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PAPER 2: PRACTICAL APPLICATION OF THE COMPOSITE MODELING UNITS, AND AN EXERCISE ON EMULATING THE MATHEMATICS OF TIME DILATION IN A RELATIVE VELOCITY OR GRAVITY SITUATION[1]

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Abstract: Paper 1 suggests intuitively that as humans, we must continue to investigate physical Objects by our natural Geometry. At the same time, we may want to explore a Nongeometric tool to check some other aspects. The two positions presume two distinct scopes and two independent Logics, so they are not conflictual, and we should be able to form a single consistent picture (no-strange-things criterion).
In Paper 2, we enter the technique of NBM more systematically. The text below comes from a compromise, as we want to make as clear as possible any assumption which hides into the Model. At the same time, we want it to remain a very straight and practical tool, so we formulate it in term of Rules, Procedures, and lists of instructions.
KEYWORDS: Physical Objects; Model Time; Model Space; Local and Nonlocal; Conceptual Model

Most probably, a Nongeometric position cannot be written down by regular Geometry and regular mathematics. Our Rules attempt a practical listing of both the inherent assumptions

[1]Our Papers 1 and 2 qualify as a bare and unchecked proposal. They express a possible formalism which is still under construction: see also the disclaimer in Paper 1 for more details. The contents of this Paper 2 reflect the present status of the Model. We limit to a Point-Mass equivalent, and cover the basis of our formal Objects by a composite A-B Logic-Geometry. This includes a Proto1 standard for describing the Closed and Local Objects, and a Proto2 standard for reproducing, into the Model, the formal light-like and the relative-Moving in general.
We also provide some key Rules for handling Model Relationships, limited to the more basic ones amongst the Closed and Local Objects. We mostly focus on Modeling Time dilation, and benchmark the whole against its two well-established formulae for a relative-speed or a gravity situation. Our Model works as a Nongeometric emulator of what we already know, and must be tested on other physical situations. By convention, we use he when we operate the formal Observer, and it for the Observed Object. We adopt a discontinuous notion of Time-like, and a Nongeometric handling of our Objects, so we mark it as a Nongeometric Beating Model (NBM).

and the working instructions of our formalism. They are organized here by the flow sheet of Fig. 0, although we note that this is only one possible illustrative example of the whole formulation.

A Rule does not truly contain a specific assumption by itself, but it assumes in general that we will follow a given Procedure to apply practically that given principle or set of concepts. As we play the role of a human-level Modeler, we basically do not know why that given Rule should work, so the whole remains barely descriptive of our formal Objects and of their Model Relationships. Hence the true assumption of NBM is global, and it is more properly the whole set of Rules and of their interplay, as well as the pragmatic way we think and operate in NBM to describe our Objects.

This reflects in Fig. 0, so we will touch the levels we show A to J on the right: A) key assumptions which are specific to NBM; B) starting A-B Logics-Geometries in the abstract; C) special Modeling technique by which we play different descriptions in parallel; D) how the Model relates to real-life Objects; E) Proto1 standard for describing Closed and Local Objects; F) Proto2 standard for describing the light-like and the Moving at a very elementary and coarse level; G) formal combination Proto1+Proto2 for describing the Moving of Massive Objects in general; H) contextual Logics of the MATCH and the CROSS for describing the relative-speed and the relative-distance; I) benchmarking our MATCH scheme onto the formula for Time dilation due to relative-velocity; J) benchmarking our CROSS scheme onto the formula for Time dilation due to gravity-distance.

The arrangement of this Paper 2 with regards to the key Modeling issues, also summarizes in Table 1. Two distinct Modeling compartments show on the right, where basically the Model Absolutism allocates the Objects, and the Model Relativism allocates their mutual Relationships. The listing on the left refers to Section 1. Then Section 2 presents a homework in terms of two Procedures P1 and P2, where we attempt reproducing by NBM the two basic formulae for Time dilation in a relative-speed and in a gravity-distance situation.

Subsections - Rules	Modeling issues	Model sub-block	Conceptual Handling
I.1 – R1 to R4 I.2 – R5 to R7 I.3 – R8 and R9 I.4 – R10 to R12	Basic principles, self-consistency, working Rules, and key Logics of the Model Poles and Artifacts: defining and operating the logical-skeleton of our formal A-B Objects.	General framing of NBM.	Global
I.5 – R13 and R14	Defining the composite Geometry-like of our first-	Proto1 standard for describing Local and	Absolutistic

I.6 – R15 and R16 I.7 – R17 and 18	kind of elementary Object: Proto1 standard for Closed and Local Objects.	Closed Massive bodies within the limit of our Point-Mass equivalent.	
I.8 – R19 I.9 – R20 I.10 – R21	Adding a Time-like function on board, and obtaining the first complete Modeling Unit in terms of a Beating Proto1-Object.		
I.11 – R22 and R23 I.12 – R24 I.13 – R25	Completing our composite Proto1-Object, and making explicit its inherent properties into the Proper of the Model.		
I.14 – R26 I.15 – R27 and R28	Formalizing a second kind of Object by transforming logically our first Modeling Unit, so deriving our Proto2 standard for the Model light-like and the Moving in general.	Proto2 standard for reproducing a coarse and discontinuous light-like into the formalism. We also use a β-Fraction of our elementary Proto2, as a key component for the relative-Moving of the Closed and Local Objects of the kind of Proto1, where the β is the regular v/c.	
I.16 – R29 and R30 I.17 – R31 and R32	Comparing the way Proto1 and Proto2 work into the Proper, and formalizing their inherent properties due to the different geometric-like Assets and distinct Logics they have on board.		
I.18 – R33 and R34	Establishing the general frame for Model Relationships in terms of a Relativistic α-balance of the Object on Target.	Elementary Model Relationships in general.	Relativistic
I.19 – R35	Associating the relative-speed and the relative-distance to the two most elementary Relationships in-between any two Closed and Local Objects.	Elementary Relationships in the realm of Closed and Local Objects.	

I.20 – R36 to 38	Defining the MATCH-Logic for handling practically a relative-speed situation in parallel to its regular 3D picture.	Nongeometric description of the relative-speed.	
I.21 – R39 and R40	Defining the CROSS-Logic for handling practically a relative-distance situation in parallel to its regular 3D picture.	Nongeometric description of the relative-distance.	

Table 1: Topics of Paper 2 with regards to the Modeling issues and overall arrangement of NBM.

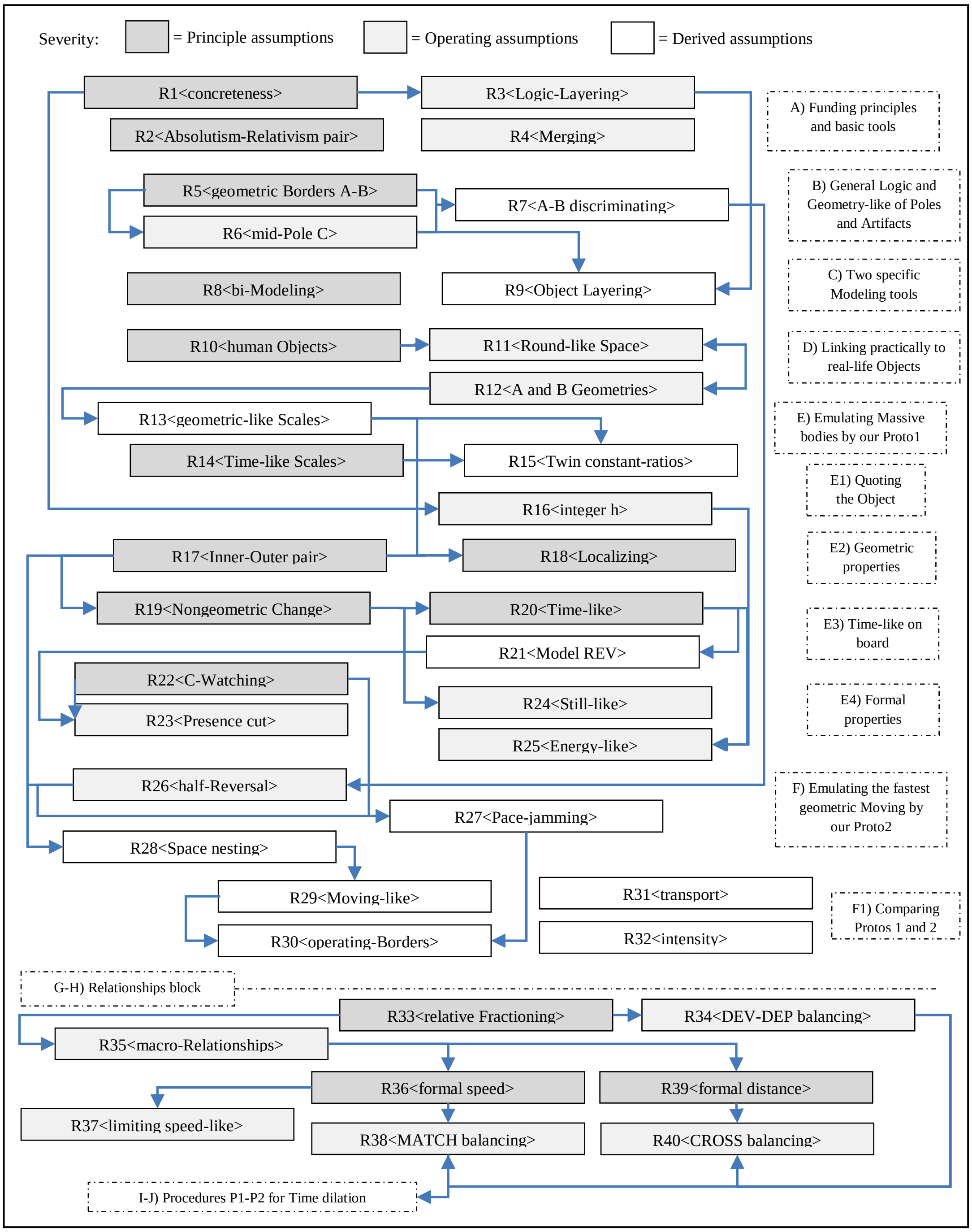


Fig. 0: A possible schematics of our starting Rules (left), and of the issues they cover (right).

I. SINGLE-STEP ASSUMPTIONS AND WORKING RULES OF NBM

Note: Before we enter the Modeling-environment, we refer to a general principle which plays as our zero-Rule, and thus determines all the others.

R0. <self-consistency> Our NBM-Modeling of the Objects and of any NBM issue, requires that we Modelers keep self-consistent. This formalism relies on self-defined Logics: they cannot be contradictory, neither the NBM-Modeler can enter self-contradiction when applying them.

Comment: We also assume that a human-level Model cannot neither explain nor interpret in the sense we normally mean, so below we work by a barely descriptive tool.

I.1 Founding principles and key working Rules of NBM

Note: We start by a group of four general Rules which are very specific to NBM, and which apply throughout: the first two play the role of funding assumptions; the other two are key assumptions also, but act as two practical Modeling tools.

R1. <concreteness> NBM limits to the concrete human Observing-Modeling of concrete Objects: this refers to our composite Model Objects, to their mutual Relationships, and more in general to any component of the Model.

An explicit h-criterion comes by R16<integer h>. It involves all the NBM Poles, Artifacts, and Logics-Geometries: they are the concrete components which our Model Objects are made of.

Our Observing Point-Of-Views (formal POVs), can only be set on board of our concrete Objects. We normally operate the concrete POV of a given Model Pole: that POV means taking both the formal Logic and the formal viewing-like of that specific Pole.

The Model Relationships arise from a balance of the Model Objects: into the Model, both components are same level of formal-objectivity, and basically are made of the same material-like (details by R33<relative Fractioning> and R34<DEV-DEP balancing>).

Comment: NBM cannot know whether Reality is concrete, neither does it imply any privileged human opinion about Nature (badly-formulated question). We Modelers play mentally a formalism, and just need a practical criterion to classify what is concrete and not concrete in it.

R2. <Absolutism-Relativism pair> NBM adopts a pragmatic mix of Absolutism and Relativism to describe the Objects and their mutual Relationships. These two complementary Modeling-environments obey two inverse-Logic, so they make an inherent Twinned-pair into this formalism:

i. The Model Relativism, is when we operate a POV outside the Object (External POV): the POV has the Object on Target, and he uses his Target view on it (the Observed Object is the Target of the formal Observer).
ii. The Model Absolutism, is when we decide to set the POV into the Object (Internal POV): the POV is in the Proper of the Object (he Targets his own Object), and he uses his Proper view.

Operatively, a POV is a POV no matter where he lays, and all POVs can look indifferently both inside and outside the Object where they lay. All POVs of NBM are equivalent, neutral to the position they hold, and same level of objectivity-like (they are concretely set into concrete Objects). They all possess both the Proper and the Target view (the formalism is fully symmetric on that). The picture they take by their Target view, is as objective in the Target view, as the Proper picture is in the Proper.

Note: The next two Modeling artifices are very specific to NBM: they generate some unusual Modeling effects, that we will see nevertheless to work practically in our Rules and calculations below.

R3. <Logic-Layering> The NBM Logics and the operation of Reversing (applying a NOT), always operate on entities which are allocated into the Model and prescribed to be concrete. Our logical operations stay concrete also, so just transforms the entity we operate upon, whilst the entity by itself conserves. This normally requires thinking of an additional Logic-Layer to insure the overall consistency, and the new Logic-Layer created by the operation, begins to work together with the pre-existing one/ones.

When two or more Logic-Layers are generated this way, they are assumed to exist-like concretely into the Model, and to be contextual-concomitant, so they work in parallel. The Logics we add or transform on board of the Objects, conserve as an integral part of them. The same Layering-technique also applies to the specific Model Relationships we have in-between any two Object. The whole works as a descriptive Modeling tool.

We also assume that although contextual and mutually-consistent, the system-Layers keeps logically-independent. Hence we Model them one-by-one based on their specific Logics (e.g. Time-like vs. Geometry-like), then we assemble the Model pictures which make our Nongeometric description (e.g. of a composite Model Object, or of a Model Relationship between two of them).

Note: By Fig. 1, we sketch conventionally top-down our Layering criterion. We also work left-right onto two distinct conceptual-stages = Modeling-environments, which basically refer to how much we Modelers have defined our Object, and thus to what and how much the formalism can see:

i. The Model Root contains and makes the logical-skeleton of our Objects: it has no units, it is always equal and symmetric, and any inherent Object is assigned a value of 1=100% in its own Proper.

ii. The Model Watch is where we Modelers allocate some regular quoting, e.g. as of [λ_o; σ_o; τ_o; ν_o] in the case of our composite Point-Mass equivalent: in its own Proper, the λ_o expresses in regular-meters, the σ_o in inverse-meters, the τ_o in regular-seconds, and the ν_o in inverse-seconds (the four are Model Parameters in the form of elementary Scales of the Object). In the Watch, all Objects quote and distinguish regularly (they are no longer the simple logical-1 they are in the Root). In any case, the Root is contextual to the Watch, and the two Modeling-environments work together.

R4. <Merging> In NBM, we cannot distinguish two items unless we have a criterion for. This determines a special fading-and-confusion effect that we define as Merging: formal identification of two or more items that the Model viewing-like cannot discriminate. Operatively, we have two different situations:

i. Root: The Root has no criteria beyond the ones we Modelers give to the Root (Fig. 1.a). Hence into the Model Root, the formalism:
   - Cannot distinguish a Pole of a given kind from another Pole of the same kind: within the Root, all Poles of a given kind identify and Merge in one.
   - Cannot distinguish an Artifact of a given kind from an Artifact of the same kind: within the Root, all Artifacts of a given kind identify and Merge in one.

ii. Watch: The expedient of Merging the Model items, does not apply to the Model Watch (Fig. 1.b).

The NBM Merging in terms of confusion-and-identifications of one or more Model items, is as natural and objective-like into the Root, as it is distinguishing them into the Watch.

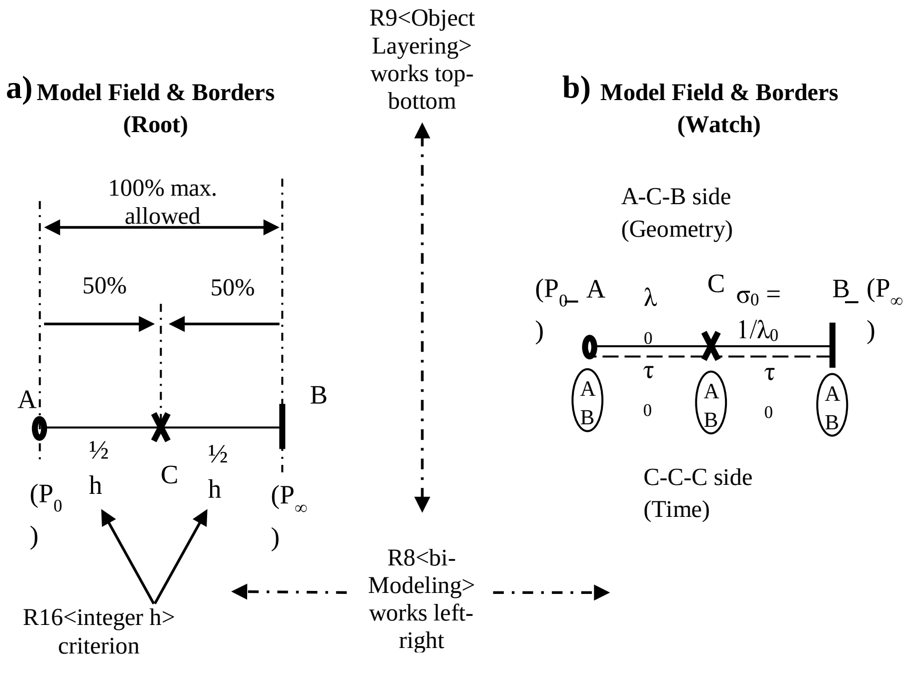
Comment: The objectivity-like of the Merging into the Root, comes from the idea that the Root Observes in the Root by the tools they have there, and the same holds for the Watch when the Watch Observes in the Watch: otherwise, we would affirm the principle that for instance, Observing by a Martian on Mars, is less objective than Observing by a human on Heart.

Note: The next two Subsections attack the bare Logic of NBM. We flag out that for the moment we only work into the Root: although concrete, this is just a logical-draft of out typical NBM Objects, and has no Geometry in it. We proceed this way only because the idea is unusual, but NBM does not say that the Logic comes before the Geometry (badly-formulated question). In fact, they work strictly in parallel, and this comes from just the way we set this specific formalism.

I.2 Bare Logic of the Model Poles (A-B pair and mid-Pole C)

Note: This and next Subsection present a set of five starting assumptions that seem to touch at Geometry: they indeed found the A-B Geometry of our Objects, but we will see this outcome hereinafter. First, we focus on the very elementary Logic which NBM seems to start by. The bare sketch of Fig. 1.a-b is Nongeometric: it relates to our first-kind Object Proto1, but the formal Logic we present there is general, and it holds for Proto2 also.

