Article

Conscious Life Beyond Death (Part V)

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Abstract

Part V of this Article contains the following Sections:

*Correspondence: c/o Steven Mitchell. Email: smitc1@brockport.edu Note: This article was written by Prof. Wolfgang NMN Baer and is published posthumously. Wolfgang NMN Baer, Ph.D. (in Physics) was an Associate Professor of Information Sciences (Ret), Naval Postgraduate School, Monterey, CA, USA, & Research Director, Nascent Systems Inc., Carmel Valley, CA, USA.

Appendix A1. The Action-Flow Diagram of a Conscious Being

To model what a human actually experiences in his eyewitness here and now we must explicitly include a symbolic mechanism that measures the MoR from the 3rd-person perspective. To do so requires identifying an action-flow cycle, labeled by model-meaning loop (a,b,c) in Figure A1.1, into the 1st-person observable here and now of the basic existence cycle. This brings an ontological interpretation of the operational symbols that implement the MoR, into the diagram as shown below.

External Action Flow

a_x = Dcx(A_x); Detector cells externals, convert Unknowable external action into recordable type sensations

a_x = Mx (a_x); Measurement processing, convert recordable type sensations into observable qualia type sensations

a_x’ = comp(a_i,a_x); Display of qualia, comparison with prediction produces an internal and external corrected (a_x’) and (a_i’)

a_x’ = Xx(a_x’); eXternal coordination processing, higher level to cell coordination

A_x` = $A_{cx}$($a_x$`); Actuator cells externals, convert control signals into Unknowable external action

Internal Action Flow

a_i’ = comp(a_i,a_x); Display of predicted qualia is compared with external display to produce a corrected internal observable action signal that flows into the eXplanatory Process X(a_i’).

E,T = X(a_i’); The eXplanatory process converts corrected sensations into energy and time field. These physical values parameterize what is seen and felt in the 1st-person perspective.

P, **Q** = Ac(**E,T**); Actuator cells experience flow of action as time and action flow rate, which we call energy. The momentum (**P**) and quantity of space (**Q**) occupied are internal model parameters that propagate along the action flow line.

P’, **Q’** = Z(**P,Q**); Generalized time propagator function that transports one phase state to another. Z is not a standard classic function. I chose it to include isolated systems that contain their own clock.

E’,T’= Dc(**P’**,**Q’**); Modeled detector cells that generate the expected 1st-person conscious experience.

a_i = M(**E,T**); The model measurement M() process converts energy-time field into an observable display. In this example, the memory recall of an expected apple location is depicted.

