

INSTITUT
DES HAUTES ÉTUDES SCIENTIFIQUES

35, ROUTE DE CHARTRES
91440 BURES-SUR-YVETTE
907.48.53 59.77 59.47

SEP 26 1979

19 September 1979

Over pers file
B DE WITT

Dear John,

Just a quick response to your short note.

There is nothing in Bohr's description that is not contained in Everett. Everett, however, would amplify Bohr's statement. When Bohr says that an elementary act of measurement (or quantum interaction or what have you) is "brought to a close by an irreversible act of amplification," Everett would add that the process of one "world" splitting into many is simultaneously brought to completion. Everett in fact delves deeper by pointing out that nowhere does Bohr give a rigorous definition of "irreversible" or make a distinction between "irreversible in practice" and "irreversible in principle." Some might say that therein lies Bohr's strength, that the distinction has no operational significance. Everett suggests (and I believe) that it is a mistake to transform the wonderful lessons that Bohr has taught us into points of dogma. The history of physics has taught 1. that one should never be dogmatic, 2. that one should never hesitate to push a formalism to its ultimate logical conclusions however absurd.* In the

* Some well known absurdities: The negative energy states of the Dirac equation. The infinite level shifts of quantum electrodynamics. Black holes.

WP - Section II - Box De - Bures D. Witt, B.

case of the formalism of quantum mechanics one cannot say that the interferences are there at one moment but gone the next. All that Everett is really trying to say is that the interferences are in principle always there. As David Deutsch so aptly puts it: "Quantum theory is the Everett interpretation." The theory may ultimately be proved wrong, but at the present time you cannot have the one without the other.

Kindest regards,

Bryce