First we define the Poles A and B as just as two logical-opposite (left), then we associate them to the Geometry-like and to our Border Poles P_0 and P_∞ (right). The $A=P_0$ and the $B=P_\infty$ define the Model Field, and any Model Object must stay in there: its 3D mapping-back ranges from a geometric Point to geometric infinity.



This formalism distinguishes two contextual levels, where we work respectively by the Model Logic onto the logical-skeleton of the Object (left), or we consider the concrete Geometry and the actual λ_0-σ_0 quoting of that same Model Object (right).
The sketch on the right also shows two distinct Logic-Layers, which are assigned the Geometry-like (top), and the Time like (bottom) of our formal Objects. The whole formalizes as Root-Watch Modeling (left-right), and Logic-Layering (top-bottom).

Fig. 1: A possible illustrative schematic of our first-kind elementary Object (Proto1).

R5. <geometric Borders A-B> First we cancel any human preset: this makes an empty Model with no item defined in it. Next, we take a logical entity whatsoever, say A, and its Reverse-Twin, say B = NOT-A: the two play in a specular pair, and make two opposite logical-ends. Then we set the logical distance A-B as the inherent maximum the formalism can ever attain: this quotes 100% in the Model Root, and A and B make the two Poles we start with.

More in general, we assume that a contextual NOT-Reverse always defines-generates in NBM and must remain logically-compatible: in this example, once we have a whatsoever element that we call Pole A, we also have its NOT that we call Pole B, and the two can co-exist plainly on a same Logic-Layer. Hence the two logic-ends A-B actualize the top Layer of Fig. 1.b.

Based on that, we Modelers associate our first two Poles A and B to the Model Geometry:

a. Pole A matches a geometric Point (Pole P_0), and it tracks the Local side of the formalism.
b. Pole B associates to geometric infinity (Pole P_∞), and it tracks the Nonlocal side of the formalism.

This first couple of Twinned-Poles makes the geometric-like Borders of the formalism: the ideal span in-between them is identified as the Model Field, and it writes A-B or P_0-P_∞ indifferently; this means going from a geometric Point whatsoever in 3D, to some geometric infinity that we think directionless and pseudo-spherical-like. In any case, all the Model-Reality must stay into the Model Field, and the formalism cannot extend beyond its own end-Poles A and B.

Our Poles A=P_0 and B=P_∞ stay on either ends of the Field, are fully opposite, and qualify as full end-Poles: their NOT-opposition makes 100%, and their formal distance is 100% also. This first Twinned-pair produces a first-kind of Pole (100%-type), as opposite to the mid-mixed ones of R6<mid-Pole C> (50%-50%-type).

Associating A= P_0 and B= P_∞ is a human-level convention: the two end-Poles are barely logical at the start, so they are perfectly equal into the Model. They are basically same-kind, but keep nevertheless distinct because A is NOT-B, and B is NOT-A (they mutually define and differentiate each other).

R6. <mid-Pole C> First we take a concretely allocated A-B system, which makes a preexisting Logic-Layer as of R5<geometric Borders A-B>. Its contextual NOT-Reverse is assumed to be inherent in NBM, as something which words external-different from A and B. We formulate it as a NOT-A and NOT-B that we associate to another concrete Pole C (for the moment unknown), but this last human-level specification becomes incompatible with the preexisting Logic-Layer A-B: A and B are already in a NOT-Relationship, so that a neither-A-nor-B would match one of them, which means a YES-Relationship = 0% distance-separation from that Pole; this conflicts with our requirement that Pole C maintained a NOT-Relationship = full 100% logical-distance both from A and from B. To find a concrete-and-compatible solution, we assume that the system adds a parallel Logic-Layer, where it applies just part of the required-ideal NOT to A and B, and specifically the maximum that the system can concretely apply: by symmetry, we end in a third Pole C, which makes a new kind and quotes [50% NOT-A + 50% NOT-B]; this is equivalent to [50% YES-A + 50% YES-B], so C qualifies as a mixed-Pole that writes C=AB. Globally, neither A nor B writes C=AB into the concrete system, and it makes another Logic-Layer.

This new kind is fifty-fifty and expresses just one-half of the maximum logical distance in-between A and B (50% quoting): in the Root (Fig.1.a), any third Pole C stay always, necessarily, and exactly in the middle of the Field (full 100% span of the Object). Hence the new kind C=AB qualifies as an inherent mid-Pole, and always stays mid-distance from its reference pair of end-Poles A-B. This logical property does not apply to the Watch (Fig. 1.b), where the two distances A→C and C←B express regularly in physical terms (details by R13<geometric-like Scales>).

Our mid-mixed-Pole C also actualizes the Model Interface of a composite A-B Object: this is a logical component which is shown by a cross-dot in the Nongeometric sketches of Fig. 1; it makes there a false Point-like item, and it marks the separation of the two half-Fields, where the Logic Reverses A to B and vice versa.

The Local and Nonlocal sides of the formalism lay respectively toward Pole A and toward Pole B: they are defined in terms of two Twinned Slabs A-B as of R12<A and B Geometries>. In the 3D, the Model Interface corresponds to separating the solid core of the Object from physical Space around it: the first is given an ideal radius of λ_0 meters, and the whole limits to emulate the well-known Point-Mass scheme; such a scheme is just extended here to a trivial two-Slab Object (our elementary Proto1), which is therefore a Point-Mass equivalent.

The formal POV in A is A-type (i.e. Point-based and watching Linear), whilst the formal POV in B is B-type (i.e. Round-based and watching Round-like): the two half-systems are equal and come by a specular Reverse, so the kind of viewing-like does not truly change when we pass over the Interface (from A we see a Linear-Geometry by a Linear-view, and from B we see a Round-Geometry by a Round-view, so the two come out to be the same). Nevertheless, the two POVs and the two Logics-Geometries A-B on either side of the formalism, stay logically independent: our mid-mixed-Pole C marks the concrete Interface and the logical-switch between them.

R7. <A-B discriminating> At this elementary stage, the formalism only requires three kind of Poles, where A is YES-A, B is NOT-A, and C is an equal AB mix. The three make an A-C-B arrangement, were mid-Pole C can detect much clearly his two partners A and B: they both are different from him, and moreover they are different from each other (they show onto either extreme-end of the two respective half-Fields).

When applying R20<Time-like> and R27<Pace-jamming>, this property will allow deciding whether our formal Time-like counter on board of the Object works regularly (detected by Pole C), or works idle (undetected by Pole C).

I.3. Bare Logic of the Model Artifacts (A-C-B and C-C-C systems)

Note: This Subsection stays on the key Logics and defines the NBM Artifacts: they are made of Poles, and basically actualize the logical-skeleton of our Model Objects, so they define our standards Proto1 and Proto2 in terms of the general-inherent kind of any given particular Object. Fig.1 is the Artifact of a whatsoever Proto1-Object. Hereinafter we will get our Proto2 by just transforming logically the Proto1-Artifact: this comes in practice by folding its two halves onto one another (details by Subsections 1.14 and 1.15).

R8. <bi-Modeling> NBM adopts a parallel bi-Modeling, which means describing contextually the Objects by two distinct operating levels of the formalism. This concerns the Logic we Modelers and the system adopt to describe the Objects, and relates to its resolution, not to the Objects by themselves:

i. The Root (Fig. 1.a) is where abstract NBM operates, so the quoting standardizes as a barely formal percent. We assume this makes a very funding but very limited level of description of the Model-Reality: the formal vision does not go beyond distinguishing elements of a different kind, and the standardization of the Poles and of the Objects is so high, that this produces a peculiar Merging-in-one effect.

ii. The Watch (Fig. 1.b) is where the Model Objects associate to their actual and true-like physical Scales, so they quote regularly e.g. in meters or in seconds. We assume this produces a more detailed and much familiar description of our formal Objects, so that any two of them keep regularly distinct because of their different true-like size: the Merging mechanism does not concern the Model Watch.

The bi-Modeling is a Modeling artifice, so we describe our Objects and work on them by looking at once at what is going on inside the Root and the Watch: both components make an integral part of our Nongeometric description and are allocated on board of concrete-like Objects, hence they are given same concreteness and same degree of objectivity-like into the formalism.

Comment: The whole makes nothing but a Modeling tool, where we basically describe separately the Logic and the Geometry on board of our Objects. As we work by an A-B Point-Mass equivalent, our quoting of a concrete Object in the Watch includes four Model Parameter as of $[\lambda_o; \sigma_o; \tau_o; \nu_o]$, and no Merging applies there (more details by Subsection 1.5).

R9. <Object Layering> Our pragmatic top-to-bottom Layering of the elementary Objects actualizes by Fig. 1.b. This Logic-Layering comes from the inherent A-C-B construction of our Objects, so it works independently from our bi-Modeling by the Root-and-Watch environments. Hence we assume that the Object by itself organizes its own Logic on two distinct Layers, which therefore reads both in the Root and in the Watch. By convention we Modelers refer to Fig. 1.b, and set our Model-description accordingly. Next we assume explicitly:

i. The top Layer to be geometric-like, and to make an A-C-B system: this conserves the key features of the starting A-B system (whole Model Field and A-B Geometry), and just sees the third Pole C to have added right in the middle (it splits the Field in two halves, and plays here as a geometric-like Interface). Such a first top Layer expresses the POV of either A or B: they continue to play their original function of full-Poles, and both appreciate another full-Pole at the end of the Field, plus a mixed-Pole C in the middle (A sees B, and B sees A 100% away, whilst C is 50-50% and always stays 50% away).

ii. The bottom Layer to be Time-like, and to make a C-C-C system: by the inherent Logic of a three-Poles system where one of them is C=AB, we have that A and B cannot be full-Poles any longer; they will be instead fifty-fifty with regards to C, just because C is fifty-fifty with regards to them. In short: a full-Pole is a full-Pole with regards to another full-Pole, but in a three-distinct-Poles system, where one of them is necessarily a mid-mixed-Pole, all of the three Poles become mid-mixed-Poles relative to the others. Such a second bottom Layer of the Object, basically expresses the POV of C, who sees at once two other Poles and they both are 50% away from him; as such, they are half-strength with regards to him, and he classify them as being 50% mid-mixed-Poles, i.e. same-kind of himself.

The starting A-B pair, the third Pole C, the resulting distinct Logics of the A-C-B and of the C-C-C system, as well as the Layering regardless of the way we sketch it humanly, are assumed to be concretely set into the system, so they qualify objective-like by our Model: the top and bottom Layers are inherent to our formal Objects, and always work together.

We in fact have in the Object the three POVs of A, B, and C, but two of them are logically-equivalent at the start: calling the end-Poles $A=P_0$ or $B=P_\infty$, is a later geometric reading by the Modeler. Hence the operating Layers are only two: the one associated to either POVs of A or B = top Layer, and the one associated to the POV of C = bottom Layer. Our human visualizing top-to-bottom as of Fig. 1.b, makes just a practical example and plays here as an explicit Modeling artifice.

Note: When we work by NBM, we are asked to manage mentally five distinct Model pictures of our Model Objects:

i. The Object Root (Fig. 1.a): here the symmetric A-B Twinning of the two Slabs applies, and our quoting remains formal as of 50% and 50%; this first Modeling-environment is where we allocate the Logic on board, but also the h-concreteness and our Model Time-like, so that for instance the formal Energy and the inherent behavior of our elementary Objects, basically inhabit there.

ii. The Object Watch (Fig. 1.b): this second Modeling-environment is where we imagine our Artifact to gain much of the traits of a physical Object (still within the limit of a Point-Mass equivalent); the one of Fig. 1.b, for instance, emulates a Closed and Local Massive Object, which has a solid-core of λ_o meters, and is surrounded by some physical Space as we know normally, except that our formal Space pertains to it, and quotes σ_o inverse-meters: thickness of our B-Geometry half-Slab (details by Subsection 1.5).

iii. The top-Layer of the Object (upper side of Fig. 1.b): here the Object shows us its composite A-B Geometry in terms of an A-C-B system; the Model picture and the working Logic are ruled now by the common POV of either A or B. Hence we read the two geometric-like quoting of λ_o and σ_o, respectively for the Local and the Nonlocal parts of the assembly: such a geometric-like reading, basically comes through the eyes-like of A and B.

iv. The bottom-Layer of the Object (bottom side of Fig. 1.b): here the Object shows us its Time-like features in terms of a C-C-C system; all the three C behave in fact AB, just because they are considered now to be part of a three-Poles system. The whole expresses the picture of the Object by the POV of C, so the Logic is very different, and thus works on a logically-separated level. Hence we Modelers read, directly onto the same Assembly, but just underneath its Geometry, other two formal Scales which obey a distinct Logic, and thus cannot be geometric-like. Next we associate them to our pragmatic Time-like, and we Modelers assume to read, on this second C-C-C Layer, our τ_o and ν_o Parameters of the Object: differently from the top-Layer A-C-B, the τ_o and the ν_o are identical on the two Local and Nonlocal sides of the Object, so they basically work transversal to our A-B concept; this is inherent in the C-C-C Logic, as the left C-C distance must be equal to the right C-C distance in any case. Such a property holds both in the abstract and in the concrete, which is not the case for the A-C-B system on top: the B is NOT-A and different from A, so the two Nongeometric run A-C and C-B can be different into the abstract and into the concrete. Hence our Time-like reading of the three-Poles situation within the Artifact, comes now on behalf of Pole C and of its formal view-like.

v. Finally, we must recall that the Model does not contain regular Geometry, and cannot work unless we support it by our regular Modeling and regular picturing of the same physical Object into the 3D. For any Modeling step we take in NBM, we need a parallel visualizing of basically two things: the 3D popping up of our formal Objects (Subsections 1.4 and 1.7), and the 3D mapping-back of our formalism into the particular real-life situation we want to emulate by NBM (working examples by Subsections 1.20, 1.21, 2.1, and 2.2).

Operatively, we are not required to think-parallel like the system: instead, we visualize all those contextual levels one-by-one (we think sequentially as we do normally), and next we combine mentally the several formal pictures we get from them (more practical examples come below).
Hereinafter we will also touch at Model Relationships (Subsection 1.18 on), and there we will work by two distinct Modeling-environments, which are the Proper of the Object into the Absolutistic block, and the Target view of that same Object into the Relativistic side of the Model (see also the Model-mapping as of Table 1).

I.4. Logic of human Objects and of human Space (A and B Geometries)

Note: The next three Rules connect the starting A-C-B Logic with our regular picture of Point-Mass Objects into the 3D.

R10. <human Objects> The human picture of current real-life Objects, basically consists of a series of regular, solid-core, Massive Objects: beyond being objective, they are always for us Unambiguous, Closed, and Local. Here we assume that these properties belong not to Objects, but to the inherent human Observing-Modeling of Objects. As NBM is another human Model, these same properties determine the way the whole formalism is worked out (see also Paper 1 for more details):

a. Unambiguous (one single value at a time for any single property or Parameter): NBM takes note of that, and switches to a working notion of Time-like that becomes inherently discontinuous; this is a Modeling artifice to manage and make compatible, into the formalism, the two human notions of some Unambiguous Objects that has some Absolutistic Time running in it (details by R20<Time-like>).
b. Closed (Unambiguous and complete boundary): this human idea requires Space to exist concretely all-around the Local core of a regular Object; this in turn leads to the NBM idea (human as well) of a composite elementary Object (Proto1), which is made of a part A (emulating the Closed and Local solid core), and of a complementary part B (emulating and making concrete the surrounding Open-and-Nonlocal Space: details by R12<A and B Geometries>, and R13<geometric-like Scales>).
c. Local (Unambiguous geometric position in Space): this bases on the fact that a very sharp and precise Point-based Geometry is available to us; therefore, the NBM generalization consists in identifying this property with Logic A and Geometry A (regular Point-based Geometry), and to introduce, as a complementary describing tool, an additional Reverse Logic B with its Reverse Geometry B (logical-inverse of A, and thus curvature-based); such a second Geometry associates to the idea of an additional Round-like POV, as if it were

the complementary Twin of the Point-like POV that as humans we normally adopt (details by R11<Round-like Space>).

Comment: NBM does not express on the true nature of physical Objects (badly-formulated question). We just care of the concrete conditions for we humans to have Unambiguous, Closed, and Local Objects into our human Model.

R11. <Round-like Space> In NBM, we define and use two inverse and complementary POVs, which reflect our two end-Poles A and B. These two A-B POVs are Reverse each other, adopt inverse Logics, and by the formalism they are geometric-like:

a. A Point-like POV (usually set in $A=P_0$) can-NOT determine by one single Observation whether an Object is Closed.
b. Its complementary Twin defines Round-like POV (usually set in $B=P_\infty$), and he can-YES make sure, by just one single Observing-shut, that an Object is Closed.

NBM also considers that the human sense of a regular Object vs. Space, makes an inverse-Logic pair, and those two concepts get Reverse-Twinned by the two properties a and b above:

a. All regular Massive Objects are Closed (YES geometric boundary), and do not penetrate each other (they can-NOT, be entered into).
b. Space has NOT a geometric boundary (it Opens to geometric infinity), and it contains regular Objects (Space can-YES, be entered into).

Operatively, we do not use any longer the word Space: in NBM it becomes either a concrete Nonlocal Slab B (Nonlocal geometric part of an Object, which classifies Absolutistic), or a concrete Geometric Distance in-between two Objects (which is relational or Relativistic).

R12. <A and B Geometries> Our two complementary end-POVs A-B, determine two distinct and complementary Geometries A and B upon their two Reverse-Logics. This leads to the double viewing-like and formal quoting by the Model Watch as of Fig. 1.b):

a. Geometry A lays on the side of $A=P_0$, and it qualifies Linear-type: its formal Observer is A, it is Point-based, and he quotes the distances from himself in meters as we do normally. Hence Pole $A=P_0$ watches regularly and straight, i.e. from himself (the geometric zero), up to its Twin $B=P_\infty$ (the geometric infinity).
b. Geometry B lays on the side of $B=P_\infty$, and it qualify Round-type: its formal Observer is B, it is curvature-based, and he quotes normally the distances from himself, but by using the inverse-meters instead of the meters that uses A. Hence Pole $B=P_\infty$ watches anti-regularly and anti-straight, and we call this Modeling picture a Round-watching-like (or equivalent human concept). Nevertheless, by the standpoint of B, his own viewing-like and quoting remains straight, provided we Modelers express it in inverse-meters.

   NBM has no intuitive visualizing of that, and must rely solely on the formal anti-symmetry of the Model: our $B=P_\infty$ is definitely an equal Twin of $A=P_0$, so he watches-like from himself (his own geometric zero = zero curvature for us), up to his own geometric infinity (which means infinite-curvature, thus makes for us a perfect geometric Point, and by definition matches the other-end-brother of B, which is in turn our Pole A=P_o).