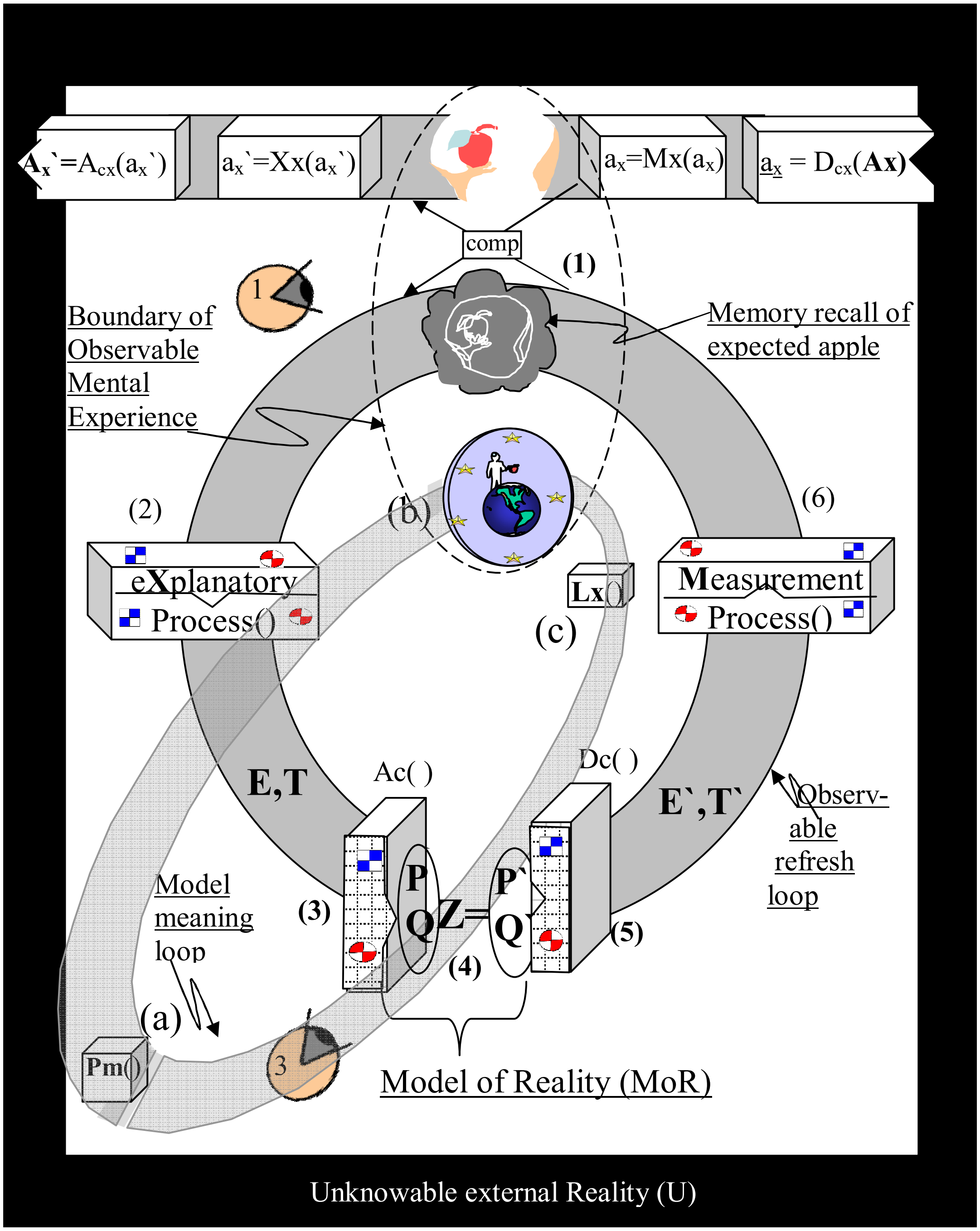
Model Meaning Flow

P’, **Q’** = Z(**P,Q**); Looking into the Model of Reality from a 3rd-person point of view. This is not the processed output of a factory, but images from a walk through the machine room, watching it push and hammer the eventual product in place. The meaning of each action contributing to a product feature is here recorded as an ‘**a**’ type action

a = Pm**(Z);** Project the proposed meaning of the working symbols of the model into the theoretical display of what it might be.

a’ = Registration(**a**); Errors in registration, volume or content provided learning experiences.

Z()’ = Lx(**a’**); Learn explanation modifies the Z function that controls the changes applied to the P,Q parameters to calculate P’,Q’.



All the activity depicted in Figure A1.1 happens internally to this bigger Self. The boundary of the Self's observable mental experience, when operating in the standard behind-the-eyes position, is the dashed line at the top of the dark action cycle designated by the label (1). This activity on the mental side of both external 'Dcx' and internal 'Dc' detector cell interface is parameterized by the E,T parameters because these describe the action flowing through the 1st-person perspective. The action on the physical side of the action flow, including what we believe is in the Unknowable and in the Model of Reality that represents the Unknowable, is described by the motion of material as Schrödinger originally described it as a real wave function in a real medium. [A1-1] The quantum complex wave function (see Appendix 4) is an approximation when wave oscillation amplitudes are small enough to make the material motions linear and reversible.

The MoR itself uses a classic physics model of the external world in which the average momentum vector **P** and the quantity position vector **Q** And combinations thereof are used to define the action structure '**A**' of interest. This structure is normally hidden behind the "man with the apple" reality view. When the system of interest is the whole of Reality, Z( ) models its behavior in the MoR at (4). Here we are revealing the classic physical parameters whose execution predicts future expectations.

In many 'Self' action-flow diagrams we place the "man with an apple" icon overlaid thereby hiding the working symbols [A1-2] in the model because it is much easier to operate one's model through their meaning icons than the working symbols. It's like driving a car using gas and break pedals as working symbols. They control but do not implement the actual motion of the automobile.

Critical to the life-death cycle is elimination of the external action flow by the "I already know flow", which is justified when the MoR has been tested and is believed to generate reliable predictions. In that case the real external interface stimulation is slowly supplanted by simulated MoR operation, and in the extreme, the 'Self' eliminates the external communication and operates as an isolated being we have identified as one's 'Soul', introduced in Chapter 2.

Appendix A2 – Equivalence of Action, Energy or Momentum Descriptions
(Ref CAT Section 4.4.2.2)

We will show how momentum, energy, and the action picture are related to each other. We will demonstrate that a system when described in classic degrees of freedom (f) actually provides a phase-space measurement result within the structure of the f-axes the conscious being has been able to build into its MoR. If no measurement of the f-axis is available in which to record the sensor stimulation, the signal cannot be remembered in the MoR and hence cannot be processed.

When an adequate f-axes structure is available, the measurement result can be transformed into a time-energy framework. We can then visualize a single additional time axis (T) that does not provide any additional physical content because 'T' is calculated as a function of the state of all the f-axes available to the conscious being. (See Appendix A3)

A third equivalent description is provided by the action flow between all the internal degrees of freedom.

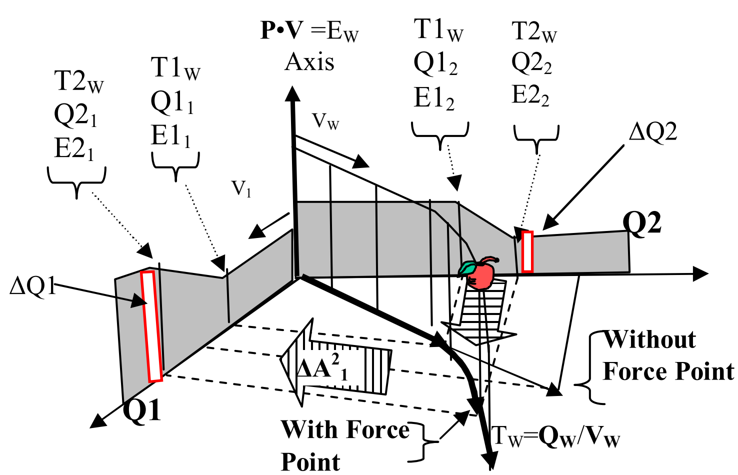


Fig A2-1 Action flow described in energy or momentum terms (ref. CAT-Fig. 4.4-5)

We use only two degrees of freedom 'Q_1, Q_2' for graphic clarity. Figure A2.1 shows the system trajectory of an apple recorded along the motion of the apple's system point. The action of the apple appearing in each axis gives a momentum '$\mathbf{P}_1$, $\mathbf{P}_2$' in intervals '$d\mathbf{P}_1$, $d\mathbf{P}_2$'. During the first segment from the origin, the action moves along each axis at constant velocity and along its T-time line at a composite velocity '$\mathbf{V}_W$'. The motion is a straight line, and no action transfers during this segment.

