarities between Boge’s ideas (2019) and my ideas… The author wrote his paper in an UNBELIEVABLE similar framework to my EDWs perspective! Many of his ideas are UNBELIEVABLE similar to my ideas from 2002-2007!!!

(2019) Florian J. Boge, The Best of Many-Worlds, or, is Qantum Decoherence the Manifestation of a Disposition? (\*This is a pre-print version of an article accepted by Studies in History and Philosophy of Modern Physics. The accepted version includes minor changes.) (p. 1)

So according to the quantum

formalism (read dispositionally), both these dispositions will manifest at the same time. This is

problematic, as we retrieve nothing but a many worlds-story with a dispositionalist touch, and

all the problems associated with probability remain. (p. 9)…..

Now recall, \_rst of all, that while decoherence does not lead to a proper collapse, it at least

selects a preferred basis and thereby reduces the system’s “dispositional freedom”, if you will.

Since basically any old interaction will induce such reductions, this leads me to the following

“\_rst axiom” for a dispositionalist analysis:

(DA1) Only perfectly isolated systems instantiate collections of entirely nonmanifest

dispositions. Any interaction will impinge on the non-manifestness. Ambiguity

due to the possibility of basis changes indicates that the system has dispositions

w.r.t. values of all measurable quantities, even non-comeasurable ones.

[the author has already moves within a different framework than the unicorn world, different than Everett’s many worlds, but UNBELIEVABLE similar to my EDWs! DA1 is UNBELIEVABLE similar to my rules that refer to EDWs!!!]

Since (selective) measurements on a decohered state will, however, unambiguously indicate

one out of the many values the system is disposed to exhibit, only one of these dispositions must

have been ampli\_ed so much as to become detectable. The remainder, in contrast, can only be

present ‘latently’, to borrow Margenau’s term; but it must be still so present, as evidenced by

recoherence. Hence thinking, say, of “spin up” and “spin down” along some direction as CMDs,

this means that “spin up” might be manifest to a high degree, under suitable environmental

conditions, but that “spin down” would be manifest at the same time, albeit to a far lesser

degree. (p. 10)

(DA3) In the manifestation process represented by the decoherence mechanism,

only one out of all the manifesting dispositions will manifest dominantly, and the

Born probabilities quantify each disposition’s tendency to do so. The remainder

will become e\_ectively latent, thereby not contributing to observable behavior. Decoherence

factors quantify the tendency for swaps in dominance, which becomes

almost negligible for most larger systems after very short times. (p. 11)

[again, another rule UNBELIEVABLE similar to my main principles that apper in my work 2006 and mainly in 2008!!]

3.1 Minds andWorlds

The foregoing considerations lay a reasonable foundation for an interpretation of decoherence

in terms of dispositions. However, the fact that the dispositions involved in some quantum state

will all manifest to some degree, on my account, makes it still unpleasantly reminiscent of a crude version of the MWI. As in the MWI, the entire content of a decohered state is not merely

possible but somewhat actual. And there will be a loss of interference, so that the di\_erent

dispositions may be said to be “branching”, in a loose manner of speaking. But the thing that is

missing for my dispositional account to collapse into the MWI is the association of additional

consciousnesses with those dispositions that become e\_ectively latent.

To see the point more clearly, let us brie\_y assess the role of consciousness in the MWI.

Maybe the most detailed assessment of this issue is Albert and Loewer (1988, pp. 206-7), who

introduced the many minds view of the MWI: ‘every observer[...] has associated with it not

a single mind but rather an in\_nite set of minds’, and the Born probability, derived from the

squared modulus of a coe\_cient of some state in a superposition, ‘is a measure of the “proportion”

of minds’ associated to that very state.

Now Albert and Loewer’s original proposal did not take notice of decoherence yet, but Lockwood

(1996, p. 185; original emphasis) believed that the stability of the pointer basis might

answer the question ‘why consciousness and perception should favour the states that they do.’

Zeh (2000, p. 226; original emphasis) similarly writes that when decoherence (and branching)

take place,

[i]t is not the real world (described by a wave funtion) [sic] that branches in this

picture, but consciousness (or rather the state of its physical carrier), and with it

the observed (apparent) “world” [...].