The whole does not concern the two Model Geometries by themselves, but the concrete and individual Model Object made of them (Fig. 1). Based on the properties a and b above, we say in short that our composite Object is made of both a Line and a Round:

a. The Line is the part of the Object toward A=P_o: it makes a concrete Model Slab, whose Geometry is A and Point-based. This emulates the Closed and Local solid core of a regular Massive Object (Proto1 configuration).
b. The Round is the part of the Object toward B=P_∞: it also makes an equal Model Slab, whose Geometry is however B and curvature-based. This makes an Open Nonlocal Space around the solid core of that same regular Massive Object (inherent logical-Twinning of the concrete A-B components of the Object).

The geometric-like configuration, and thus the mutual organization of the Line and of the Round in an Object, words in short the Asset (Object-configuration): this is a Nongeometric concept, and it determines the way the composite Object works in NBM. The two parts can keep well-distinct, and this makes the two Slabs to remain extraneous one another = no geometric-like overlapping. This is the case of our Proto1 as of Fig. 1, so we call it a fully-unfolded Asset: the overlapping into the A-B assembly makes 0%. Hereinafter we will see that the second-kind Object we call Proto2, works by a fully-folded Asset: overlapping 100% as of R29<Moving-like>.

Comment: Our two Geometries are not fixed in Space as we normally think of a reference frame: they on the contrary match the Object they pertain to, and float freely with it. They should best visualize as an individual pair of A-B Geometries on board of each one of our Objects: in NBM, any elementary Object carries around its own Geometries A and B, basically the same way that an Object in general carries around its body.

I.5. Geometric-like and Time-like Scales based on our A-C-B and C-C-C construction

Note: So far, we basically have set some elementary Logic, then mapped-back its implications to the regular 3D. We now switch Root→Watch, and enter the concrete physical-like quoting of our Objects (still limited to our composite-equivalent of the well-known Point-Mass scheme).

R13. <geometric-like Scales> We set two geometric-like Scales on the top Logic-Layer of our Artifact (A-C-B system as of Fig. 1.b): by this step we allocate a concrete size to its Slabs A and B, basically the same way we do when we quote a regular Object.

We chose the Scales to be λ_o on the A=P_o side, and σ_o on the B=P_∞ side: we make them Reverse-Twinned (logically-inverse) by prescribing a Rule $\lambda_o \cdot \sigma_o = 1$ (or equivalently $\sigma_o = 1 / \lambda_o$); this is not really a mathematical relationship (the two Scales remains logicallyunrelated), and it does not make a mathematical system with R14<Time-like Scales> (otherwise and by evidence, the formalism would not work). The λ_o and the σ_o of the Object are our concrete working Parameters:

a. We will measure normally the λ_o in meters [m]: this first Scale expresses the plain geometric distance of our mid-Pole C from our end-Pole $A=P_o$; this is also the regular thickness of the Local Slab within the elementary Object (emulator of its solid core).

b. We will handle the σ_o as just as the equal Twin of λ_o: hence we will measure normally (and exactly the same way), the one which plays the distance-like σ_o of our mid-Pole C from the other end-Pole $B=P_\infty$; we just use here a different unit, which is the inverse-meter [1/m] instead of the regular-meter; for the rest, the σ_o means again the concrete thickness of our prototype Slab, but it refers to the opposite-inverse side where the Object is Nonlocal (this formal thickness expresses there in inverse-meters, and this reflects a working Logic which Reverses with regards to the one of the straight-meters).

Our A-B assembly is made of two single-valued Slabs: it makes a false unidimensional in NBM, whilst in the 3D, it basically pops up as a directionless and pseudo-spherical-like Inner-Outer assembly (solid core A + individual Space B).

Comment: We will continue to express the σ_o regularly in inverse-meters [1/m], but considering it a curvature is misleading: we use instead the same word Model Scale, both for the λ_o and for the σ_o. Hence they should read as just as the two sizes and the two geometric-like weights of our two Slabs. This double-quoting mechanism is inherent to the Model, and by just itself, it is fully neutral and symmetric with regards to the Local and Nonlocal side of an Object. We nevertheless remain mentally centered on $A=P_o$ because of an evident practical need.

R14. <Time-like Scales> The bottom C-C-C Layer of Fig. 1.b qualifies different-Logic than the A-C-B on top. This last is geometric-like, thus the C-C-C can-NOT be same-kind. Next we play opportunistic, and set there our Time-like Scale: basically it is a formal distance in-between two identical Poles C. Our Parameters for the individual Time-like into the Object, are therefore the τ_o and its Reverse-Twin ν_o:

i. Our Time-like Scale reads into the C-C-C Layer on bottom of our Artifact, as an inherent τ_o-τ_o pair: we make it to play regularly, and express the τ_o in seconds [s]. The original Modeling-concept comes however from the Root, and basically quotes the amount of concrete physical-like Presence of the Object: this is unique to NBM, and to its notion of a discontinuous Model-Time.

ii. We define our working Frequency ν_o by assuming first that it is a logical entity, and secondly that it qualifies as just as the logical-inverse of the τ_o: the two make a pair of Reverse-Twins, basically the same that we prescribe for the λ_o-σ_o pair in Geometry. The ν_o quotes plainly in inverse-seconds [1/s], but once again, the Root-idea underneath the Model Frequency is very specific to NBM and to its

Beating Time: such a formal Parameter basically expresses the inherent rate of Change into the Object. The τ_o-ν_o pair qualifies Absolutistic, and it is allocated individually into the Proper of any Object: operatively, each one of them Beats its own Time-like on board (details by R20<Time-like>).

The Twinning into the domain of Time-like actualizes by prescribing a Rule $\tau_o \cdot \nu_o = 1$ (or equivalently $\nu_o = 1 / \tau_o$). The original Modeling-concept writes in the Root as of [amount of Unambiguous Presence] • [rate of Change] = 1.

Comment: In NBM, we accept openly not to know what is Time, neither we could decide whether it plays or not as a concrete entity in Nature (badly-formulated question). It is nevertheless practical for humans to count Time, so we use the NBM Time-like as a Modeling artifice into the Model.

Note: The τ_o and the ν_o, as well as the λ_o and the σ_o, are Nongeometric single-valued entities. They make a single isolated spot of Model-Reality, as opposite to our regular viewing of the physical World as a continuum. Thinking of a distribution, or of some mathematical function within this very prime block of the formalism, produces a self-nonsense condition into the Modeler.

I.6. Twin constant ratio and concreteness of the formal Objects

R15. <Twin constant-ratios> The formalism generates spontaneously two fixed proportioning ratios within our Artifact of Fig. 1.b (Proto1). By just opportunism, we Modelers associate:

a. The fixed λ_o/τ_o ratio of the Local A-type Slab, to a first constant c [m/s]: we flag out it is barely formal and independent from the physical World, but we want to emulate real-life Objects in any case, so we fit this property of the formalism onto c, where c is the speed of light [m/s]. Hence we make explicitly Model-c = c, which reads as an opportunistic Modeling tool whose function is descriptive-only.
b. The fixed σ_o/τ_o ratio of the Nonlocal B-type Slab, to a second constant a [1/(m•s)], for which we tentatively propose $a = c^4/(G \cdot h)$, where c is the speed of light [m/s], G is the gravitational constant [$m^3/(kg \cdot s^2)$], and h is the Planck constant [$J \cdot s = (kg \cdot m^2)/s$]: here too, the a-constant is a bare property of the formalism, but we Modeler play opportunistic, and attempt reproducing the physical traits of Space-Nonlocal into the B-Slab of our composite Objects (details by Subsections 1.21 and 2.2).

We assume that this Twined-proportioning ratio is inherent to the Logic on board of our composite Objects, and thus holds for any Object we can allocate into the formalism at this elementary stage.

Comment: The two resulting Rules $\lambda_o/\tau_o = c$ (always fixed), and $\sigma_o/\tau_o = a$ (always fixed), refer to two Slabs where two inverse-Logics works: they do not combine together, neither they form a true mathematical system with the other Model Rules for the pairs λ_o-σ_o and τ_o-ν_o (otherwise the formalism would not work).

R16. <integer h> The NBM specification for concreteness, carries out practically by assigning one integer h to any Object in the Proper, where h is the Planck constant [J•s = (kg•m^2)/s] (more details by R25<Energy-like>). Hence we handle the Proper Object as an integer Modeling Unit.
These same individual-h and h-criterion, make concrete both the Model Objects and the Model Relationships (more details by R33<relative Fractioning>). In NBM, the h could be regarded as the equivalent of a material-like, and basically the Objects, the Relationships, and the whole formalism are made of that (see also Subsection 1.17).
Operatively, at this elementary stage we assume that in a Proto1 (Fig. 1), both Slabs weigh 50%-50%, so the h stays ½ + ½ h onto the Local and Nonlocal parts. In a Proto2, we will see that the Slabs overlap and Double, so the h conserve and stays 100% on such a Double-Slab (more details by Subsection 1.14).

I.7. Popping up the formal Objects in the 3 D, and Locating their Slabs and the core

R17. <Inner-Outer pair> The abstract A-B Geometries we Modelers set into the Root, need to map- back correctly into the human 3D. Hence we add an independent definition of our two Poles P_o (associated to A) and P_∞ (associated to B). The two make two Reverse-Twinned states, which limit the regular Geometry of any Object by just the way we mean it normally (operating-Borders of the human 3D):

i. Pole P_o matches the idea of a regular geometric Point: concrete limiting state where the Geometry of a regular Object cannot be stretched anymore. This formalizes in a condition of Wide-Shut Geometry (or equivalent human concept), whilst its Reverse-Twin P_∞ makes a condition of Wide-Open Geometry: our P_∞ marks the idea of geometric infinity, and no concrete Object can expand more than that.
ii. A Point-like POV onto a P_o can define a Point-based Geometry (A-type), whose range stay necessarily inside its opposite Twin at P_∞ (B-type): a Geometry A is Inner-type, and always Inner to its Twinned Geometry B. By a trivial anti-symmetry, our Round-like POV onto the P_∞ defines a curvature-based Geometry B, which is Outer-type, and always Outer to a Geometry A (the Root has no such an Inner-Outer concept, and here we refer explicitly to the 3D popping up of our formal Objects).
iii. Our first-kind elementary Object of Fig. 1.b (Proto1), emulates the Closed and Local Massive Objects of the 3D. Within the limits of our composite Point-Mass equivalent, they all are made both of a Line which is Local, A-type, and always Inner, and of a Round which is Nonlocal, B-type, and always Outer. The two stay symmetric into the Nongeometric Root, and become antisymmetric from

the Watch on, i.e. when regular Geometry begins to emerge; in any case both parts weigh 50% each for the system.

iv. Fig. 2 (compare with Fig. 1) sketches the ideal popping up of a Proto1-Object, where its Line makes the Inner, and the Round occupies all of the 3D Outer Space = Nonlocal one-half part of that same individual A-B Object. Below come some quick Rules for visualizing our formal Objects onto the many ones we have in real-life (think in any case of a simple Point-Mass-equivalent):

- The Inner parts stay normally inside their Outers, and the Outers incorporates their Inners.
- The Inners makes the Closed and Local solid cores of the Objects, and two of them cannot penetrate each other: any concrete Inner qualifies most-inside toward the P_o-state, so that another same-level Inner cannot be more inside than that; two Inners are geometrically-incompatible, and their two P_o must remain external each other for both Inners to qualify most-internal with regards to the P_o-state as they are by definition.
- Conversely, two Outers cannot be external each other: nothing can be more external than an Outer-defined Geometry which bases on our P_∞; this defines as the most-expanded and all-encompassing geometric-state, so the Outer half-parts of our Model Objects behave antisymmetric with regards to our Model Inners.
- Having two or more Outers at a time, seems geometrically incompatible, but if we accept that they concretely exist-like into the Model (½ h allocated to them), they only can be internal one another: this allows them to keep same-level and most-external with regard to the P_∞-state as they are by definition (on the side of the P_∞, and differently than toward the P_o, any one of those half-Slabs occupies all of the available geometric-room, so that there is no way to accommodate two or more otherwise than by superimposing geometrically). The Model Outers thus fit normally into one another, and do superimpose geometrically: this is just the Reverse-symmetric of when we say that two Inners cannot penetrate.
- Operatively, we assume that the NBM Outers make a Nonlocal blanket to any Model Objects, and all of them superimpose in a common Nonlocal Model Space: their logical source is in fact our P_∞, and by evidence it can be just one (a wide-shut Geometry as of our P_o can differentiate from another wide-shut Geometry, but a wide-open Geometry can-NOT, so the only logical-outcome is that all wide-open Geometries basically superimpose and confuse-in-one).
- Conversely, the Model allows as many P_o and as many different Objects as we want (provided their Inners remain external one another). All the

Outer Nonlocal blankets of those formal Objects, must share in any case the sole and common geometric infinity of the 3D (which is operatively our P_∞).

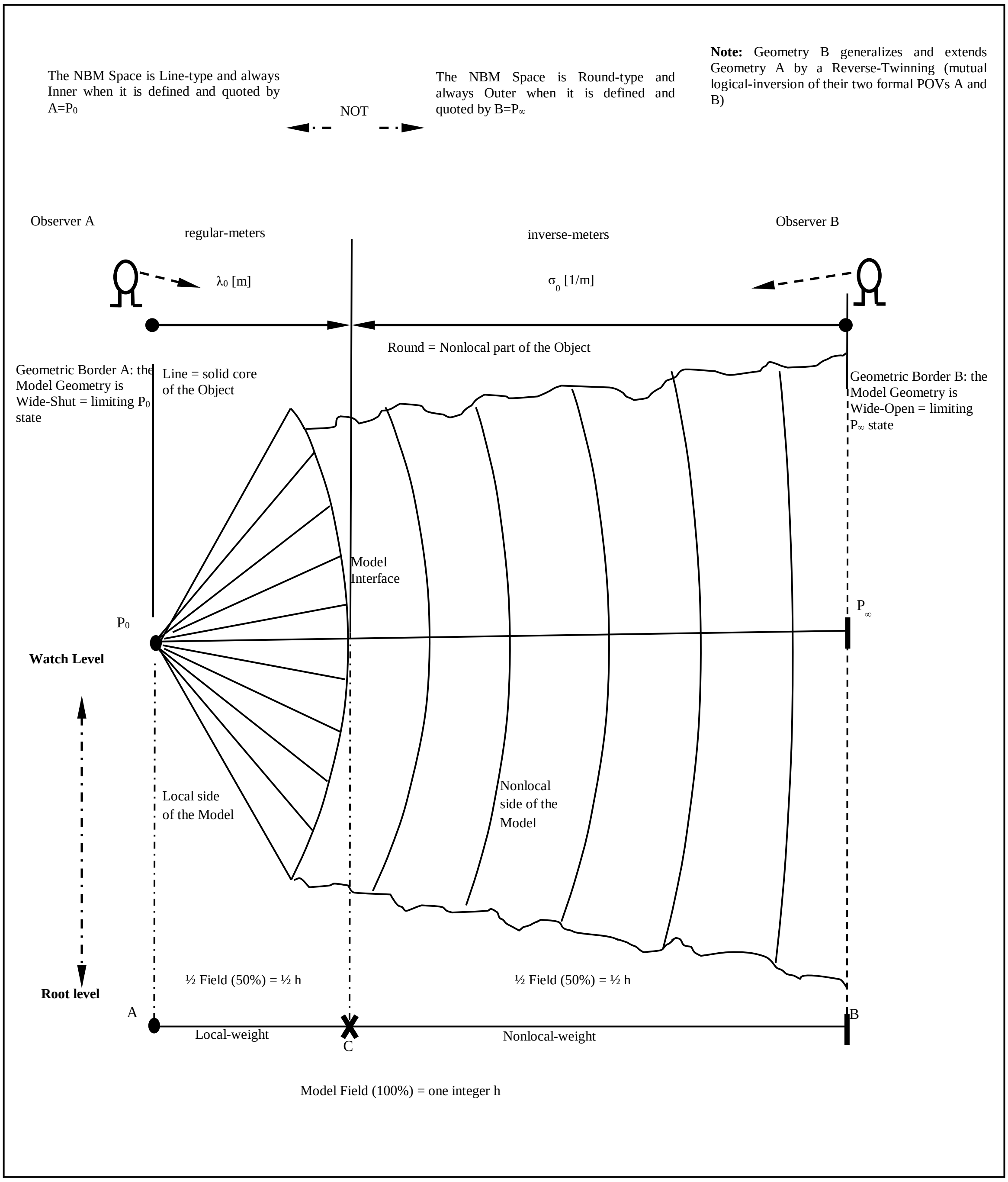


Fig. 2: 3D popping up of the Line-and-Round of a Proto1 (Nongometric sketch not-to-scale).

R18. <Localizing> We specify our formal Object Proto1 into its own Proper (Figs. 1 and 2), and independent from other Objects or pre-existing human references. Hence we assume that its property of being Closed and Local is inherent, and comes individually from its complete A-B arrangement: the A-component makes sharp its positioning into the 3D, and the B-component makes the system sure that its solid Local core is confined within a given anti-radius of σ_o inverse-meters (single-shut Observation by our Round-like POV in $B=P_\infty$, which means also that the solid core stays within a precise radius of λ_o meters around $A=P_o$ on the Local side).

Without the A-Part of the Object, we Modelers could not Locate a Proto1, so we could not claim it is Local; without the B-Part of the Object, we Modelers could not claim that a Proto1 is Closed (self-consistency by the Modelers when operating into the formalism).

Comment: Hereinafter, we will apply these same criteria to our second-kind Object Proto2: it basically works by a Double-A part with no B on its side, so within this same formalism, that Object Proto2 qualifies Local-but-Open, i.e. basically False-Local or Nonlocal-equivalent in human terms.

I.8. Preparing our Absolutistic Time-like by the expedient of Commuting the A-B Slabs

Note: Up to now, we regarded our Time-like Scale τ_o [s] as a static entity. We now define the NBM Commutation as a Nongeometric permutation into the Object, and enter the discontinuous Beating Time which is specific to our formalism: it is basically a pace-to-pace progressing of the Model.