Next the apple entered a curved T-line segment. During this segment, action flows from the Q_2 to the Q_1 axis. At each instant the distance dT_W swept out along the T-line projects into smaller dq_2 intervals as the apple turns away from the q_2 axis and projects into a larger dQ_1 interval as it turns toward the Q_1 axis. The momentum '$P_1(Q_1)$ and extension ΔQ_1' along the Q_1 axis decreases and along the Q_2 axis '$\Delta Q_2$and P_2'increases.

A change in momentum during a time interval implies the presence of two forces. The force from the Q2 axis on the Q1 axis is:

Eq. A2-1 $\mathbf{F}^2{}_1 = \mathbf{\Delta}P_2 /\Delta T_W = \mathbf{\Delta dAw}/(\Delta T_W \cdot \Delta Q_2) => d^2A/dT_W dQ_2$.A similar calculation applies to the action lost by the Q_2 axis only where the momentum density increases and therefore the sign of the momentum change is negative.

Eq. A2-2 $\mathbf{F}^1{}_2 = -\mathbf{\Delta}P_1 /\Delta T_W = -\mathbf{\Delta dAw}/(\Delta T_W \cdot \Delta Q_1) => -d^2A/dT_W dP_1$.

The flow of action from any degree of freedom interval (ΔQ_f) to any other ($\Delta Q_{f'}$) can therefore be described as a network of action flow. We believe action- flow diagrams are the most understandable physical representation of how isolated action structures exist and how they interact with each other in a multiverse being cosmology. This fact anchors the action flow in experimentally grounded physics. [Aa2-1]

[Aa2-1] See Mandelung Equations

Appendix A3 – Physics of an Isolated System

(Ref CAT Appendix A4-2)

A3.1 Classic System with External Time

In classic physics the evolution of an isolated the system is defined by the functions,

Eq. A3-1 $q_1(t), q_2(t) \ldots q_f(t) \ldots , p_1(t), p_2(t) \ldots p_f(t)\ldots$

where: $q_f(t)$ = the generalized coordinate or position at a time t
$p_f(t)$ = the generalized momentum or desire to change at a time t
t = an external time parameter
f = the degrees of freedom of change available to the system

These 2f expressions are solutions to the equations of motion. They define the movement of all parts belonging to a system. They imply a rigorous connection between the system and time. The evolution of the system is completely defined by the progress of time and is thereby deterministic. In classic physics the physical basis for such a connection was simply assumed by Newton. Time is imposed from the outside and drives change relentlessly forward. They are not isolated.

A3.2 Classic System with an Internal Clock

To isolate a system, we must replace Newton's external time with an internal clock. Mathematically we can add the motion of a clock as a zeroth degree of freedom

Eq. A3-2 $\quad q_0, p_0(q_0), q_1(q_0), q_2(q_0) \ldots q_f(q_0) \ldots, p_1(q_0), p_2(q_0) \ldots p_f(q_0)\ldots$

where: $p_f(q_0)$ = the clock momentum, i.e., desire of the clock change at a time q0

q_0 = the position of the clock pointer

The motion of this additional degree of freedom is summarized by the motion of the clock pointer q_0. The clock pointer is either the source of a control signal that drives or accompanies the evolution of the remaining degrees of freedom. The physical mechanism for such control or monitor functions need not be specified. Like Newton, we just assume it exists. However, q_0 is not known a priori. *One condition is missing*. The state of the system with its own clock cannot be predicted without a measurement of at least one of the parameters in the list above. All the rest can then be calculated from the 2f+1 expressions known to have defined the event under Newton's time.

A3.3 An Isolated System Measures Its Own Time and Space

This implies that according to known physics, outside observers who are isolated from the System under consideration cannot determine when its here-and-now state is until they make a measurement. Outside observers may learn, through many measurements the distribution of a spectrum of here-and-now states a System may take on. But which specific here-and-now state the system is in requires a measurement that breaks the isolation. During periods of isolation the system runs at its own time and occupies its own space. If this has a familiar ring it is because the random nature of quantum theory is directly explained in CAT by the fact that quantum systems are electromagnetically isolated from outside observers until a measurement is made. Exactly where and when they interact cannot be determined.

A3.4 Single Degree of Freedom Representation of a Classic System

An alternative to adding an additional physical clock is to calculate the time state of a system only from the 2f classic parameters. Assume we have completely defined a system by listing all its observable pf's and qf's at one instance in a single row. We simply assign some single value function 'T= T(pf,qf)' to each row of values as their instantaneous time state variable 'T' and supply the missing condition by assuming the energy 'E' is constant. We therefore recognize the time and energy expressions as one way to specify a system, and the individual position and momentum as an alternative way to specify the same system. Figure A3.1 provides a comparison between the two ways of looking at such systems.