And Wallace (2012, p. 3; original emphasis) equally describes the MWI with decoherence as

both a many-worlds and a many-minds theory, in the sense that it entails that

there are a great many versions of myself, living in surroundings much like my

own and interacting with other versions of yourself, elsewhere in physical reality.

But there is a certain problem associated with even this many minds view, in the decoherence

based version appreciated by Lockwood, Zeh, andWallace. This problem is that the “branches”

of the “mutliverse” are never really separated, but will always (weakly) overlap. The conscious

states associated with actual observations, however, do not overlap at all—I simply do not feel to

have perceived “spin down” the least bit when my spin measurement clearly reveals “spin up”.

Consciousness, in other words, will have to “cut o\_” the branches in a way that decoherence

strictly never does.

So states of consciousness will have to be added to the MWI, as they cannot be identical

with any of the (always slightly overlapping) physical states, and Albert and Loewer’s verdict

that ‘any many worlds interpretation which respects’ that agents can correctly access and

report their own beliefs ‘will be committed to some form of non-physicalism’ (1988, p. 206;

original emphasis) seems entirely correct. This invalidates a central virtue of the MWI, ‘that it

purports to explain how to make sense of quantum theory without adding extra equations or

interpretational postulates.’ (Kent, 2010, p. 311) But consciousness thus also receives a rather

central role for the MWI, as it is only in relation to conscious experience that the “apparent”,

“non-overlapping” worlds exist; those worlds in which we gather all evidence for QT and decoherence,

after all. (pp. 11-12)

[again, UNBELIEVABLE similar ideas to my ideas! For instance, the expression the “branches”

of the “mutliverse” are never really separated, but will always (weakly) overlap mirror EXACTLY my EDWs!!!!]

The problems with this single mind view are numerous, for instance that as long as one

assumes that ‘when A sincerely reports that she has a de\_nite belief about the value of x-

spin[...] then A does believe that the x-spin has a de\_nite value’ (Albert and Loewer, 1988, p.

205), it implies that ‘mental states do not even supervene on brain states [...] since one cannot

tell from the state of a brain what its single mind believes.’ (Albert and Loewer, 1988, p. 206;

original emphasis) And it equally creates the ‘mindless hulk problem’, namely that ‘[i]f I embark

on what I take to be a conversation with my wife, how would I know, on this view, that there

was really “anyone at home”?’ (Lockwood, 1996, p. 175; original emphasis)

My dispositionalist assessment of decoherence is di\_erent in that I have assumed only one of

the dispositions to become ampli\_ed over the others for all conscious observers. In this way,

consciousness may supervene on the brain states (it is associated only with the dominant ones),

there will be no mindless hulks (every conscious biological organism has a conscious mind,

associated with its dominantly manifest dispositions), and, as I have explained, consciousness

does not play any fundamental role in the interpretation of the theory. (p. 13)

[obviously, we are within the EDWs!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!! UNBELIEVABLE similar ideas to my ideas 2002-2008!!!!!]

3.2 Spooky Manifestation at a Distance?

Basically, there are three main options for a causal account of the situation (e.g. Suárez, 2004;

Näger, 2016): (i) the outcomes directly in\_uence each other causally, (ii) the distant setting (of

the measuring device and environmental conditions) causally in\_uences the local outcome, or

(iii) there is a (hidden) common cause for the correlation.

Now as regards options (i) and (ii), a result by Näger (2013) suggests that dependence on both

settings needs to be assumed to avoid the derivation of a Bell-type inequality. This is unproblematic

in principle for the dispositionalist: The local environment, featuring also the “setting

conditions”, will obviously \_gure in the local manifestation; and that the remote environment

will apparently exert an in\_uence as well has already been acknowledged. Nevertheless, the

causation would be superluminal, and hence imply daunting consequences like the in-principle

possibility of causal loops.

Option (iii) has been suggested e.g. by Mittelstaedt (1998) and Näger (2016). While Näger

(cf. 2016, p. 1148) appeals to the traditional collapse-vocabulary,14 Mittelstaedt (1998, p. 158;

emphasis added) allows that ‘the environment acts – as a common cause [...] – and provides

simultaneously the objecti\_cation’ of two spin observables’ values along the same axis and on

opposite arms of the experiment. (p. 15)

Long story short: if we think of the relation between the two manifestation events

as causal, this would violate the causal constraints implied by the relativity theories and the

probabilisitic-causal constraints of standard accounts of probabilistic causation.