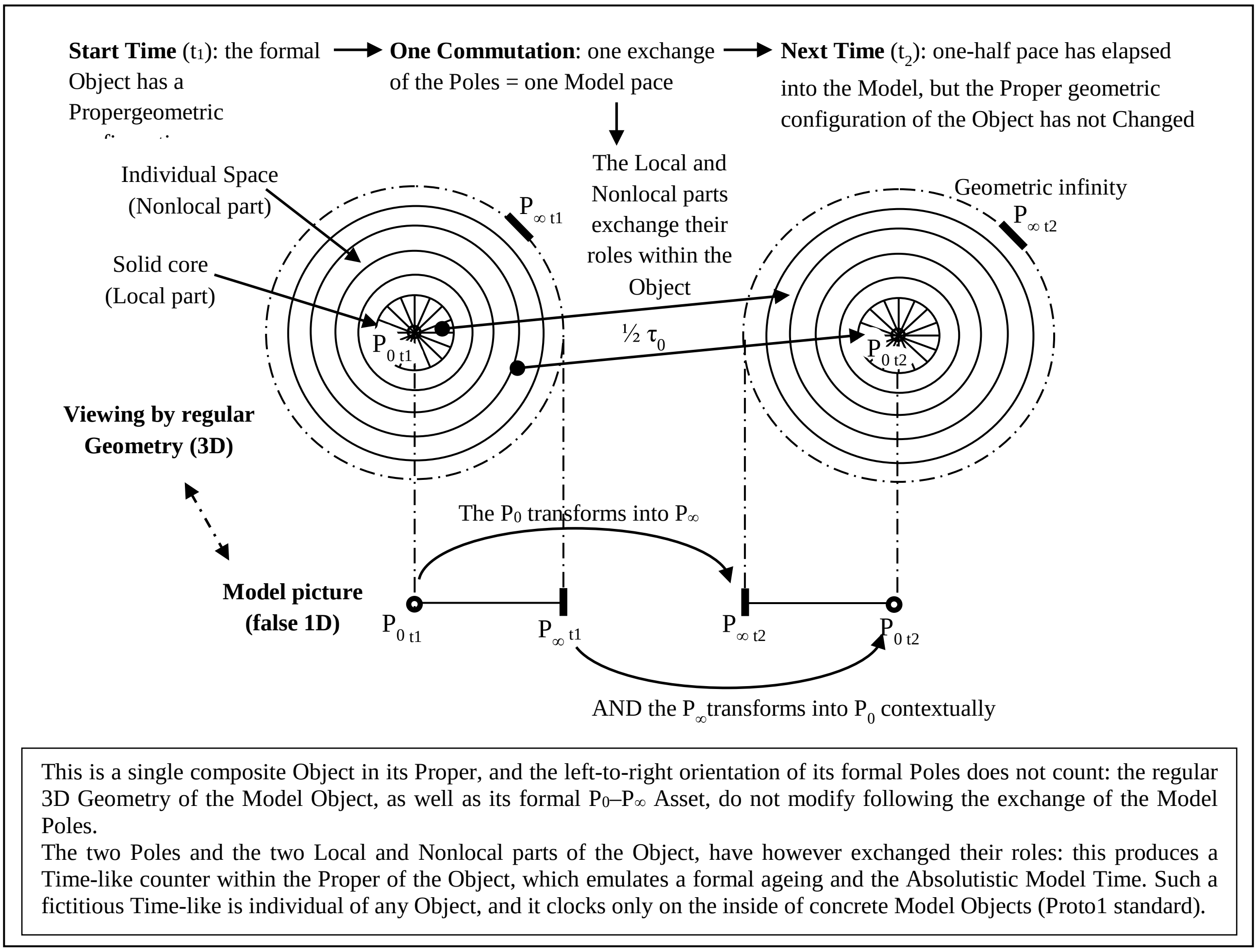


Fig. 3: Exchanging the Model Poles and formalizing a Nongeometric Change into the Object.

R19. <Nongeometric Change> In NBM we stay pragmatic, and define the Absolutistic Time-like as an inherent Change of the Object, which does not modify its geometric shape: any outside Observer who relies on just the Geometry of the Object, could not detect this Change, neither operatively nor in principle. We Modelers, on the contrary, play into the Proper of the Object, so we know the mechanism because it is the one we prescribe formally into it.

Our definition makes a logical-Reverse of the regular measuring of Time, where we see some geometric Change of a needle or of some equivalent concrete Object: there we play humanly from the outside of the Object, and such a notion of Time is Relativistic. Our formal Time-like mechanism works into the Proper, is inherent, and basically matches the human idea of counting practically the ageing-like of an Object (see also Paper 1 for more details).

A quick Procedure for the Nongeometric Change summarizes below:

i. We work on a composite Point-Mass equivalent, and can think of a Logic-permutation of the two A-B parts of the Object (which would not be possible in a regular Point-Mass Object). Fig. 3 shows that if we exchange the Logic of the Poles A-B in a whatsoever Object of the kind of Proto1 (compare with Fig. 1), we have no detectable Change of the Object by itself:
   - the Root of the Object (Fig. 1), is equal and symmetric with regards to our human sense of the left and the right, so the elementary status of the Object remains the same (our wording A vs. B of the Model Poles, does not count there);
   - into the 3D (Fig. 3), we start by a configuration where a solid-like Inner (Local core of λ_o meters) stays in the center of a Space-like blanket, and switch to a configuration where another-but-identical solid-like Inner stays in the center of another-but-identical Space-like blanked (the two refresh-like, but the regular Geometry of the assembly does not Change by the human 3D);
   - we assume openly the such a Modeling artifice conservers the physical-like Scales of the Object (it takes place in the Root, and there are no reasons for the Model Root to interfere with the Model Watch); in the Model-animation of Fig. 3, the Local core of the Object keeps its Nongeometric-size of λ_o regular-meters, and its Nonlocal blanket = individual Space keeps its Nongeometric-size of σ_o inverse-meters.

ii. At the same time, we Modelers know positively that there is a concrete Change into the Object (self-consistency): we claim that its two A–B Slabs are concrete because of the two ½ h that we Modelers allocate to them, and our Procedure makes they both to Change their status Local ↔ Nonlocal. In practice, our mechanism is a contextual double-NOT on both Poles A and B of the Object into the Root, so it is not a geometric Moving as we normally mean, neither does it produce a geometric Moving of the Object or parts of it (this associates to the specific Logic-Geometry and to the composite A-B construction by which we describe our Objects).

iii. We formalize such a Modeling artifice as one NBM Commutation, so we can count it practically by making: 1 double-NOT = 1 exchange = 1 Commutation.
   Our Model-pacing and formal Time-like, come next by assuming that the Commutation repeats regularly into the Object, so we associate it conventionally to one-half the inherent Time-like Scale of the Object itself:
   - One first formal exchange of our two A-B Poles, Reverses the two ½ h with regards to their original state into the two A-B Slabs: this counts one Commutation and makes ½ τ_o seconds into the Object.

- One second exchange makes one Commutation more, and brings back the two ½ h and the Object into the former starting state; this makes another ½ τ_o seconds into the Object, and by convention it closes one full-Model pace of one τ_o [s].

Then the inherent Commuting of the Object quotes regularly by the Proper Frequency ν_o [1/s], where we mean explicitly the number of A-B exchanges = number of Commutations per any regular human second.

The Model-Time formalizes as an individual Beating of any elementary Object of the kind of Proto1: the term Beating flags out that this is a discontinuous Model-pacing formalism.

Comment: We note that we started by a 100% empty Model, then we specified our concrete Proto1-Objects, and next we added our practical Model-Time on board of each of them: the NBM Time-like stays into the concrete Objects of the kind of Proto1, and no other Time-like or similar concepts are concretely allocated outside of them (self-consistency). We also flag out that our formal Commuting is very abrupt (on-off switch of the inherent Local vs. Nonlocal Logic). Thinking of it as a regular process-in-Time, or thinking that one Commutation requires some Model-Time to happen, make a self-nonsense condition into the Modeler. There are no sinusoid nor mathematical functions at this very elementary level (they would just conflict with our own definition of the Model-Time). In practice, one Commutation does not absorb any Model-Time: it conversely generates one bit of Model-Time, which depends on the Object, and thus quotes ½ τ_o seconds (where the τ_o is the Time-like Scale of that precise Object undergoing the Commutation).

Note: If a Model condition determines where we Modelers and the system cannot see the Commutation, no one can claim that the Model-Time is going on regularly into the Object. We will apply this self-consistency requirement to our Proto2, where we will see that it basically Beats Timeless-like: the Commuting simply get out of our definition, and thus does not generate Model-Time but something else (details by Subsection 1.15).

I.9. Grafting an individual Time-like function onto our composite Model Objects

Note: From now on, the NBM idea of an Object is no longer the one of an inert item. We think instead of a Modeling Unit = ever Evolving and adaptive Object, whit its own Logic and Time-like on board. Such a Nongeometric idea is general, and it allows generating our second-kind Unit Proto2, by just transforming the Logic on board of a typical Proto1. Hence our Proto1 and Proto2 become the reference-standards for two kinds of flexible Objects which work and behave very differently into the Model.

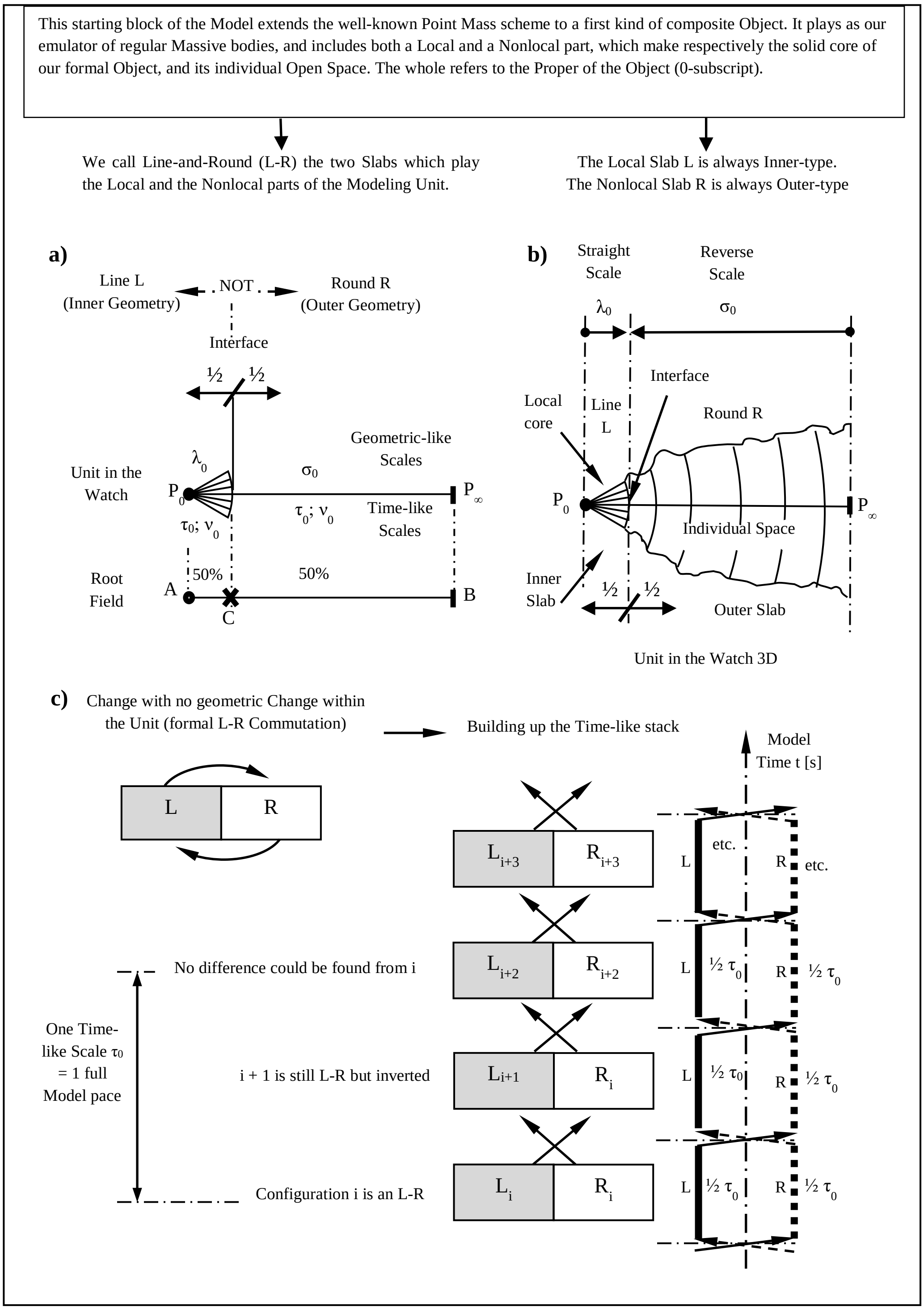


Fig. 4: Overview of our complete Proto1-Unit for emulating Closed and Local Objects.

R20. <Time-like> We handle the Model-Time as a logical and practical entity within our Model Objects. The original Root-Logic comes by the Presence-Change antagonism, that we assume to be inherent in the human Observing-Modeling of Unambiguous Objects. This writes $\tau_o \cdot \nu_o = 1$ in the Proper of any Proto1-Object: the τ_o basically measures the amount of Object which is properly A-AND-B defined, and enough well-shaped for we Modelers and the system to claim the physical-like Presence of a correct-and-complete Proto1 during the τ_o interval (self-consistency); the ν_o measures its rate of Change as of the number of abrupt on-off Commutations per any regular human second. For the rest, these two Reverse-Twinned Parameters, quote regularly in seconds and in inverse-seconds. Hence we handle them normally in terms of our Time-like Scale τ_o [s], and Model Frequency ν_o [1/s].

The Beating makes in general a pace-to-pace progressing of the individual Model Object, and our Time-like is a trivial counting of it. Fig. 4 suggests an example of how we could resume our picture so far of a complete Proto1: a) provides a possible NBM schematics of the elementary Object, b) illustrates its 3D popping up, and c) shows the ideal stacking of the discontinuous Time-like states of the Object. Such a Time-like notion is typical of our Proto1-standard, and of our composite Objects which are made of both Slabs A-B. It basically deserves four steps into the Proper, which may visualize for instance as in Fig. 4.c, where we start bottom-left from a i-state whatsoever of the assembly:

i. Our Proto1-Object includes both the Line L (A-side = λ_o meters), AND the Round R (B-side = σ_o inverse-meters): it is complete and well-shaped by definition, AND we claim it is concretely Present into the Model because of our assumption that both Slabs carry one half-weight of ½ h (self-consistency). Next we assume that the whole A-B assembly stay there exactly as we Modeler mean (i.e. in that Unambiguous configuration and concretely-like) for half a Time Scale of ½ τ_o seconds.

ii. Then our Poles $A=P_o$ and $B=P_\infty$ Commutate suddenly AND together, which means that they exchange their roles logically. This basically works Timeless-like to the system: the formalism and the system do not know of Time-like unless they see concretely one Commutation to have happened, then the Model shot-counts one ½ τ_o more than before, and sums into the Absolutistic Time-like of that particular Object where we Modelers assume to apply our Commuting-artifice.

iii. The two Slabs L-R which have just inverted logically, block that way for another ½ τ_o seconds, so they continue to assure the correct formal Presence of the Object: for that same Model-interval, they qualify as a complete λ_o-σ_o pair of the same kind of before, so they add another amount of complete and Unambiguous Proto1-Object, which lasts and quote ½ τ_o seconds into its Proper. Next we assume the two Slabs L-R to counter-Commutate automatically, which again produces a regular L-R configuration of the same kind of before, neither does it cause a geometric-like Change or a Moving of the Object.

iv. The counter-Commutation reestablishes the starting situation, and brings anything back in place within the Object: the Model could not even distinguish the two ½ h that we Modeler imagine to track during our Time-like cycling. Globally, the two ½ h go back in the state and in the same kind of Slab which hosted them before. Hence we claim for one full system-cycle to have gone, and thus for one entire formal pace τ_o to have elapsed into the Model-Time of that Proto1-Object.

We also assume explicitly that once allocated to the Proper of a Beating Unit, the Commuting mechanism goes on ceaseless and unvaried, so that it conserves also when the Logic-Geometry on board of the Unit transforms (see also Subsections 1.14 and 1.15). By the same animation-sketch of Fig. 4.c, we can note that within the Root, there are only two distinct Time-like states which the profound Object goes back and forth. We basically assume that the Root can discriminate them as an elementary reciprocal NOT = Reverse, so they quote trivially: [original Object; Reversed Object]. Therefore, the Time-perception into the Root limits to that and qualify recursive (self-consistency): in human terms, we may say that our profound Time-equivalent just goes back and forth sharply. Next, the Model-Time mechanism we propose above, simply consist of counting those two Root-states sequentially into the Watch. Hence we write explicitly ½ τ_o + ½ τ_o + ½ τ_o and so on, to keep track into the Watch of the number of Commutations that the Object-Artifact has undergone in its profound Root. In any case, the τ_o corresponds to the concrete amount that the complete-and-correct A-B Object has remained there during the system cycle. Hence by our τ_o-Parameter, we explicitly mean the actual physical-like Presence of an Object of the kind of Proto1 = Closed-and-Local, which in this a case is very neat and Unambiguous during the whole τ_o cycle: into the Proper, this is self-evident and comes by our A-B description-construction of the inherent Object; into the Relativism = Target view of that same Proto1-Object by an outside Observer, we will see that it is not always the case, so the Observer may see only a part of the Object and of its inherent Time-like (details and practical exercises by Section 2).

In a Proto1 configuration as of Fig. 4.a,b, we have two distinct Commutations at once: basically A becomes B-type, and B becomes A-type, where we assume that the profound system can distinguish the A and the B (operatively, this comes by the POV we allocate to mid-Pole C of that same Object: see R7<A-B discriminating>, and R22<C-Watching>). Hence we complete our sketch of the assembly by two barely formal small-arrows, which weigh ½ h each: in Figs. 4.a,b they show fully-open, and basically reflect the typical configuration of a Proto1-Object; in a Proto2, those same small-arrows will sketch fully-closed and conserve their overall weight (i.e. ½ + ½ h = 1 h: this is due to the different configuration of the assembly, but corresponds in any case to the inherent integer-weight of the Proper Object: details by Subsections 1.14 and 1.15). In human terms, we also say that mid-Pole C of a Proto1-Object discriminates the left-right Frequencies of his own A-B Slabs (our pair of Nongeometric arrows therefore show open-and-distinct), which is no longer the case in a Proto2-Object (our two small-arrows show conventionally closed-superimposed, which means confused-indistinguishable to Pole C).

Comment: The term Beating is general, and we normally mean 1 Beating = 1 Modeling Unit of any kind. Any Proper Beating is an integer Object, and we allocate 1 h on board of it. Our key Rule $\tau_o \cdot \nu_o = 1$ holds for any Proper Beating in its own Proper. It however generally deviates when we enter the Model Relativism, which means handling a Proto1 through the Target view of an outside Observer (either human or formal).

Note: The next three Rules R21, 22, 23 just zoom on some formal properties of the Time-like artifice we have just defined. The fourth Rule R24 makes a point on the inherent behavior of a Proto1 when it Beats.

I.10. The REV of 1 second per second as a third inherent constant of the Model

R21. <Model REV> Within their own Proper, all Proto1-Objects are synchronous, and keep Changing regularly by a fixed Time-like rate of 1 second per second: this formalizes as the Rate of Evolution (REV), by making REV = $\tau_o \cdot \nu_o = 1$ [s/s]. The subscript o does not applies to the REV: it is inherent to all Proper Units of the kind of Proto1, and does not depend on their individual Proper Parameters. The REV is a false dimensionless: in practice, it means for us that the Proper Beating is working regularly, so it produces 1 second of Model-Time per any second of Model-Time. Next we stay pragmatic, and mean the last term to coincide with the regular human second = regular going on of the human Time as it shows on perfect undisturbed clocks.