Transform from q,p system to E,T system	Transform from E,T system to pf,qf system
E = E(…pf,qf…)	qf = qf(E,T,…α_{f-1},β_{f-1}..)
T = T(…pf,qf…)	pf = pf(E,T,… α_{f-1},β_{f-1}..)

Fig A3-1 Canonical Transformations in Hamilton Jacoby formulation of classical physics

It is very important to understand that the behavior of the system is completely described by the 'pf,qf' parameter list. Describing the same event with another set of symbols does not change or add physical properties to the system under consideration. All that has happened is that the conscious entity observing the system is no longer fixed in the 3rd-person p,q reference frame but rather rides along with the motion of momentum in each q_f-axis thereby experiencing all the action flowing through the system at a rate 'E' for a time interval 'T' in the 1st-person perspective.

A3.5 Action Calculation in Canonical Coordinate Frames

When the system point trajectory is defined in the position and momenta in all its degrees of freedom, the action is given by:

$$\text{Eq. A3-3 } dA(p_f,q_f) = \Sigma_f\{(\partial A(q_f,p_f)/\partial q_f)\cdot dq_f + (\partial A(q_f,p_f)/\partial p_f)\cdot dp_f\} =\sim \Sigma_f \{p_f\cdot dq_f + ½\cdot dq_f\cdot dp_f\}.$$

The derivative of the first term is the definition of momentum in each degree of freedom while the second term is the change in the length moved during each interval when the momentum changes in the interval. We'll show in A3.7 that the change in momentum also changes the action so the '$½\cdot dq_f\cdot dp_f$' term is the action transmitted or received in the f^{th} degree of freedom that flows to another degree of freedom.

When we look at the same system in an 'E,T' coordinate frame, the form of action is $A(E,T,\ldots\alpha_{f-1},\beta_{f-1}..)$. In this form, all the derivatives are constants 'α, β' except for the two shown.

$$\text{Eq. A3-4 } dA(E,T) = (\partial A(E,T,..\alpha_{f-1},\beta_{f-1}..)/\partial T)\cdot dT + (\partial A(E,T,\ldots\alpha_{f-1},\beta_{f-1}..)/\partial E)\cdot dT = E\cdot dT + T\cdot dE$$

Here the $E\cdot dT$ term is the action in the 'dT' interval and integrating over the entire period of the event gives the action $A(E,T) = E\bullet T$, where E is the average energy. The '$T\cdot dE$' is the change in action at time T. Since T and E are single global parameters, if the action changes at any one time point it must flow to or from another point in time within the same event or interact with an external event.

A3.6 Approximately Isolated System

In one specification, the Action of an event is defined by energy and time. shown here as a function of all degrees of freedom in a three-part 'Whole' consisting of 'You', 'I' and the rest of the universe 'U'.

$$\text{Eq. A3-5 } A(E,T)= A(\ldots q_{fU}(E,T),p_{fU}(E,T),..,\ldots q_{fY}(E,T),p_{fY}(E,T),..,\ldots q_{fI}(E,T),p_{fI}(E,T),..).$$

Here T defines the motion of a Whole system point moving with constant velocity along a trajectory marked off by constant distance intervals through a multidimensional coordinate frame composed of all degrees of freedom "f_I,f_Y,f_U". The ability to assign degrees of freedom to 'You', 'I', or 'U' indicates these parts represent identifiable components with large actions defining their own existence and relatively small interactions describing their communications. It is therefore practical to think of ourselves as isolated systems first and then add our communication actions as perturbations.

Equation A3-5 bundles the degrees-of-freedom into action forms. The isolated action description of the rest of the Universe would be

$$\text{Eq. A3-6} \qquad E_U \bullet \Delta T_U = \Delta \mathbf{A}_U = \Sigma_{Uf}\, \mathbf{p}_{Uf} \bullet \Delta \mathbf{q}_{Uf}.$$

By subtracting the E,T term and rearranging the time interval so they can all be added we achieve the formula for Hamilton's Principle Function 'S'.

$$\text{Eq. A3-7} \quad \mathbf{S}_U = \Sigma_{\Delta TU} \{ \Sigma_{Uf}\, \mathbf{p}_{Uf} \bullet \Delta\mathbf{q}_{Uf} / \Delta\mathbf{T}_U - \mathbf{E} \} \bullet \Delta\mathbf{T}_U = \Sigma_{\Delta TU} \{ \mathbf{L}_U \} \bullet \Delta\mathbf{T}_U.$$

'L' here is the Lagrangian energy term often used in physics and other disciplines when optimization of one's Time path is involved. The usefulness of isolated systems as a starting point for adding communication interfaces is proof that physics assumes isolated systems are real even if they are hard to see.

A3.7 Isolated or Interacting Systems

Whether the action is visualized as a total action happening in $\Delta\mathbf{T}$ or whether it is first observed as activity distributed in a large number of degrees of freedom, the amount of action should be identical for an isolated system. The action function 'S()' in Equation A3-7 would be categorically zero if the momentum/space and energy/time values were collected at the same time. In the CAT model this is not the case. Whether the action is described from a 1^{st}-person 'E,T' or a 3^{rd}-person 'p_f,q_f' perspective it is an independently real event and should have its own amount of action no matter how it is measured.

The action function has several classes of uses:

– S is the name of an expression that models the system
– 'S() = 0' is a number of units that, if zero, should therefore be a minimum criteria for isolation.
– 'S() = const' is a number of units of action that in net differ sent and received
– 'δS = 0' indicates a variational condition on the T-path that constrains its actual motion to force-equilibrium paths.

