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↑ A COFFEE HOUSE

LEIDEN, SAT AM
26 MAY

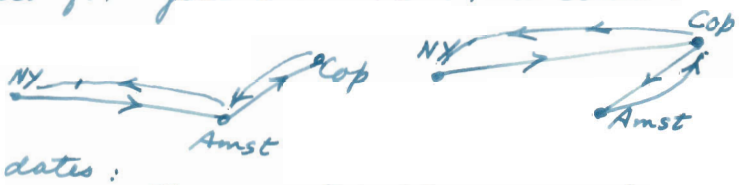
Dear Hugh:

I am sending in a few minutes this

Cable: Niels Bohr
Physicum
Copenhagen
Everett now Princeton phoned asking
confer with you. Hopes fly almost immediately
but must return midjune. Could you cable
him if inconvenient. My great hope thesis
suitable Danish Academy publication after
revision Have answered Stern. Regards
John

It is well for you to tell me and Bohr you have to return 15 June but I hope to goodness you keep open the ~~possibility of st~~ necessity to stay until the battle is won. I would prepare WSEG for this.

~~Pls~~ I hope very much you will stop here coming and going as you can without extra cost if you travel KLM. I am quite prepared to believe SAS will do this much for you at no extra cost: but KLM will do this



My dates:
Free coming week except for lecture Tues am May 29 and seminar Wed night and a 1 hr apptmt 11-12 am Sat. Leave Sun night June 3 for 4 days England back Fri am June 8. from Sat. afternoon June 9 to Sun. afternoon June 10 am attending a physics meeting. Back here late Sun June 10. Here until Sat June 16 when am going on weeks sailing trip with children newly arrived from U.S. Then here continuously.

cut here ↓

Here is a note to give Mrs. Pratt: ← MBP - Could you please handle as promptly as E. needs

Mrs. Pratt - This is to authorize and request the university to disburse $260 from the Elementary Particle Research fund for part payment of Hugh Everett's expenses to come to Amsterdam and Copenhagen to confer with Bohr and me on his work. - John A. Wheeler. 26 May 1956

A. Peterson - Paradox outlined by Everett.

Distinction between Bohr way & the 2 postulate way to do q. mech.

Ever analyze paradox à la Copen? See Bohr's papers. How extend system under investigation?

If QM description of measuring tool prevents its use as a meas. tool

Complexity of human being - exclude by psycho phys. parallelism

A.P. says more cautious to deal with spots on plate, forget the brain side. Then do sharpen up to everyday issues - more immediate. Lucky thing that how we see spot doesn't matter. Everett ought to reform so.

What do

See Warsaw ~1938±1, New Theories of Physics Bohr's need Definition of "Phenom. in Qu. Physics". cf also Einstein Blume. Have a wholeness that is foreign to class - Stone throwing. Q. phenom. are indivisible. To subdivide, have introduce an apparatus which is incompatible with the phenom one wanted to subdivide. (Slits; which hole did electron go through - specify history more closely; change phenom. - Bad for interf; if we want to retain diff. between phys. & math. Have to pick one expt arrang or other - cf Bohr-Einstein example. When loosen diaph. to measure recoil & tell slit, then it becomes part of meas. system. Then apply QM to slit, uncertainty principle. B & A working on this - B says A you don't have good ~~chac~~ set up to meas mom - but then A's app. no more suitable for A's purpose. But then say not every system has a

ψ fn does not pertain to a phys system in same way as a dynamical variable (Can't meas h class — symbolizes a wholeness foreign to class phys.) (Consider this for Lorentz's notes). ψ fn for elec doesn't have sense until we get something like a prob dist of spots. Only a coord sys can give a vector a meaning. Have to know ψ plus expt'l apparatus to make predictions.

Nonsense!

With photon of Brown mom., can get distbn. of spots in one expt; or can say through which slit goes.

So, Q. M. formalism no well defined applin. without expt'l arrangement.

Wholeness. ~~[illegible]~~

2 formalisms: Must & do give same result.

Objection: Does not appreciate the change brought into physics by the quantum. E Calls Bohr too conserv. — but AP: ~~as~~ no more conserve. than demanded by exist of g.

Bohr would say Everett much too class, not in math but in recognize new features. Just as in post formalism, the whole problem the tough one was to find the right words ~~was~~ to express the content of the formalism in acceptable form.

This would make a good introductory statement early in thesis

2. Much not about the things Everett thinks it is about; only for domain where $\frac{e^2}{\hbar c}$ small, where can meas. mom or pos. with ∞ accuracy; not a matter of our only having tested business so far; only in H atom as long as small radn damping; if no longer

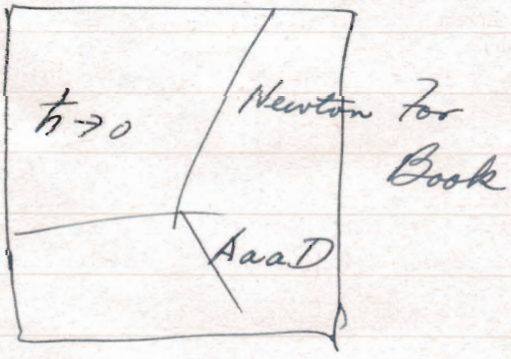
Surprising we can have a JW position always QM, complex words for $e^2/\hbar c$; much opposed by AP – no poss to connect with ordinary words.

JW evolution in a strongly coupled world. Help each other out. Need words. Thus

AP Math can never be used in phys until have words. Aren't comparing selves with servomechanics. What mean by physics is what can be expressed unambig in ordinary language. Spots on plate have meaning but not in Everett – he talks of correlations but can never build that up by + fns. – H atom stability

Def of Physics?

obviously haven't completed reading of thesis! → it does just that.



Bohr (ac to AP) need non-rel. way to live self into rel. world – have to sep. between space + time – consider watch; entrance into complex nos only via real nos; hence entrance into rel via non-rel.

JW – in world of big $\frac{e^2}{\hbar c}$ assemblys of points evolution occurs – Help each other – flight may thru to a language – language second. Very contrary to Bohr say AP.

What do re HE III thesis. (1) Knowledge limited (2) Class phys didn't help learn about observ. (3) In QM learned more.

New thing in Q Mech. Concept of wholeness.
If use space + time (c numbers etc)
All things on QM (and objections) based on this c-number idea (hence Bohr's great emphasis on class obsvn).

Great divergence not on formalism but on words.

In this realm of discussion there is no problem of several observers.

JAW - need to describe detailed QM of slit, not merely $\Delta p \Delta q \sim \hbar$ — hence have to analyze in detail.

AP cites Bohr-Rosenfeld (cf my Vol Bergamon) —

[Says Von N + Wig all nonsense; their stuff beside the point; doesn't come into; could overlook test body atomicity —
Von N + Wig - mess up by including meas tool in system]. Wh

Silly to say | ‡ | apparatus has a ψ-function. Example chosen for corresp. with classical.

But more typical - meas. system has a certain amt of dynamics.

If want to predict prob distbns of class variable