Globally, we assume that the REV is a third inherent constant of the formalism, which adds to the two geometric-like constants of R15<Twin constant-ratios>: at this elementary stage, our three key-constants of any Model Object are the c [m/s], the a [1/(m•s)], and the REV 1 [s/s].

By the Model Relativism (Target view of a Proto1-Object by an outside Observer), the $\tau \cdot \nu$ product generally reduces below 1. Hence the Model REV of 1 second per second, makes a limiting condition for any Beating Unit which operates in Time (Proto1-Objects): operatively, it traduces into the inherent maximum we can ever register into the Model for the Time-like rate of our elementary Objects (either Absolutistic or Relativistic).

Comment: In the concrete, the REV-constant compensates for the fact that the Model-Time works individually, and assures that our emulators of the Closed and Local Massive Objects (Proto1-Units), always emulate a synchronous Time when they are static one another: this basically reproduces the property of the human clocks to remain synchronous when they are still and the influence of gravity is negligible (details and practical exercises in Section 2).

I.11. Other formal properties of Model Time-like which are specific to NBM

R22. <C-Watching> In a fully-unfolded Object of the kind A-C-B (Proto1 as of Fig. 1), Pole C makes the only concrete POV which is available to the system to count concretely the Model-Time (Model-Modeler self-consistency). Pole C is therefore our natural supervisor of the Commuting and of the Model Time-like. Should he fail, we Modelers shall conclude that the system does not count the inherent Time-like into that Object, and down there, any Absolutistic-Time and ageing-like go idle (the entire Modeling Unit works Timeless-like).

Comment: This comes by self-consistency and from R7<A-B discriminating>: from his mid-position as of Fig. 1, C sees clearly the A and the B when they exchange, so he registers directly the concrete Change of the Object; this in turn makes his only reference for the profound Time-like, and thus the only concrete and properly-defined Time-pacing that he and the system can establish within his own profound Object. Conversely, if we imagine to take the POV of the A or the B into the same Object, we shall conclude that we would Commutate ourselves by any Commutation, so we would not see neither the Commutation nor the concrete Time-like: our A and B are elementary Observers, and first do not know by themselves of the Commuting mechanism; secondly, in their profound concrete, they both see any moment another partner which is always a 100% NOT with regards to themselves; hence the situation they see after any Commutation never Changes, and they cannot count the Model-Time for what we define it. In short, we may say in human terms that the A and the B of the Object are taken into the Model-Time, so they cannot see it, and only mid-Pole C can: he sees the Model Time outside of him, AND as a concrete Commuting of the A and the B; we note also that our C is an AB, so that into the Nongeometric-profound of the Root, he is immune to our Model Commuting which is a trivial exchange of the A and the B.

Hereinafter, we will see how this ability of Pole C in registering Time-like will alter in a Proto2, where we basically fold the Object in a way that Pole C cannot see the Commutation any longer: the folded Unit therefore begins to work Timeless-like, neither the system has another practical tool to claim that the profound Time-like down there the Object is concretely running (more details by Subsections 1.14 and 1.15).

R23. <Presence-cut> We refer in general to a Relativistic situation, where either one or both Slabs A-B of a Proto1 become incomplete during a given Fraction α of the Proper Time-like Scale τ_o. Then we Modelers and the Relativistic side of the system, shall count a total amount of Object which reduces to a cut-out Scale of $\tau = (1 - \alpha) \cdot \tau_o$ [s]. This value shall be the actual Time-like Scale, and the actual amount of Presence, that we Modelers can claim for that Proto1-Object to have remained concretely well-shaped, consistent, and Unambiguous within a given Relativistic Target view: during the missing or otherwise ambiguous α-Fraction, the Object did not fit completely our Proto1-standard, so we cannot count the α-Fraction as a regular Proto1-Object.

The Presence-cut never applies to the Proper. We nevertheless assume that the Model Relativism makes a concrete reason for such a formal cut to occur. Hence we apply practically this α-cutting technique into the Target view of an outside Observer who wants to quote a Proto1-Object from the outside. The Fraction α which classify NOT-Proto1 and to be cut out, may range in principle from 0% to 100%, but in no case it can exceed those limits.

Comment: This Rule basically comes from self-consistency: our inherent Proto1 is a whole, and by definition the Commutation is contextual, so during one τ_o, both Proper Slabs and the entire Object stay there in the precise form we call a Proto1. Hence the τ_o-Presence is always complete and Unambiguous into the Proper, and it lasts precisely τ_o seconds per any inherent τ_o Scale of the Object. Our Model Relativism works however in a separate Target view of that same Proto1-Object, and we assume that there it filters out part of the original. Hence we Modelers must count less Object into that Target view, and we do by a Relativistic τ which is less than the inherent τ_o (more details by Subsections 1.18, 1.20, 1.21, and practical examples in Subsections 2.1, and 2.2).

I.12. Inherent formal properties of our first-kind elementary Object (Proto1)

Note: Next Rule and its formal jargon, basically make an expedient for visualizing practically our Proto1, and for keeping on hand its key differences with regards to the next formal Object Proto2.

R24. <Still-like> Proto1 is our first-kind of elementary composite-Object, and it plays the NBM-emulator of regular Massive bodies (Point-Mass equivalent). Its properties do not depend on the particular Parameters of the Unit (our set [λ_o; σ_o;, τ_o; ν_o]), and come directly by its inherent A-B arrangement as of Figs. 1, 2, and 4. Below we resume intuitively the formal behavior of a Beating-Object of the kind of Proto1:

i. Such a Unit carries its own Time-function on board (NBM Commutation), and works any moment with both Poles and both Slabs at once: we say this makes an A-AND-B operating-Logic, and we call Proto1 a two-Poles Unit (in short 2P-type, or just 2P).

ii. The B-Round always come together with the A-Line, where the first is our reference for the property of being Closed, and the second for the one of being Local: a 2P-Object of the kind of Proto1, always qualify Closed and Local. During the Beating, it stays fixed and Unambiguous for ½ τ_o seconds, then it Commutates and stays fixed and Unambiguous for another ½ τ_o seconds (and so on indefinitely). Its total 2P-Presence therefore quotes τ_o seconds per any τ_o seconds (the Presence of a 2P-Object into its own Proper is always 100%).

iii. The Line and the Round keep 100% distinct and do not overlap: the Asset qualify of the kind fully-unfolded, and it is always so for any 2P-Unit into its Proper (our Proto2 works instead fully-folded, which means a 100% geometric-like overlapping).

iv. Any Beating-Unit which works 2P, qualifies Still-like into the Proper as of Fig. 4.c: our composite Object replicates-refreshes in the Model-Time, and makes a complete Change once a time per any τ_o, but for the rest it is self-standing and geometrically auto-stable into the human 3D as of Fig. 3 (our Commuting mechanism conservers the regular Geometry, neither does it make the Unit to drift or to Move relative to other Units of the same kind 2P).

v. The term Still-like opposes to the term Moving-like that we will adopt for our Proto2. Both terms refer to the inherent properties as of the Proper Asset of the Unit, and keep an Absolutistic meaning but are barely formal: the solid-core of any Massive-like 2P-Unit, can Move freely with regards to other 2P-Units of the same kind. This is however Relativistic, and it makes another Modeling block downstream of the Proper (more details by Subsections 1.18, 1.20, and 2.1).

vi. The 2P-configuration of a Proto1, and the subsequent way the Unit Beats and behaves, make a first operating-Border of the formalism: this is both logical and much concrete for any particular Object we can conceive by NBM at this elementary stage (no Object can be more unfolded and more Still-like than a Proto1 configuration).

Comment: A practical short wording for the whole, comes for instance by saying that our Proto1 (2P-Unit) works fully-unfolded by a contextual A-AND-B Logic, and that it behaves Sill-like. It qualifies Closed and Local, and emulates the regular Massive bodies of real-life. Our next Proto2 makes a separate kind, and sort of operating-Twin of Proto1: it works fully-folded by just one-Pole at a time, so it words a 1P-type Unit, and produces a formal speed-like of c meters per any second into the formalism. Hence it candidates spontaneously for a very fist level emulation of the light-like, and for Modeling any regular Moving of our Closed and Local Massive-like 2P-Objects into the formalism (details by R36<formal speed>, and R38<MATCH balancing>).

1.13. Completing our Beating Units with some formal Energy and Mass-like

R25. <Energy-like> We tentatively propose to associate a formal Mass-like and Energy-like to our 2P-Objects of the kind of Proto1 (Figs. 1, 2, and 4). This comes out spontaneously from the inherent integer h on board of the Object [J · s], and from the elementary Space-like and Time-like Parameters by which we quote its Closed Local part, i.e. our Line-type Slab in Geometry A, which makes the solid-like core of the Object. Our elementary Proto1 is therefore given, in its Proper:

i. An Energy-like Parameter as of $E_o = h / \tau_o = h \cdot \nu_o$ [J]: hence we generalize and extend, into a concrete Local Object, the well-known formula $E = h \cdot \nu$ for the light.

ii. A Mass-like Parameter as of $m_o = E_o / c^2$ [kg]: this comes immediately by the well-known formula $E = m \cdot c^2$. Next we recall that by just an opportunistic choice, our c-constant means both the speed of light, and the inherent λ_o/τ_o fixed-proportioning of any A-type Slab that we can have into the Model. Hence we derive immediately, for the Proper Mass of our Object in terms of its Proper Geometry, a formal relationship as of $m_o = (h \cdot \tau_o) / \lambda_o^2$ [kg].

iii. A non-Moving Momentum (sort of inherent internal Momentum), which comes from our particular choice about the Model Time-function (Fig. 4.c), and which consist of exchanging regularly the ½ h onto the Local and Nonlocal parts: this writes $Q_o = h / \lambda_o$ [kg · (m/s)]. We flag out that the Commuting mechanism is Nongeometric, so it does not produce any true-like Moving into our composite Objects (at least not at its conceptual source). Therefore, such a presumed non-Moving Momentum remains a barely formal Parameter.

Comment: Regarding Point iii, we basically borrow in a very pragmatic and intuitive way, the well-established De Broglie formula that we know to apply to a Moving Object, and which is therefore Relativistic by itself. Our formalism attempts keeping symmetric, and our Commuting mechanism produces a logical-relocation of the two ½ h on board of the Object, which is not so different from the overall transportation-like of the h we have in an Object we see to Move from the outside (see also Subsection 1.17). In short, we basically associate to the inside of an Object (Absolutistic side), the same formula that we know to work on a real-life Object when it Moves with regards to us (Relativistic side). The same Absolutism-Relativism symmetry and subsequent equal handling, basically inspire also Point 1 above regarding the Model Energy.

I.14. Deriving our second-kind Object Proto2 by folding the Logic-Geometry of a Proto1

R26. <half-Reversal> By Fig 5.b (Root-Watch schematics), we formalize our second-kind of elementary Object (Proto2 = 1P-type Unit). The Procedure does not depend on the particular NBM Parameters of the Unit, and it illustrates below as a series of step-by-step instructions:

i. Start by a Proto1: We take a concrete 2P-Unit (Proto1) that had already been allocated into the Model as of [λ_{om}; σ_{om}; τ_{om}; ν_{om}]. The new subscript m stands for Moving, and it refers to what we are going to do right now. The Unit carries 1 h and preexist-like into the formalism, so we assume that it conserves in any case.

ii. Define the half-Reversal: We act directly into the Proper, and apply a half-Reversal (NBM logical operation), which is a single-shut NOT on one end-Pole only (e.g. our A, but starting from B would be equivalent). In NBM, we assume globally that this once-a-time single-NOT only transforms the Asset, and that the Unit becomes fully-folded of the kind 1P: this means that the Object Beats by just one Pole A or B at a time (as opposite to the 2P-standard, where both Poles are active and contextual at any time). We also assume that a symmetric operation exists, and that a counter-Reversal can reestablish the original 2P-Unit: the back and forth switch 2P↔1P is assumed to be free and reversible (at this elementary level, we do not touch at why it happens).

iii. Practical visualizing: We assume that all key functions on board conserve, as well as the Proper Parameters of the original 2P-Object. We distinguish two passages as of Fig 5.b:

Passage 0 Folding:

- We start from Fig. 5.b-top (Nongeometric sketch), and apply ideally our NOT to Reverse Pole A=P_0 and its Line A-C: operatively, we switch the left A-part of the Object Local → Nonlocal.
- This makes Pole A to become NOT-A = B: in the 3D, the P_0 of the Object transforms in the P_∞ of that same Object; the Local Scale λ_{om} Reverses in its Twinned Nonlocal Scale $\sigma_{om} = 1/\lambda_{om}$.; the ½ h allocated there converts to Nonlocal.
- The Reversed half-subassembly we have just formed is made of one extra Pole B=P_∞, one extra Round C-B, and one additional ½ in the Nonlocal. Hence it is same-kind and same size of the one which was there before, i.e. the original Nonlocal half of the 2P-Object we started by. The two are identical and the system has no criteria to distinguish them anymore, so they Merge in a special configuration that we call Double-Pole BB and Double-Round RR. The way we illustrate-describe the Object therefore switch to Fig. 5.b-middle.
- The new Double-Slab RR now carries the whole h (global conservation of the original 2P-Object), and thus it weighs ½ + ½ h (as opposite to the plain ½ h that we associate to both single-Slabs of a 2P-Object). For the rest, a regular single-Slab or a Double one, have nothing truly different to the eyes-like of the profound system (the Model Root only discriminates the kinds of the Model Poles and Artifacts).

Passage 1 Beating regularly:

- By Passage 0 = Step 0, we obtained our folded Artifact-Unit in the form of a Double-Round RR: it makes half-geometric-Object with an actual h-weight of 1 onto the run C-BB, which corresponds to half-a-Model-Field.
- Next we assume that the Commuting continues undisturbed in any case, i.e. by the same inherent τ_{om} and ν_{om} that we had formerly allocated into the original 2P-Object prior to folding: the Logic of the Beating-Commutation defines independently from the Logic-Geometry which

undergoes the folding, so this second passage reflects conservations and self-consistency. Hence we complete our NBM description by the three Steps below:

- Step 1 = 1st regular-and-inherent Commutation into the folded Object: this makes the BB to Commutate into an AA, so our practical visualizing of the Object switches to Fig. 5.b-bottom: the freshly formed Double-Round RR Reverses onto the opposite half-Field (run AA-C in the sketch), where it becomes a Double-Line LL which subsist on its own, so it must carry now the full weight ½ + ½ h of the Object (the h-content into the folded configurations of the moment, stay always the same and equal to the h-content of the starting 2P-Object). The assumption comes from the idea above: the profound system knows of the Double h-weight (conservation), but cannot discriminate the geometry-like of a regular vs. a Double half-Slab (NBM self-consistency), so the Beating continue the same and fully undisturbed by itself (by our single-shut NOT, we only forced the two Poles to group geometrically in one, then they continue to Commutate together and contextually as they did into the original 2P-Object).
- Step 2 = 2nd regular-and-inherent Commutation into the folded Object: this comes after a regular half-pace of ½ τ_{om}, and it writes AA→BB. Hence our practical visualizing of the Object switches-up again to Fig. 5.b-middle: this second regular pacing of the Model Reverses the whole Double-Line LL into an Object which is h-complete, but made of just a half-Geometry RR onto the half-Field C-BB (same NBM-configuration and same profound-state as right-after the folding we specified above in Passage 0).
- Step 3 on: we assume that the Commutation-Beating of the new Unit goes on indefinitely (as is was the case for the original 2P-Object), and that the new-kind configuration as of (a Double-Line LL)-OR-(a Double-Round RR) is auto-stable (unless some possible counter-Reversal reestablish the original 2P-Beating). Hence the new-kind Object Beats as of [τ_{om}; ν_{om}], whilst its Geometry-like quotes [λ_{om}; σ_{om}] (same NBM-Scales of the 2P-Unit we started by). The Procedure above does not depend from the individual Parameters of the Units, so it reflects in general the properties of the folding or unfolding the Objects in NBM.
- Globally, we visualize the new Unit as a half-Object which converts Local-Nonlocal by a regular Model-pacing. It nevertheless weighs 1 into the profound system, and such a new-kind Beating works now by alternating its own Geometries on board as of AA-OR-BB (as opposite to the inherent A-AND-B of our 2P-Proto1 standard). The same regular

switching back-and-forth from Local to Nonlocal, reflects in our schematics of the new-kind 1P-Object in Fig. 5.d (Proto2-standard).

iv. Other properties:

- We assume that in a folded 1P-Unit, the system cannot distinguish anymore the left-side Frequency from the right-side one: in Fig. 5.d we sketch our Nongeometric small-arrows fully-closed, which basically means confused-superimposed to the eyes-like of our profound-Observer Pole C; as we assume this folded-state of the Asset is in any case temporary-reversible, we keep nevertheless track of both ideal-arrows in our Nongeometric sketches. In Subsection 1.20, we will use such an argument to quick-Model the relative-speed of our formal Objects.
- In a folded 1P-Object, when the Local Geometry A is on, we lack its natural complement Geometry B. The A determines the property of being Local, whilst the B determines the property of being Closed. Hence we assume explicitly that the concrete A-part of any 1P-Object of the kind of Proto2, qualifies Local-but-Open = False-Local = Nonlocal-equivalent. This is the homolog of the solid Local core of our regular 2P-type Objects of the kind of Proto1 (Massive-bodies emulators), but in a folded 1P-Object, basically neither we Modelers nor the system could Locate such an A-part within a confined area of regular geometric Space (the A-core of the Object is Local nonetheless, but it remains Open = unbounded on the Nonlocal side: in short, the Nonlocal-half misses, and does not Close concretely the Local-half).

More in general, the two logical-transformations we identify as half-Reversal and counter-Reversal, only change the geometric-like Asset of the Unit, and induce two stable and distinct modes of inherent operations of the Beating. We word them respectively a fully-unfolded Asset (2P = Proto1), or a fully-unfolded Asset (1P = Proto2), so in NBM we assume that they make the two extreme standards for the logical-practical Beating of any one of our elementary Objects (operating-Borders of the formalism: more details by Subsection 1.16)

Comment: The whole should not be regarded as a true assumption, but as a plain Modeling artifice for producing a second-kind of NBM Object, and next exploring its formal properties. In any case we limit to our task of only describing concrete Objects.