– 'dS = dS ' an infinitesimal action that is small enough so that its parts can be added together with negligible error

– 'ΔS = $\int$dS' a finite amount of action derived by summing

Action in its different categories of utility all support the basic concept that any system can be modeled by a network of action.

The extent to which action structures appear in physics either explicitly or implicitly gives action-flow diagrams the equivalence to more traditional energy, momentum-based formulations of physics. This equivalence is submitted as evidence of the validity of action diagrams as valid physical problem formulations.

Appendix A4 – The Quantum and Classic Approximation

Here we make the claim that the action-flow model of Conscious Action Theory is identical to quantum wave description of Reality in the limit that the amplitude of 'ψ' oscillation are small enough to avoid breaching the containment of the flow. As evidence, we submit an action-flow diagram that explains the relationship between the everyday world and the quantum reality discovered in the last 100 years.

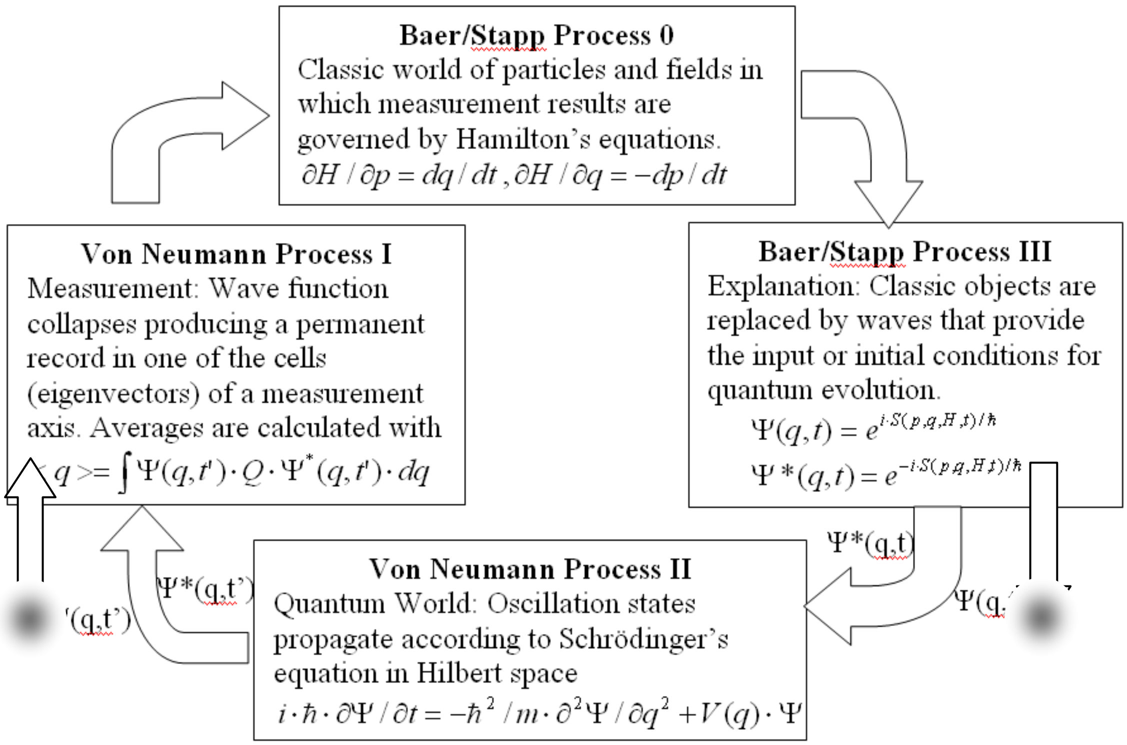


Fig. A4.1 Action flow to quantum function overlay mapping (Ref CAT Figure 1.2-2)

Figure A4.1 represents the basic processes of classic and quantum physics. Von Neumann identified two distinct components in quantum theory. Process II addresses the deterministic time evolution of an isolated quantum system state. Process I addresses the operation of a measurement interaction between the quantum system and the world of classic objects being moved forward by Process 0. Process 0 describes the classic object world and uses position and momentum to define our System as an object in our space and time.

Here is a break our space is defined by degrees of freedom that are incorporated in a corresponding set of f-axes. These f-axes may or may not contain a distribution of action.

Compatibility with Quantum Theory:

Detailed presentation documenting the equivalence of CAT and quantum theory is shown in Appendix-A4 and Baer (2020 Chapter 5). The compatibility rests on the distinction introduced between the classic **A**ction parameter in the CAT model, which represents the material of an event happening onto itself, and Schrödinger's wave function 'ψ', which in the standard Copenhagen interpretation of quantum mechanics represents the probability amplitude of measuring a physical value, such as position or momentum of a particle. It is an unfortunate result of history and zeitgeist during the early 20th Century, which eschewed any reference to the conscious observer, that Reality was eliminated from physics. Even worse was the popularity of the Positivist philosophy[A4-1], which discouraged any attempt to assign meanings to the working '**A**' type symbols of our reality model. Although a large number of quantum symbol interpretations have been put forward [A4-2], the standard answer to such proposals is that while they may be pedagogically useful, they are misleading artistic conceptions and only the '**A**' type symbols should be trusted to represent Reality because they work. Thus, quantum theory has become an instrumentalist theory and scientists should "shut up and calculate" the tested working symbols rather than waste time asking why such calculations work.