There is a recent proposal by Gebharter and Retzla\_ (unpublished) that I believe can be

exploited to remove the tension within the parameters of my dispositionalist account. Gebharter

and Retzla\_, namely, suggest that correlations like these could be understood in virtue of

‘common cause triggered non-causal dependencies’ (their pp. 26 \_.), i.e. that there is a common

cause of the two correlated events (something which brings them into existence), but that the

correlation is explained not in virtue of this common cause, but rather in terms of a nomological

connection between them.

This idea can be put in the service of my dispositionalist account as follows: while the interaction

with the environment causes the two systems’ dispositions to manifest, the precise

dynamics of states, amplitudes, and associated probabilities are then determined purely by the

interaction Hamiltonian, i.e. nomologically. Which dispositions will manifest with what frequency

in repeated trials is \_xed by the Born rule, i.e. nomologically as well. In this sense the

quantum correlations are triggered by a common cause (the environment) while being determined

by laws of nature (the unitary dynamics and Born’s rule, read in terms of propensities).

So no ‘spooky actions at a distance’ (Einstein, 1947, p. 157; emphasis added) after all. (pp. 15-16)

[words by words UNBELIEVABLE similar ideas to my ideas!!!!]

Notably, there is now no problem with special relativity on any level anymore, insofar as the

relevant interaction (given by some Lagrangian) is Lorentz covariant: the correlation is ensured

by a Lorentz covariant law and triggered by the dispositional pro\_le of the joint quantum state.

The state in turn acts as a common cause of there even being any measured values in the \_rst

place, which lies in the join of the past light cones of both detection events. (p. 16)

[I applied my EDWs to Einstein;s special relativity in 2014!!!! And even earlier…]

In this paper I have provided an interpretation ofQT and decoherence in terms of the manifestations

of dispositions, thereby building on ideas that date back to Heisenberg’s early interpretive

e\_orts. My main suggestion was that decoherence should be understood in the sense of a mutual

manifestation of dispositions in virtue of the interactions between the systems they pertain

to. This manifestation would be gradual, in the sense of Hüttemann’s CMDs, which allows that

systems can be literally more or less localized, and have a more or less de\_nite momentum at the

same time. To read the formalism somewhat literally (and not introduce a collapse postulate

after all), I introduced the notion of dominant manifestation, which would mean that all values

of some observable would manifest on a system in consequence of a suitable interaction, but

that only one of them would become ampli\_ed to such a degree that it would lead to observable

behavior. The remainder I referred to as e\_ectively latent. The Born rule-weights I took to

quantify the strength of a disposition’s tendency to become dominantly manifest. One might

think of this in terms of a resource (‘actuality’) for which the values compete, in such a way

that shares will be distributed unequally.15

My account has several merits: Unlike some other realist interpretations, it appreciates the Born rule right away, but does not have to reserve a special role for consciousness. It can make

sense of observation, including such things as recoherence, while allowing that minds may

supervene on brains and avoiding such things as mindless hulks.

However, some drawbacks or open questions remain: There is nothing in the formalism

which corresponds directly to the selective ampli\_cation at stake; this is gathered rather from

our successful practice of using the Born probabilities, and the experience of single outcomes.

And there is the murky business of non-local in\_uences, which haunts most realist interpretations.

This can be dealt with by viewing the relation between the correlated outcomes as

nomological, not causal; but strictly speaking, this in turn implies the need to provide an account

of the laws of nature compatible with a non-causal reading.

I do not think that these are fatal \_aws or insurmountable di\_culties. Hence I suggest that

a propensity-interpretation along the lines suggested above is an option that deserves more

attention than it presently enjoys. (p. 16-17)

[Obviously, UNBELIEVABLE similarities to my EDWs no more or less!!!!!!! It is about “correlations’ (in my term, “correspondence”, between EDWs!!!!!!! IS IT CLEAR?????? It seems as if Boge were writing thihs paper under my EDWs!!!!]