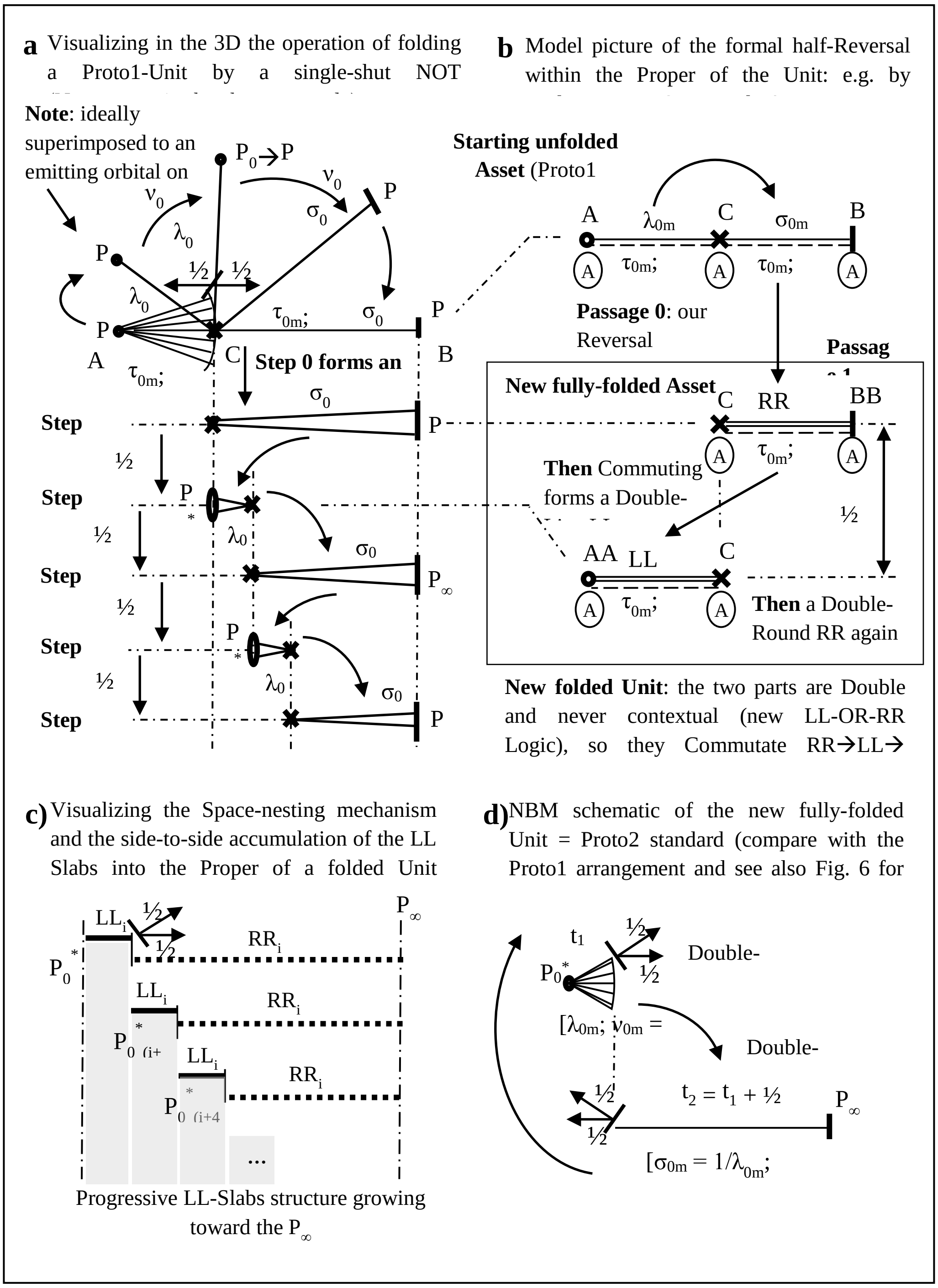


Fig. 5: Introducing and visualizing the new-kind fastest moving Unit (Proto2 = 1P-type Object).

I.15. Formal properties of the new-kind Modeling Unit (Proto2 standard)

Note: Some passages below may seem confusing at glance. The point is that we Modelers prescribe the Model-Time, so within the Model we think before and independently of it (self-consistency). Hence it comes spontaneous to adopt the unusual concept of a series of Model Objects which are logically-ordered by the Model Logic, but nevertheless stay out of our Model definition of the Model-Time. In human terms, those Objects come logically-after one another, but stay like out-of-Time for the system: into our formalism, the sense-of-Time is exclusively the concrete product of 2P-Proto1 Objects only. Hence we hold and cross-compare below the two distinct standpoints of a Modeler who stays before the Model-Time, and of a regular human Observer who is a 2P-Object in Time.

R27. <Pace-jamming> In a 1P-Unit of the kind of Proto2, Pole C fails to distinguish and count the Commutation. Hence the Commutation goes idle, and by definition does not produce the specific Time-like and Absolutistic-ageing that we Modeler and the profound system can claim in a regular 2P-Object. A 1P-Unit therefore does NOT Evolve in Time, and the Change by the Beating must come by another Model Parameter (see R28<Space-nesting>). Here we need to flag out the difference between the two POVs outside or inside the Object:

i. External-human POV: First we take a regular POV outside the 1P-Unit (we are a 2P-Observer in Time), and look at our sketches of Figs. 5.b,d. There we are into the Proper of the Object (the sketch is a hybrid NBM-human), so we Modelers identify two distinct Time-like states which the Object goes back and forth (same idea than a regular 2P-Unit as of Fig. 4): they quote for instance [LL; RR], or equivalently [0; ½ τ_{om}]. Next we tend, as it is normal, to count sequentially those two states, so we imagine that the Beating Evolves-happens in Time. However, the Time-frame we use is ours, and it qualify Relativistic with regards to the Object (we stay outside).

ii. Internal-inherent POV: Now we want to define the inherent system-Time into the profound Object. We proceed by our Absolutistic Model-definition, so we cannot rely on outside references, neither we can refer to the regular human Time-framing of the Beating. Hence we take the POV of mid-Pole C into the 1P-Unit, and apply R7<A-B discriminating> and R22<C-Watching>. First we note that when we Reverse-and-fold the original 2P-Objects, we act from the outside and imagine to conserve the starting Geometries, so we write a Double Pole AA or BB on the top-Layer of our schematic in Fig. 5.b. Our mid-Pole C is part of the bottom-Layer, and he sees those two Poles AA and BB in the upper geometric-part of the Artifact:

- In a regular 2P-arrangement, he sees them to Commutate, so he counts the number of Commutations and the regular going on of the Model Time-pacing into the Object (compare with Figs. 1.b and 4).
- Now Pole C sees alternatively an AA only, or a BB only: they stay on their own, so the AA cannot qualify 100% NOT-BB (there is no BB contextual to it), and the same applies to the BB (Pole C cannot classify it as a 100% NOT-AA). Moreover, when they get-on and show to C, they lay half-a Field away from him, so Pole C must classify them as mid-mixed-Poles, i.e. 50%-50%-kind. Globally, Pole C concludes that the two Double Poles he sees alternatively are of the kind AA=AB=C, and BB=BA=C: by any one Commutation, in the very end he sees a Pole C to Change in another C, so he cannot discriminate, neither he can see the Change and count the concrete Time-like pacing into his own Object. If he cannot from there, the system cannot neither, and also we Modeler rely on him to judge consistently of our formal Time-like into that profound Object. In human terms, this is equivalent to say that the Commuting goes on regularly (we 2P-Observer in fact see it in our sketches, but from the outside); nonetheless, that particular fully-folded Commuting does not count the Model-Time into the Object, and any 1P-configuration just Beats Timeless-like by itself (Model-Modeler self-consistency).

iii. Formal Timeless-like: Hence we assume that in any Object of the kind 2P-Proto1 (Figs. 5.b,d), the regular pacing of its half-Geometries as of RR→LL→RR→LL→etc., still comes in a logically-ordered series, but those Model Slabs qualify contextual into the Unit: there they come all-together and Timeless-like, and in human terms they show-develop on a given Model Time-level, which stay blocked onto the moment we Modelers imagine to fold the Unit (upon unfolding again in a 2P, Pole C and the Object recover immediately their ability to Beat the Model-Time). The whole reflects the POV and formal-judgement of the inherent Observer Pole C who operates into the Proper of the folded-Unit, and thus formalizes the inherent Model-position with regards to Model Time in that same profound Object. We also flag out that by the Model, the inherent series RR→LL→RR→LL→etc. comes directly into the Proper of the Object (Absolutistic), i.e. prior that we or another 2P-Object can Observe it from the outside (Relativistic): it is only by this Relativistic-passage, that we can next classify the several elements of that series based on our own 2P-Time, which is not however the inherent Time of the 1P-Unit which produces the series. Hence we have two neat and distinct Model POVs, that we assume to coexist without conflict: the 1P-Unit and its own series of logically-progressive states RR→LL→RR→LL→etc., stays out of the regular 2P-Time by themselves; we nevertheless see them in Time from the outside of the Unit, because we are 2P-Observer and proceed-judge by our own regular Time.

Comment 2: Another much opportunistic argument for accepting that a 1P-Proto2 is formally Timeless-like, comes by comparing the conclusions above with our sketch of a regular 2P-Proto1 as of Fig. 4.c: the Object there refreshes completely any τ_o, where the τ_o at the start is nothing more than a Model-pacing and a Modeling artifice; by definition though, we have no geometric-Change there, and if we wish the system and we Modelers to keep track of the Change, we need some additional Parameter which can-NOT be geometric; then we chose pragmatically our τ_o, and basically decided to call it humanly Time-Like. In short, this associates to the fact that our Beating works in a way which gives no geometric-like output, so we need an independent Parameter more, which is the Model-Time. By our sketches of Figs. 5.b,d, we see on the contrary that in a 1P-Unit, we distinguish very well the two states of the Beating on a much concrete and geometric-like basis (Local A vs. Nonlocal B): hence neither we nor the system, need an additional Parameter to identify the Change. The Change, in such a case, is already geometric-like, and we do not need the human idea of Time to keep track of it: in a 2P-Unit, we do conventionally and by the specific definition we adopt here, otherwise we could not track operatively the presumed ceaseless blind-Change that nonetheless the Beating produces also in that self-identical replicating-Object.

R28. <Space-nesting> This Rule describes the formal behavior of a 1P-Proto2 into the human 3D, so we sketch the situation in Fig. 5.a: see also Fig. 5.b on the side, where we introduced the folding-mechanism as of R26<half-Reversal>, and where we depicted the inherent folded-Object in its Proper. In Fig. 5.a, we need now to compare and cross-check the standpoint of Pole C inside the Unit, whit the standpoint of another 2P-Observer who stays outside: he clocks regularly in Time, so he reads the situation by his own regular Time. Hence we draw downward in Time the several steps that the 1P makes due to its own Commuting, but we mean that the Time-frame is the one of the outside Observer:

i. Practical visualizing: The sketch of Fig. 5.a is Nongeometric and not to scale. We basically refer to an excited orbital in $A=P_o$: upon a partial half-Reversal, it emits a 1P-Unit of $[\lambda_{om}; \sigma_{om}; \tau_{om}; \nu_{om}]$, whilst the rest of the orbital remains there: we consider that the orbital is a Closed and Local 2P-Object. The freshly-formed 1P works by a different Logic (OR instead of AND), so we assume that the two become logically-independent. By R27<Pace-jamming>, we also assume that the several RR→LL→RR→LL→etc. of the extra-1P-Unit we have just Reversed-detached from the orbital, come by themselves contextually into the Proper Space-like of the Unit itself: each of them basically works Timeless-like, and into the profound system, it must be drown as being simultaneous-like with the others. Hence the NBM Procedure summarizes below:

- Step 0 (also Passage 0 in R27 and Figs. 5.a,b) forms a Double-Round RR, which is Outer-type and does not interfere with the regular single-

Round of the orbital. Then we allocate regularly the new RR onto the common P_∞ (it fits inside the preexisting Round of the orbital).

The orbital returns to its ground state, and makes a solid core around $A=P_o$: there we visualize for instance a regular single-Line A-C of the kind 2P=Closed-and-Local (not to scale). This last is Inner-type, and when the RR of the extra-1P wants to convert LL (first Commutation after ½ τ_{om}), it would interfere with it (the LL is Inner-type also, so the two cannot penetrate each other).

- By Step 1 (first switch RR→LL), we assume that the 1P-Unit forms a new Pole $A^*=P_o^*$ as far as possible from the $B=P_\infty$, and as close as possible to the $A=P_o$ of origin (basically the Point-like source of the freshly-formed 1P).
- By Step 2 (first back-switch LL→RR), we assume that again the RR fits no-problem into the preexisting Round of the orbital. By Step 3 (another RR→LL switch), the inherent Inner-Inner conflict shows again: we now have there (around $A=P_o$) the starting orbital, plus the first LL which laid down onto the orbital at Step 1.
- Hence by the same Step 3, the system accommodates this second LL onto the former A-type aggregate, i.e. the orbital and the first LL, which stuck on it Timeless-like (by the profound system into the 1P-Object itself, this second incoming LL is in turn Timeless-like and contextual to both the first LL and to the aggregate orbital-LL in its first stage, which also repeats and extends by the following steps as of orbital-LL-LL-etc.). The first accommodation of the second incoming LL requires relocating the Pole $A^*=P_o^*$, which makes the floating reference of our 1P-Unit. Such a first Move of the $A^*=P_o^*$, is of one λ_{om} away from the boundary of the orbital (our starting C-Interface into the sketch). This makes in fact the closest available position toward $A=P_o$, and the farthest away from $B=P_\infty$.
- Any subsequent double-step generates a contextual RR which on the right fits no-problem into the Nonlocal side of the formalism (Geometry B), whilst any LL which forms toward the Local side around $A=P_o$ on the left, must obey the Inner-to-Inner precedence above (its Logic is geometric), so it lays down slightly-apart and next-to-last-one (the Root of the 1P remains neutral by itself, but a left-right=Local-Nonlocal asymmetry emerges into the 3D). This forms a growing tile-like structure of the several LL_1→LL_3→LL_5→etc., but the inner-system counts them in a Space-like Logic, rather than in a Time-like Logic. In human terms, they draw-develop onto one another horizontally (no Time-like-stacking as we mean of our 2P-Units), and geometrically they build-up from the $A=P_o$ of origin, toward the $B=P_\infty$ that they never reach concretely.

- A human Observer-Modeler, or any other 2P-Object of the kind of Proto1 (i.e. Closed, Local, and Massive-like), remains on the side of the inherent situation, and moreover progresses regularly in Time by the Model REV: he is simultaneous-like to just the last Model-step of the 1P, and thus he perceives-like this Object as a series of LL which Move geometrically away from some source in $A=P_o$, basically because they relocate position-by-position toward the $B=P_\infty$ (the $B=P_\infty$ is in any case common to the 1P-Object and to the 2P-Observer).

ii. Formal c-speed: By the Nongeometric Procedure above and our sketch of Fig. 5.a, we have that the Space-like Scales λ_{om} - σ_{om} are Twinned, so they convert ceaseless into one another. The formal Move of our floating-reference $A^*=P_o$, makes a λ_{om} more per any complete LL→RR→LL cycle, which happens once per any τ_{om}. Hence we assume that into the Model, the 1P-mechanism produces a formal geometric-like Moving of $c = \lambda_{om} / \tau_{om}$ [m/s], where the c is basically our fixed proportioning-ratio of any A-type Line into the Model. By just opportunism, we next fit the formalism and our c-constant onto the precise value of the speed-of-light. Our formal fastest-speed-like of c:
  - Does not depend on the particular Parameters of the Unit (our [λ_{om}; σ_{om}; τ_{om}; ν_{om}]), so we assume it to be common and inherent of any fully-folded 1P-Object of the kind of Proto2.
  - Such a Moving-like comes by the profound system, which is Nongeometric by itself, but it expresses geometrically-like with regards to any fully-unfolded 2P-Object of the kind of Proto1 (our Closed and Local Massive-like emulator).
  - Our formalism gives no hints on the geometric-like direction, and we see instead a tile-like structure of the Slabs, which accumulate side-by-side around the $A=P_o$ of origin: this Nongeometric picture refers to the Model Root-Watch as of Fig. 5.c.
  - Into the 3D (popping up of the Model Slabs by regular Geometry), we can visualize a series of pseudo-spherical shells, which come from the wide-shut Geometry in $A=P_o$, and migrate one-by-one (upon opening progressively onto one another) toward the wide-open Geometry in $B=P_\infty$: they never reach this end, and from the outside, we 2P-Observers just see their flashing away from their Closed and Local source in $A=P_o$.

In short, the Space-nesting mechanism and the side-to-side accumulation of the LL Slabs into the Proper of a 1P-Object, makes the operative-opposite of the Time-like stacking of a 2P-Object that we picture as of Fig. 4.c.

Comment: At this elementary level, the picture is much coarse and we miss waves and continuity. We however work here in the profound Nongeometric system, and the idea is that waves and continuity may come from the mutual interactions of the very particular Double-Lines that a 1P-Unit forms: this is Relativistic, however, and come downstream of the Absolutistic and much elementary picture we give above (see for instance the Feynman's rotating-arrows, where we basically compare two items along two distinct paths: this technique classifies in fact Relativistic by our formalism). By this Paper 2, we just cover a little part of the Relationships amongst 2P-type Units (Closed and Local Massive-like Objects). The Relationship block covering the mutual-interactions of 1P-type Objects is still under construction, so that any indication on whether and how it will refine the picture, is much premature at present.

I.16. Comparing Proto1 and Proto2

Note: The next Rule points out the formal properties of our new-kind Proto2: it makes the operating-antisymmetric of R24<Still-like>, which refers to our starting Proto1 (see also the Comment there, where we introduce our practical short-wording for the two different ways of Beating). The two kinds of Units are illustrated in Fig. 6: see the comparing-labels P1 to P4 on the right, where the P1 is in principle a Nongeometric Asset which can switch freely the two configurations from one another (at this elementary level, the Model does not contain instructions on that, neither can it describe the reasons for the switch).