The CAT formulation generally agrees with the instrumentalist approach because there is a bigger error in quantum theory. The error involves the elimination of the observer and the belief in an independent **objective** world. Until this is corrected, quantum symbol interpretations are misleading. Even Werner Heisenberg, one of the founders of quantum theory, thought quantum physics was the physics of the system that seeks to know the world not the physics of the world itself. CAT is a physics of 'You', 'I', and the rest of the conscious system's 'U'. Whether we seek to know the world or are just a conscious system playing around, the fact is if Werner Heisenberg is right, quantum and CAT physics are describing the same world.

The CAT model of a conscious being uses a double cycle of observables, one connecting to external reality and one connected to the Model of Reality. Figure 1.1 identifies the icons of a 1st-person view of objects with a 3rd-person view of objective '**r**eality' as the spatial cross sections in the mental phase of the action cycles. The division between the mental and physical phases of the being is marked by a transformation between physical material composed of mass and charge and the internal mental phase of the same material. It is a transformation of language we use in our Model of Reality not the flow of action that is changed. On one side, gravito-electric forces propagate from past to a future material configuration. On the other mental side, psychic forces accompany the action- return flow.

Here we make the claim that the action-flow model of Conscious Action Theory is identical to quantum wave description of 'Reality', in the limit that the amplitude of 'ψ' oscillation are small enough to avoid breaching the containment of the flow. Much like a spring bouncing back unchanged from its original position, any system will oscillate around its undisturbed state trajectory where wave description of 'Reality' is appropriate. This means the CAT model working symbolic operator '$\mathbf{A}_R$' can be replaced with quantum equivalent expressions of action. This means all of quantum theory is the small amplitude approximation to the CAT formulation.

Appendix A5 – Action-Flow Diagrams in Quantum Nomenclature

The infolded action-flow diagram between space-and-time-separated action densities introduced in Figure 4.5-3 is here reproduced to identify how action-flow cycles can be used to visualize quantum theory. When volumes are small enough, the cyclic action flowing between densities can be represented by a flow between the degrees of freedom of their centers in a complex Cartesian coordinate frame as shown in Figure A5-1 below.

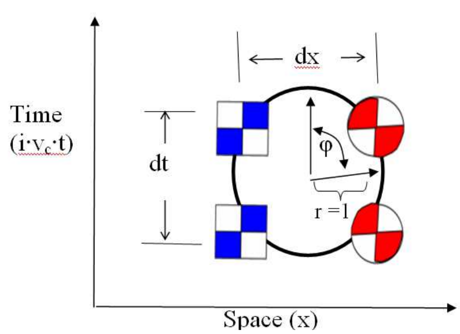


Fig A5-1 Space time Action flow parameterization

The reason a complex Minkowski space is useful was to show how energy times time 'H·dt' represents action flowing through the observer while 'p_x·dx' represents the 3rd-person theoretical side-view experience of the flow. Combined with the further recognition that the difference between these two action flows represents Hamilton's Principle. Function 'S' is the interaction between the event of interest ('Apple') and the rest of the 'Universe' ('U'). It is through minimization of this function that the actual trajectory of the event of interest is calculated.

Minkowski realized that if a complex spatial 4-vector were defined as:

Eq. A5.2-1 $$d\underline{\mathbf{x}} = dx + dy + dz + i\cdot v_c\cdot dt,$$

and a complex momentum 4-vector were defined as,

Eq. A5.2-2 $$\underline{\mathbf{p}} = p_x + p_y + p_z + i\cdot H / v_c,$$

then the dot product of these vectors would automatically give Hamilton's Principle Function, often simply called the Action Function,

Eq. A5.2-3 $$dS = \underline{\mathbf{p}}\bullet \underline{\mathbf{dx}} = p_x\cdot dx + p_y\cdot dx + p_z\cdot dx - H\cdot dt,$$

while the dot product of the complex spatial 4-vector would give the state interval squared between two state positions in 4-space,

Eq. A5.2-4 $$ds^2 = dx^2 + dy^2 + dz^2 - v_c^2\cdot dt^2.$$

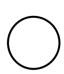
The convenience of this notation popularized Einstein's special relativity theory and was taken over in quantum theory where Schrödinger's wave function 'ψ' is defined as

Eq. A5.2-5 $$\psi = e^{(i/h)\cdot \int_0^{2\cdot\pi} (dS(\varphi)/d\varphi)\cdot d\varphi}.$$

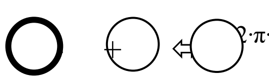
Here the Action function is written in polar coordinates where 'φ' is the phase angle around the activity cycle and 'h' is Planks constant and 'dS(φ)/dφ' is the angular momentum. Of historic interest is that Schrödinger did not postulate a complex wave function. The complex form first appeared in 1926 when Erwin Madelung published an article in which he discussed the hydrodynamic analogy between particle trajectories and fluid mechanics.[1] CAT includes the conscious observer by identifying the model of reality as the activity happening when a model operator executes the instructions specified by the theory. A fundamental, but questionable, assumption of contemporary quantum theory is that nothing can, even in principle, be known inside an action of size 'h'. If correct, 'dS(φ)/dφ' can be replaced by the constant average angular momentum per cycle 'h' and the integral can be carried out to get the full description of the motion in a fundamental cycle as the form

Eq. A5.2-6 $$\psi = e^{2\cdot\pi\cdot i}.$$

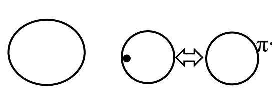
This form represents the mathematical equivalent of the form of a graphic action cycle containing a quantity of action 'h' that is visualized as a closed loop of change.