R29. <Moving-like> Proto2 is our second-kind of elementary composite Object: it plays both the very first-level emulator of the speed of light, and the NBM standard for the Moving-like of any regular Massive body. Its Properties do not depend on the particular Parameters of the Unit (our set [λ_{om}; σ_{om}; τ_{om}; ν_{om}]), and come directly by the Proper as of Fig. 5. Below we resume intuitively the formal behavior of a Beating-Object of the kind of Proto2:

i. Such a Unit comes from a formal half-Reverse and keeps its own Commuting-function on board, but it works with only one Double-Pole=Double-Slab at a time: we say this makes an AA-OR-BB operating Logic, and we call Proto2 a one-Pole Unit (in short 1P-type or just 1P).

ii. The B-Round RR is always off when the A-Line LL is on, where the first is our reference for the property of being Closed, and the second for the one of being Local: the Double-Line LL of a 1P-Object of the kind of Proto2, always qualify Local-but-Open = False-Local = Nonlocal-equivalent: we mean Local by definition because such an LL-Slab is A-type in any case, but it cannot be Located in a confined region of Space because it is Open at the same time; this property holds for we Local Modelers, as well as for the system and the inherent 1P-Object itself. During the Beating, the Double-Line LL stays nevertheless fixed and Unambiguous for ½ τ_{om} seconds, then it Commutates and produces a Double-Round RR, which in turn stays well-shaped and well-Present for another ½ τ_{om} seconds: such an inherent LL↔RR bouncing-cycle, repeats once per any full Model-pacing of τ_{om}.

iii. Upon the half-Reversal, the Line and the Round become 100% overlapped and Merge in a Double: the two original single-Slabs and their two ideal left-right Frequencies, do not distinguish any more. The new Double-Slabs therefore weigh ½ + ½ h when they are on: this lasts ½ τ_{om}, then the opposite Double-Slab forms and the full h-load switches there. This makes a ceaseless-bouncing series RR→LL→RR→LL→etc.. The Asset of a 1P-Proto2 is always fully-folded (as opposite to our Proto1, which is 2P and always works fully-unfolded).

iv. Any Beating-Unit which works 1P, qualifies Moving-like into the Proper as of Figs. 5.a,c: the Unit is geometrically-unstable when it replicates-refreshes (as opposite to the 2P which is Still-like), so that it basically spreads into Model Space rather than working into Time-like. Into the human 3D, the Unit expands ceaseless toward geometric infinity at $B=P_\infty$. The idea of a geometric-like propagation or of some Moving at the fastest-speed of c, comes in any case from the outside-picturing of the 2P-Unit by a regular 2P-Observer.

v. The 1P-configuration of a Proto2, and the subsequent way the Unit Beats and behaves, make a second operating-Border of the formalism: this is both logical and much concrete for any particular NBM Object we can conceive humanly at this elementary stage (no Object can be more folded and more Moving-like than a Proto1 configuration).

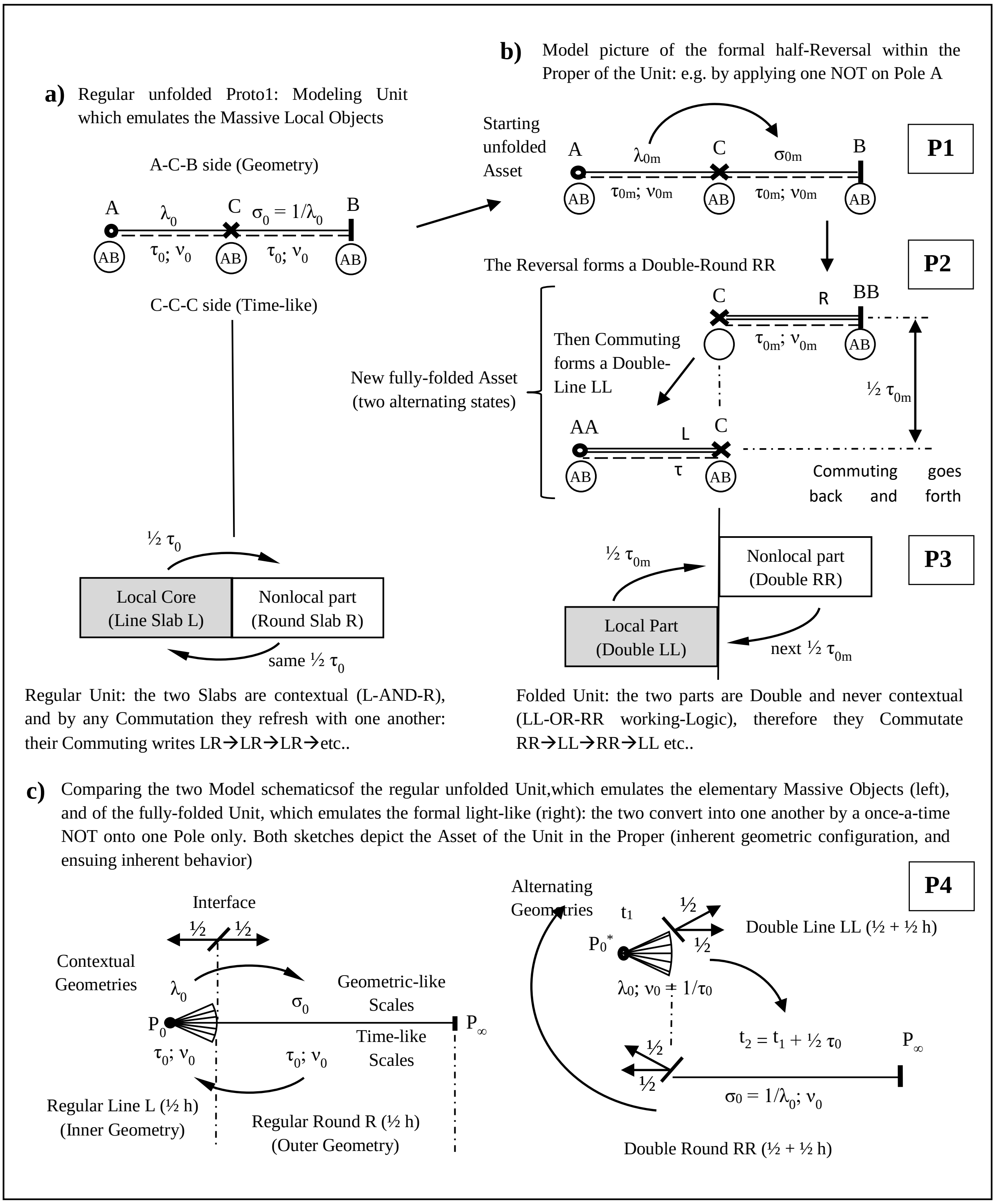


Fig. 6: Comparing our two Beating-Objects Proto1 (right) and Proto2 (right).

R30. <operating-Borders> If we set in its Proper a whatsoever Beating of [λ_o; σ_o; τ_o; ν_o], and then fold or unfold the Object by a half-Reversal or a counter-Reversal, we produce two different limiting Assets, which make the Unit to work and to behave much differently. This comes independently from its individual Parameters, and tracks the two inherent operating-Borders that any elementary Object must obey in NBM:

i. No Asset can be more unfolded than being fully-unfolded (0% overlapping as of Fig. 4), so no Unit can be more Still than being Still-like: this first limiting condition is reached concretely in a 2P-Unit of the kind of Proto1.

ii. No Asset can be more folded than being fully-folded (100% overlapping as of Fig. 5), so no Unit can be more Moving than being Moving-like: this second limiting condition is reached concretely in a 1P-Unit of the kind of Proto2. Those 1P-Unit are therefore the fastest-Moving ones we can conceive at this stage: they all produce into the formalism a geometric-like speed of c [m/s], where we Modelers set the c-constant to fit precisely the speed of light. No fastest geometric propagation-like can be emulated into the current block of NBM.

Comment: The two kinds of Units (2P vs. 1P) work by two distinct Logics (A-AND-B vs. AA-OR-BB). Hence we assume that they are logically-independent and track two distinct operating domains. In practice, any Still-like Unit of the kind 2P (Proto1), perceives the same way any other Unit which is of the kind 1P and Moving-like (Proto2). This formal perceiving basically comes in terms of some flashing away of a Nonlocal-equivalent Object: such a pure 100% Moving comes from the well-Localized area of origin of the 1P-Unit, and proceeds ceaseless by the speed of light toward the abstract geometric infinity of our P_∞.

I.17. Visualizing our Modeling Units as an h-transport either in Time or in Space

Note: NBM is concrete. By their h and their Logic-Geometry on board, the Model Objects make the only Reality-like into the Model. The next two Rules express intuitively such a particular human-reading of the formalism.

R31. <h-transport> In NBM, any Proper Beating makes an ever-Evolving Modeling Unit. A practical visualizing, is the one of an elementary machine which transports the auto-Reality either in Time or in Space, depending on its own Proper Asset: short wordings like Beating in Time for a 2P-Unit (Proto1), or Beating in Space for a 1P-Unit (Proto2), are equivalent. For any Unit in its Proper, either of one apply:

i. The rate of transport in Time is fixed, and it is given by the Model REV [false dimensionless = 1 second per second].

ii. The rate of transport in Space is fixed, and it is given by the Model c [m/s].

The NBM picture is basically the one of a same Unit, which can freely switch from working as a Beating machine that produces Proper Time (in which case the Unit is Still-like), to a Beating Machine that produces relative Moving (in which case the Unit qualify Moving-like, and always attain the fastest speed-like that we can register into the Model). The REV and the c therefore track the same inherent capability of the Beating machine in producing either Time-Like, or Moving-like into the Model: the first applies to the Proper of the Unit (pure Absolutistic Time-like), whilst the second actualizes as a geometric-like speed relative to any other Still-like Unit (pure Relativistic Moving-like).

Comment: In short, we have into the Model some key mechanism (the Beating or an equivalent human concept), which always Evolves at a fixed rate of basically 1. Depending next on its formal Asset, this very unknown and funding stuff of NBM, can take the form of either the non-geometric human idea of Time, or of some pure-Moving relative to us, and to which we humanly allocate the geometric idea of the speed of light.

R32. <h-intensity> The concrete Reality-like of a Unit is made of its inherent h on board, so that the transport of the auto-Reality is basically a transport of the h. The elementary Evolution of the Beating can be Time-like or fastest-Moving-like, but the rate of transport of the auto-Reality and of the h stays always the same into our elementary Units. The only two Parameters we Modelers have left for quoting the way and the intensity this transport happens, configure as a level of the h-transport (or h-intensity or equivalent human concept), and basically are:

i. The ratio of the h to the Time-like Scale of the Unit: this matches our human idea and definition of the Model Energy as of h/τ_o for transporting in Time [J].
ii. The ratio of the h to the geometric-like size of the Line (Local side A of our elementary Objects Proto1 and Proto2): this matches our human idea and definition of the Model Momentum as of h/λ_o for transporting in Space [kg (m/s)].

In NBM we assume that those two h-intensities apply the same way to both our 2P- and 1P-Units (Proto1 and Proto2), and that their Logic and the key mechanisms for the h-transportation, keep basically common in the two distinct sides of the Model Relativism and Absolutism.

I.18. Two key principles for entering the Relationship block (Relativistic side of NBM)

Note: So far, we stayed into the Proper of our two Objects Proto1 and Proto2. Now we quit and switch to the Relativistic side of the Formalism. There we will track the elementary Logic of our Model Relationships, and get the Rules for handling practically the geometric-like connections amongst our Closed and Local Protos1 (formal emulators of regular Massive bodies).

The next step by Section 2, will be to do some homework on the formal Time dilation: this is a part of the Model-block which covers the Relationship amongst our 2P-type Protos1. There we have a 2P-Unit who Observes another 2P-Unit through his Target view: the Target-viewing from the outside is different than the Proper, and it includes the Relationship in-between the two Units. Hence the outside Observer must apply some consistency-correction onto the original REV-running that his partner keeps in its own Proper. By NBM, such a correction is basically a cut off, so the Relativistic Time-like for the outside Observer is always less than the inherent Time-like of the partner.

We recall that we limit in any case to a very elementary picture, which is same level of the well-known Point-Mass scheme for regular Objects: operatively we generalize it into our two-Slabs equivalent, where the Local Slab A makes the Point-Mass, and the Nonlocal Slab B emulates an individual Space around the Object.

We also note that the specific Relationships amongst the 1P-Units of the kind of Proto2, belong to a logically-distinct block of the Model: this is therefore a key-part which misses completely in this Paper 2, and indeed it is largely under construction at present. From now on, we focus on emulating exclusively the other-kind Relationships amongst regular Massive bodies (our Proto1 = 2P-standard). In any case, we assume that our scheme of Fig. 7 is so low-level that it covers any kind of Objects and Relationships at an elementary level in NBM.

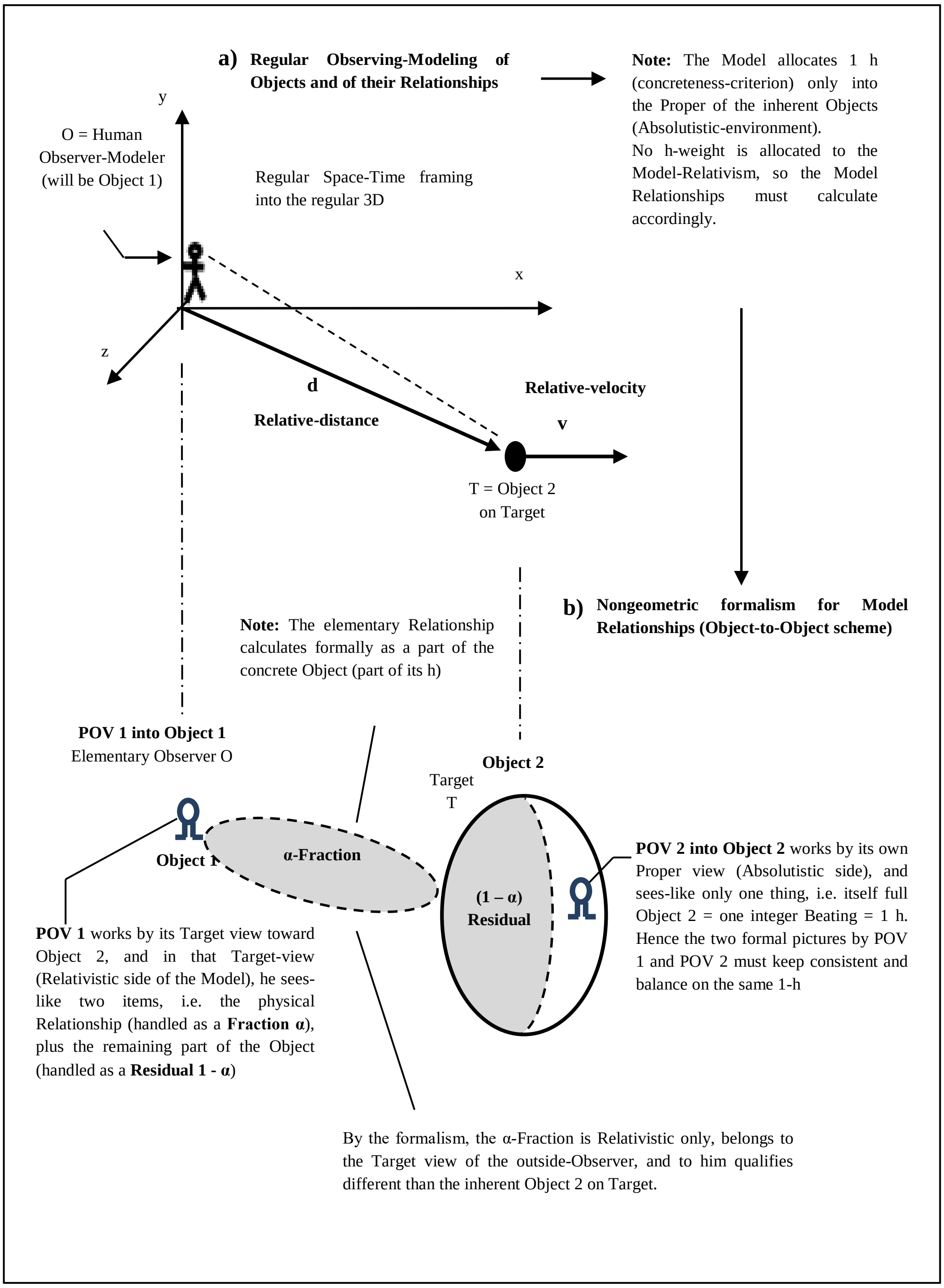


Fig. 7: Practical Rules for balancing the Objects and the Relationships in NBM.

R33. <relative Fractioning> Our Model Relativism starts by a formalism which contains only concrete Objects, and this applies by allocating one integer h to any Object in its Proper. The NBM position with regards to the Model Relationships, basically comes from that (Model-Modeler self-consistency):

i. We want our physical-like Relationships to be concrete and objective-like into the formalism. Within an otherwise empty Model, this is possible only if our Model Relationships take part of the integer h that we allocate to the inherent Objects.

ii. This formalizes in human terms as of Fig. 7: the sketch on top recalls the regular Observing-Modeling of Objects, and the one on bottom shows the general principle for handling practically the Model Relationships in NBM. By an external POV who uses his Target view onto an Object, the Relativistic Object splits-and-balances formally by:

- A first α-Fraction, which makes the concrete Model Relationship: our α [dimensionless] expresses in general a part of the Object, and must stay in-between 0% and 100%. These two ends make the operating-Border of any elementary Relationship we can have into the Model: here we mean explicitly that the Model Relationship takes in general a concrete α-Fraction of the Object. This is the reason why we Modelers can allocate the Relationship into the Model, and deem such a Relationship concrete and objective-like within the particular conceptual frame of NBM (self-consistency as of R1<concreteness>).
- A second $(1 - \alpha)$-Residual, which expresses a weaker-than-Proper Object: this is the Object as it is appreciated Relativistically by the same POV who entertains the Model Relationship with it. This concerns uniquely the Target view of that same POV who plays the outside Observer, whilst the Object by itself remains Absolutely untouched in its own Proper.

iii. This writes in short as a key balance of the Object on Target, where the two Relativistic and Absolutistic sides of the formalism compare in terms of:
(Relationship) + (Target-view) = (Proper-view)
We in fact give it a very trivial meaning, in such that when the system works Absolutistic, it contains one item only (i.e. the Proper Object), but when it works Relativistic, it contains two items (i.e. the relative Object and the Relationship). Hence the two viewings-like must keep consistent: the Relativistic Observer must see no less and no more than what we have concretely into the Proper.

Comment: Operatively, we work by splitting ideally the Proper Parameters of an Object in a Residual part which keeps similar to the original one (even if Observed from the outside), and in a second part which qualifies NOT-similar and makes our concrete Relationship: the α-Fractioning mechanism concerns more the Parameters than the Objects, and it is in any case a Modeling artifice (no Object truly splits in two, and especially in the Proper, which is where our inherent Objects stay first). The next Rule formalizes the general way we carry out such a principle of the α-Fractioning, and the three Subsections 1.19 to 1.21 provide more practical details.