Eq. A5.2-7 

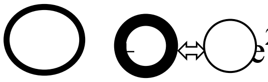
Adding this primitive form gives two parallel cycles,

Eq. A5.2 -7  $$e^{2\cdot\pi\cdot i} + e^{2\cdot\pi\cdot i} = 2\cdot e^{2\cdot\pi\cdot i}$$

Multiplying this primitive form gives two sequential cycles that double the circumference,

Eq. A5.2-8  $$e^{2\cdot\pi\cdot i} \bullet e^{2\cdot\pi\cdot i} = e^{2\cdot 2\cdot\pi\cdot i}$$

Combining multiplication and addition, we get a complex of geometric forms that are mathematically described as a Fourier transform where ‘n’ is the number of cycles and ‘a_n’ is the number of parallel loops having ‘n’ cycles.

Eq. A5.2-7 

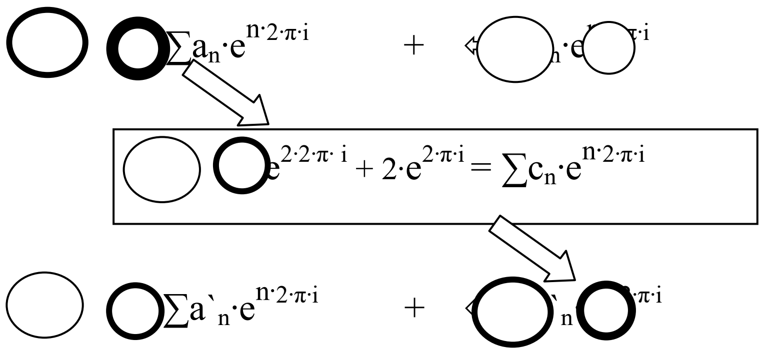
$$e^{2\cdot 2\cdot\pi\cdot i} + 4\cdot e^{2\cdot\pi\cdot i} + e^{2\cdot\pi\cdot i} = \sum a_n\cdot e^{n\cdot 2\cdot\pi\cdot i}$$

Such complex forms satisfy the Schrödinger equation (see A5-1). Two quantum systems defined by two action structures ‘a’ and ‘b’ can only interact by moving an action structure ‘c’ also composed of h-cycles.

before

interaction

after



This example shows why quantum theory can be formulated in the Schrödinger and Heisenberg wave picture because both Fermions and Bosons linear sums are standard fundamental motions. The picture is valid as long as no action structure is allowed inside ‘h’.[A5-1]

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References & Notes

Abstract and Prolog

[1] External forces cause bodies to fall and decay, internal forces case bodies to write essays

[2] Contemporary science cannot explain consciousness Chalmers, D.J. (1997) “Facing up to the problem of consciousness”, Journal of Consciousness Studies, 4:3-46. Reprinted in (J. Shear, ed), Explaining Consciousness: *The Hard Problem*, MIT Press, URL http://www.geocities.com/computerresearchassociated/consciousness.htm

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Baer, W. (2020) *Conscious Action Theory: an introduction to the event oriented world view*, Routledge Press, ISBN: 978-1-138-66746-4 (hbk)

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[4] Idealists and Materialists

Boswell, J. (1791) *Life of Samuel Johnson*, Penguin Classics, 2008, Note: Samuel Johnson's refutation of Bishop Berkeley's assertion that the moon is only there because someone (like god) is watching it.

According to Kant, it is vital always to distinguish between the distinct realms of phenomena and noumena. Phenomena are the appearances that constitute our experience; noumena are the (presumed) things themselves, which constitute reality. Search Wikipedia, "Kantian unknowables". In this essay, phenomena are 1st-person observables and noumena are visualized but not equal to 3rd-person observables.

Wittgenstein, L. (1973) *Philosophical Investigations Rev. 3*, Translator G.E.M. Anscombe, Prentice Hall, ISBN-13 078-0024288103, Note: unknowables are parameters in our theories that named inferences that we believe happen but cannot be directly observed, i.e., light, energy.

1.1. Development of Physical Action Theory

[1] See Abstract and Prolog [2], Chalmers

[2] Short and incomplete list of physicists who developed an alternative quantum theory:

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Penrose, R. (1991) *The Emperor's New Mind*, Penguin Books, ISBN 0-14-01.4534-6

Stapp, H.P. (1998) "Whiteheadian Process and Quantum Theory" http://www-physics.lbl.gov/~stapp/WHD.doc

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Tegmark, M. (2014) "Our Mathematical Universe", Random House, LLC, ISBN 978-0-307-59980-3, Chapter 10, p. 243

Reddiger, M. (2017) "The Madelung Picture as a Foundation of Geometric Quantum Theory", arXiv:1509.00467v5 [quant-ph]0, Aug. 22, 2017

See Abstract and Prolog [3]

[3] D'Espagnat, B. (1979) "The Quantum Theory and Reality", Scientific American, Nov. 1, 1979

[4] See Figure 3.1 for a more detailed picture of the optical field of view

1.2. The Action-Flow Diagram of a Conscious Being
[1] Op.cid. Baer (2020) p. 283-287 "I am to my model, as god is to reality.'

1.3. The Multiverse Cosmology of Conscious Systems
[1] Ontological interpretations of quantum abound:
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[2] Op.cid. Baer (2020) See Section 4.4, Translating the graphic action model to physics nomenclature

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[1] Van Lommel, P. (2010) *Consciousness Beyond Life, The Science of the Near-Death Experience,* HarperCollins, ISBN 978-0061777264.
[2] Van Lommel, P.; Van Wees, R., PhD; Meyers, V.; Elfferich, I. (2010) "Near-Death Experience in Survivors of Cardiac Arrest: A Prospective Study in the Netherlands", *The Lancet*, Vol. 358, No. 9298, pp. 2039-2045, Dec. 15, 2001, DOI: www.dx.doi.org/10.1016/S0140-6736(01)07100-8
[3] Lake, J. (2019) "The Near-death experience (NDE) as an inherited predisposition: Possible genetic, epigenetic, neural and symbolic mechanisms?", *Medical Hypotheses,* Vol. 126, pp. 135-148

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[1] Stanford Encyclopedia of Philosophy (2016) "Dualism", URL https://plato.stanford.edu/entries/dualism/
[2] Cahill, T. (2006) *Mysteries of the Middle Ages*, Anchor Books, ISBN: 978-0-385-49556-1, p. 209, "Thomas Aquinas Replaces Plato with Aristotle", p. 233
[3] Mach, E. (1867) "Contributions to the Analysis of the Sensations" (tr. by C. M. Williams), Open Court, Chicago
[4] Gibson, J.J. (1950) *The Perception of the Visual World*, Houghton Mifflin, 1950, Call No. Bf 241.G5, see figure "The Visual Ego of Ernst Mach"
[5] Baer, W. (1972) "The Crystal Spectra of Pm in CaCl", Phd Thesis in Physics, University of California, Berkeley, see Appendix
[6] Reductionism fails to explain Consciousness Chalmers, D.J. (1997) "Facing Up to the Problem of Consciousness", *Journal of Consciousness Studies,* 4:3-46, URL http://consc.net/papers/facing.pdf
[7] Velmans, M. (2000) *Understanding Consciousness*, Routledge Press, London ISBN 0-415-18655-2, p. 174, see Reflexive Monism Projection Postulate
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Baer, W. *Multi-Eye Input Experiments for UAV Image Navigation and Control*, SPIE Defense & Security Symposium, April 5-9, 2010, Orlando, Florida, USA, Paper No. 7697-45
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3.2. Physical Proof
[1] Classic Physics rest on the metaphysical assumptions that mass, charge, space, and time exist a priori. The physics of the objective phase of a CAT action cycle is defined by the following texts.
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Jackson, J.D. (1962) *Classical Electrodynamics*, John Wiley & Sons, Inc.
[2] Op.Cid., Baer (2020), Chapter 5
[3] Lehar, S. (2002) *The World in Your Head*, Psychology Press, ISBN-10-0805841768

3.3. Psychological Proof
[1] Internal and external signal interface in the neuro-glial interface
Verkhratsky, A.; Butt, A. (2007) *Glial Neurobiology*, Whiley, ISBN978-0-470-01561-6

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[2] Whinnery, J. (2016) "The Trigger of Extreme Gravity: Dr. James Winnery's NDE Research", www.near-death.com/experiences/triggers/extreme-gravity.html

[3]Mahler, M.S. (1975) *The Psychological Birth of the Human Infant*, Basic Books Perseus Books Group, ISBN-13: 978-0-465-09554-4, p. 3

[4] Van Lommel, P. (2010) *Consciousness Beyond Life, The Science of the Near-Death Experience,* HarperCollins, ISBN 978-0061777264.

[5] Van Lommel, P.; Van Wees, R., PhD; Meyers, V.; Elfferich, I. (2010) "Near-Death Experience in Survivors of Cardiac Arrest: A Prospective Study in the Netherlands", *The Lancet*, Vol. 358, No. 9298, pp. 2039-2045, Dec. 15, 2001, DOI: www.dx.doi.org/10.1016/S0140-6736(01)07100-8

Appendixes:

[A1-1] Sotina, N. (2014) "Derivation of the Schroedinger equation from the laws of classical mechanics, structure of physical vacuum", Physics Essays, Vol. 27, No. 3, pp. 321-326

[A1-2] Wittgenstein, L. (1973) *Philosophical Investigations Rev. 3*, Translator G.E.M., Anscombe, Prentice Hall, ISBN-13 078-0024288103

[A2-1] Reddiger, M. (2017) "The Madelung Picture as a Foundation of Geometric Quantum Theory", arXiv:1509.00467v5 [quant-ph], Aug. 22, 2017

[A4-1] Carnap, R. (2000), "The Observation language versus the Theoretical Language", *Readings in The Philosophy of Science*, edited by Theodore Schick Jr., Mayfiled Publishing Co., 2000, p. 166

[A4-2] Blood, C. (2009) "Constraints on Interpretations of Quantum Mechanics", Cornell University Library, http://arxiv.org/abs/0912.2985 (for a review of interpretations)

[A5-1] Sotina, N. (2014) "Derivation of the Schroedinger equation from the laws of classical mechanics, structure of physical vacuum", Physics Essays, Vol. 27, No. 3, pp. 321-326