R34. <DEV-DEP balancing> When we Model the NBM Relationships, it is practical to define and to balance the Density of Evolution DEV, and the Density of Presence DEP. These two additional Parameters, come out pragmatically by combining the Proper Time-like Scales that we Modelers allocate to our Objects (Figs. 1 and 4, but in general Fig. 5 also):

i. Definition: In NBM, we adopt the convention of quoting twice a Model Parameter (see also R8<bi-Modeling>), i.e. both for what it is (prime allocation into the Model Root = original value on its own in the abstract), and with regards to a reference Scale (actual quoting into the Model Watch = value as the ratio to a reference Scale = number of times the reference Scale stays into the Model Parameter). Next we know we work by an empty Model with neither solid nor preset human Scales, so we assume that our concrete reference to quote a Parameter, can only be its logical-Twin.
In the case of the Model Time-like (see R20<Time-like>), we play explicitly our τ_o-ν_o pair, and make them to both actualize the reference Scale, and to quote mutually each other. For the rest, we adopt the regular meaning and human convention of counting concretely how many times the Scale-Parameter stays into its Twin-Parameter. We word this ratio the Model Density and it covers both Absolutistic and Relativistic situations, so we define in general:
   - The Density of Evolution DEV, as of DEV = ν / τ [$1/s^2$]: this means for us the concrete quoting of the Frequency by the system, in addition to the bare Frequency ν for what it is into the profound Root [1/s].
   - The Density of Presence DEP, as of DEP = τ / ν [s^2]: this means for us the concrete quoting of the Time-like Scale by the system, in addition to the bare Time-like Scale τ for what it is into the profound Root [s].

ii. Balancing in a Relationship: We give below a possible short list of NBM instructions, and consider that our scheme of Fig. 7.a qualifies human-level only. First we assume that an elementary POV whatsoever (either Internal or External), does not know whether he is looking at an integer or at a Fractioned Beating. He then stays equal on anyone, and handles anyone by the general Rule that the Beating is an integer. When the POV is external and Relativistic, his equal-handling of the Beatings applies in general to the α-Residual he has on Target.
Next we consider that into the Proper, where the Beating is integer, our two Time-like Parameters are perfectly Twin-balanced as of $\tau_o \cdot \nu_o = 1$. This marks the undisturbed and Absolutistic clocking-like of the REV into the Objects, and it produces a Proper DEV_o and DEP_o, which are always quadratic as of DEV_o =

$\nu_o / \tau_o = \nu_o^2$ [1/s²], and $DEP_o = \tau_o / \nu_o = \tau_o^2$ [s²]. Hence the Model Frequency correlates as of $\nu_o = \sqrt{DEV_o}$ [1/s], and the Time-like Scale as of $\tau_o = \sqrt{DEP_o}$ [s]. We Modelers cannot know which one come first into the profound system, and we assume the system knows neither.

By self-consistency, we accept that into the Proper, such a two-ways of expressing humanly the Parameter, either by itself or by the square root of its Density, are just contextual (we Modelers could not discriminate a logical-order in them). Hence we extrapolate this same rule to any Relativistic situation, and to the problem of a POV who sees-like an α-Residual into his Target view, but wants to stay equal, and blindly insists it is an integer:

- In a Frequency situation, he will refer to the equivalent Frequency ν^{eq} of his relative-partner (the Residual Object he has on Target), and calculate-like $\nu^{eq} = \sqrt{DEV}$ [1/s]. Then he will match the relative-partner onto a perfect integer by just making $\tau^{eq} = 1 / \nu^{eq}$ [s].
- In a Time-like Scale situation, he will refer to the equivalent Time-like Scale τ^{eq} of his relative-partner (the Residual Object he has on Target), and calculate-like $\tau^{eq} = \sqrt{DEP}$ [s]. Then he will match the relative-partner onto a perfect integer by just making $\nu^{eq} = 1/ \tau^{eq}$ [1/s].

iii. Calculating-like: Operatively, the POV starts by quoting the Frequency and the Time-like Scale of his Relativistic partner as a $\nu_{Relativistic}$ and a $\tau_{Relativistic}$, which show into his own Target view of that same partner. Then he quotes the relative-Density of the partner by making:

- In a Frequency situation: relative $DEV = \nu_{Relativistic} / \tau_{Relativistic}$ [1/s²].
- In a Time-like Scale situation: relative $DEP = \tau_{Relativistic} / \nu_{Relativistic}$ [s²].

Then the POV closes the Procedure by the square-root and the inversion above, so it quotes relative to him a Beating partner of either [$\nu^{eq} = \sqrt{DEV}$; $\tau^{eq} = 1 / \nu^{eq}$.] in a Frequency situation, or of [$\tau^{eq} = \sqrt{DEP}$; $\nu^{eq} = 1/ \tau^{eq}$] in a Time-like Scale situation (details by Subsections 1.20, 1.21, and practical examples in Subsections 2.1, 2.2).

The whole affects the Relativistic side of the Model, and applies only into the Target view by the Observer, whilst the inherent Beating Object in its Proper continues to run regularly as of [τ_o; DEP_o; ν_o; DEV_o]. The Target and the Proper are in any case contextual and same-level of formal-objectivity as of R2 <Absolutism-Relativism pair>.

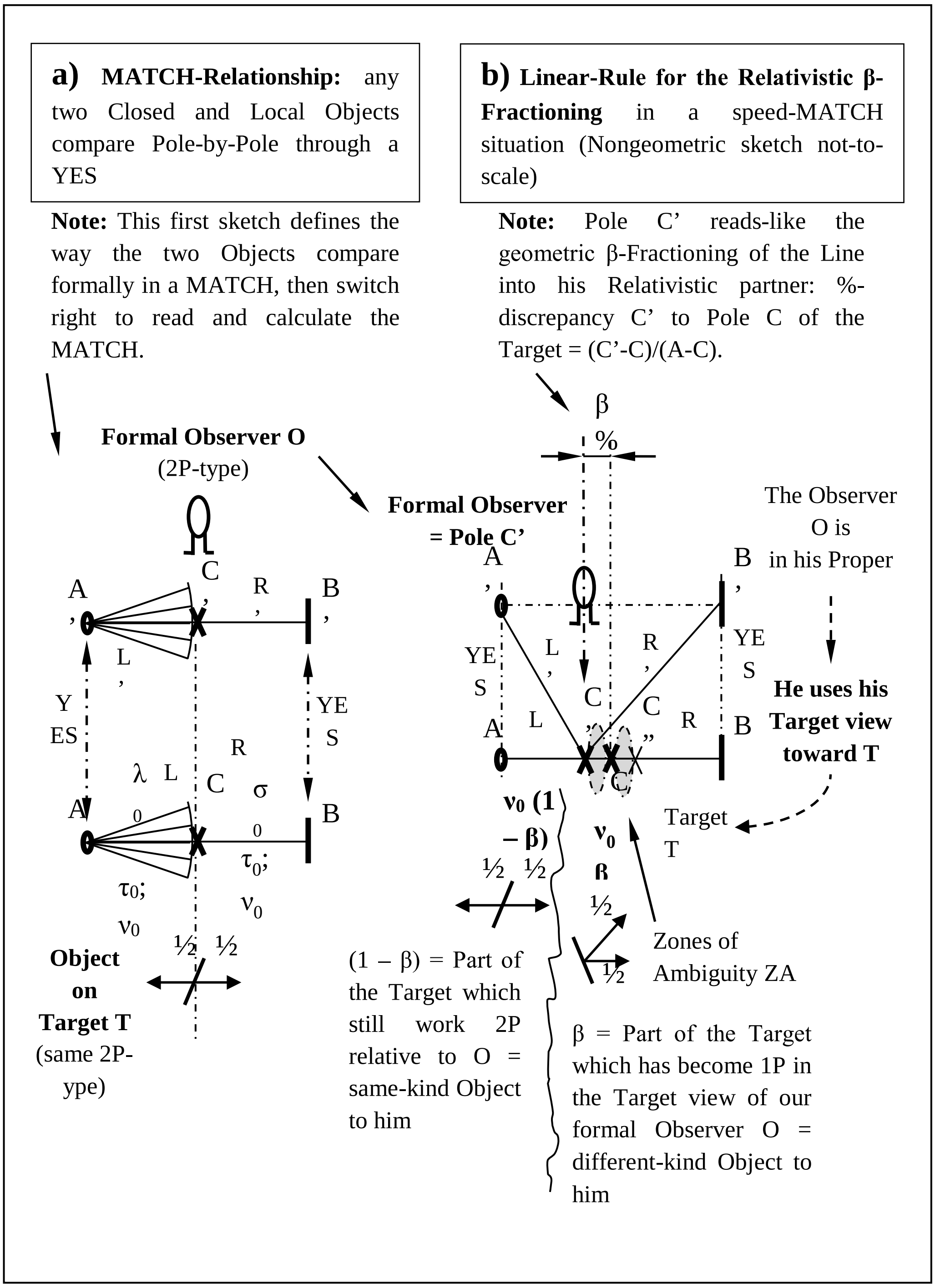


Fig. 8: MATCH scheme for comparing two Objects and handling the relative-velocity Relationship.

I.19. Conceptual Twinning of the relative-distance and of the relative-velocity

Note: Into the 3D, the two human notions of distance and of velocity keep markedly distinct (Fig. 7.a). Our profound system is deprived of Geometry, nevertheless those two Model items seem to keep distinct because of two antisymmetric Logics. We will handle both of them as an elementary Relationship between any two Massive-like Objects, so we will explore what do they have in common, vs. the Nongeometric criterion which makes them so different also in NBM.

R35. <macro-Relationships> NBM assumes that any two Massive-like Objects (2P-type = Proto1), always entertain two mutual Relationships which are contextual (always present and operating in parallel), and logically-distinct (coming from a Reverse). We formalize them as:

i. MATCH: this is when we Modelers compare and relate the two Artifacts of an Observer-Observed pair, by just a YES Pole-to-Pole Relationship as of Fig. 8. This Modeling artifice becomes our conceptual support for emulating Time dilation due to relative- velocity (geometric velocity in-between two Model Objects as of Subsection 1.20).

ii. CROSS: this is when we Modelers compare and relate the two Artifacts of an Observer-Observed pair, by just a NOT Pole-to-Pole Relationship as of Fig. 9. This Modeling artifice becomes our conceptual support for emulating Time dilation due to gravity (geometric distance in-between two Model Objects as of Subsection 1.21).

Comment: We describe such a two physical-like situations by working mainly on our Nongeometric Artifacts. The two MATCH and CROSS schemes are basically same level, and found on two inverse-Logics of the Relationship itself: the two formal Objects relate respectively by a YES or by a NOT. The NBM handling remains barely formal, and needs to be supported by a parallel visualizing of the regular Relationship in the 3D (details respectively by R36<formal speed>, and R39<formal distance>).

Note: By R22<C-Watching>, we assume that mid-Pole C is our natural Observer of our formal Time-like when we Model the Artifact-Object in its Proper (Object for what it is). Below we extend such a formal property of mid-Pole C to when we Modeler play Relativistic, and compare two Artifacts-Objects in a Model Relationship (Object for what is quoted objectively-like from the outside).

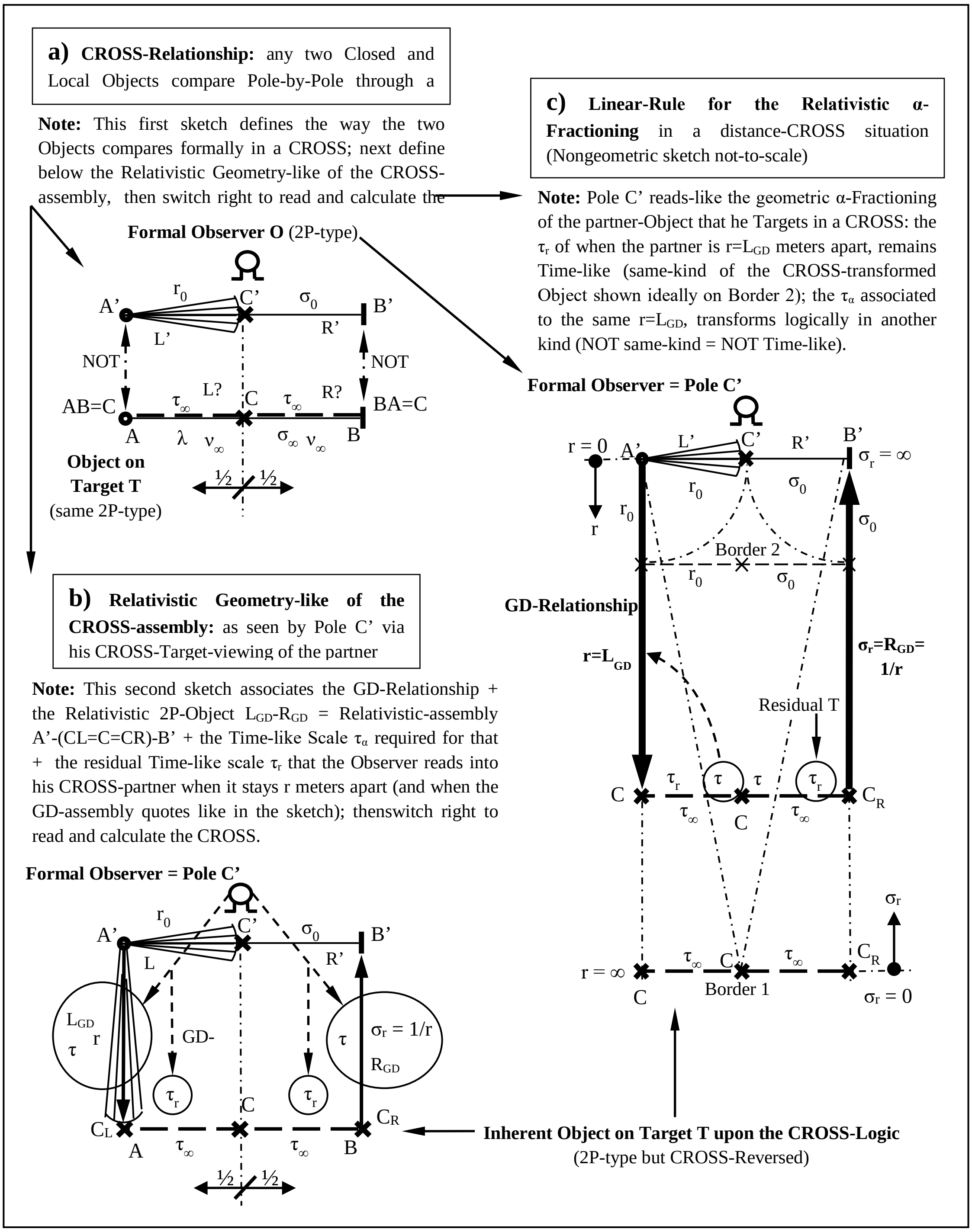


Fig. 9: CROSS scheme for comparing two Objects and handling the relative-distance Relationship.

I.20. The MATCH block for emulating the relative-velocity

R36. <formal speed> The NBM handling of a relative-speed situation is barely formal: it relies on the MATCH scheme as of Fig. 8, and on the details listed in R38<MATCH balancing>, where we focus on the Observer-Observed pair only. Such a Nongeometric Procedure cannot work alone, so we need visualizing in parallel the regular Massive bodies and the regular speed in the 3D (see for instance the well-familiar sketch of Fig. 7.a). For the moment, we prepare the general conceptual frame for mapping-back the formalism into real-life. Hereinafter this will support our geometrically-blind calculations of the MATCH. Hence we set the points below:

i. A Massive body whatsoever, and a regular Observer whatsoever, are emulated by a couple of 2P-type Units (Proto1): both are Closed and Local Objects, and by NBM they are of the same kind.

ii. The Object on Target, which Moves by a speed of v [m/s] relative the Observer, is handled as a formal mix of:
   - a Residual Object of the kind 2P (Proto1), which is therefore same-kind of the Moving Object and same-kind of the Massive Observer, and
   - a Moving-like Fraction which is 1P-type (Proto2), and thus different-kind with regards to both the Observer and the original Object which is Observed. Such a 1P-Fraction actualizes the relative Moving, is Relativistic, and is emulated by an identical Fraction of the light-like mechanism as of R29<Moving-like>.

iii. Operatively, we refer to Fig. 7.b and apply R33<relative Fractioning>, where in the case of a Moving-Relationship, the α-factor for the formal Fractioning is the well-known $\beta = v/c$ [dimensionless]: we therefore calculate our pragmatic NBM-Fractioning by the regular speed v of the Object [m/s], and by the regular speed of light c [m/s] (details by R38<MATCH balancing>). We just regard the β as a percent of the formal light-like, so we basically apply a same percent of a Proto2-Unit to reproduce the Moving: this component of the physical-like situation, is handled as a formal 1P-Object which shows into the Target view of the Observer, and adds to the solid-like Relativistic Object which is 2P.

iv. NBM is deprived of regular Geometry, and of any other human frame beyond the concrete Objects. Hence our picture remains abstract and directionless by itself: the NBM velocity-like of the Target, basically goes from its Pole P_o, which marks the geometric Point where the Object is at present, toward the P_∞ of that same Moving Object. As such, the formalism is neutral on whether the Target is going toward the Observer, or if on the contrary it is Moving away from him.

R37. <limiting speed-like> In NBM, we basically reproduce the relative Moving of a 2P-Object, by translating it partially in a 1P-Object into the Target view of the Observer, where the first emulates a Massive body (2P-component) and the second a β-Fraction of the numerical-speed of light (1P-component). Such a Relativistic 2P→1P translation cannot give more than the original 2P-Object in its Proper, so that no Massive-like 2P-Object can travel faster than light into this first elementary block of the Model.

R38. <MATCH balancing> The Nongeometric MATCH scheme of Fig. 8 (or equivalent human Modeling artifice) provides a practical example of how we calculate the relative-Moving Relationships in NBM. This concerns any pair of Massive-like Objects of the kind of Proto1, where we Modeler make to play one Unit as the formal Observer, and the other as the 2P-Object on Target: the two are same-kind, and this same kind is 2P. Such a MATCH scheme is specific for emulating the regular relative-velocity v [m/s] in-between the two Units (details by R36<formal speed>); it obeys the general NBM framing of Model Relationships as of Fig. 7, and R33<relative Fractioning>. The key instructions for balancing the Relativistic 2P-Object into the Target view of the 2P-Observer, summarize below:

i. Defining the MATCH: We Modelers work in the Root, and compare the two Artifacts-Objects as of Fig. 8.a:
   - Our 2P-Observer sketches on top, by highlighting his own three-Poles system A'-C'-B': he reads-like his relative-speed partner, and does not influence it. The Parameters of the Observer will not enter our calculations.
   - The 2P-Target shows to him on bottom, and we highlight the three-Poles system A-C-B of such a second Object: into the Proper, it is same-kind of the Observer, which means same 2P-Logic, and same Time-like Beating as of any Proto1. Hence the two are similar into the Proper, and Beat by the constant Model REV of 1 second per second. The 2P-Unit on Target is an integer by itself, and it quotes in general [λ_o; σ_o; τ_o; ν_o]: these are the Proper values that we Modelers, and thus the system, have allocated to the inherent Object. The Observer, in turn, wants to quote this same Object from his own Relativistic POV outside of it.

   The formal comparison carries out Pole-by-Pole (A' with A, B' with B, and C' with C), and by using a YES Logic (as we show in the sketch). The operating scheme is Nongeometric and left-right symmetrical, as it is for the Root and for NBM in general. We also note that due to the YES-Logic, the two Artifacts stay onto the same Layer: they basically Merge into the profound of the Root, but we Modelers sketch them separately so we keep able to work on them in human terms.

ii. Observing and calculating by mid-Pole C': We now switch to Fig. 8.b, and establish a simple linear Rule for emulating, into the profound system, the regular relative-velocity v [m/s] of any two Massive bodies in real-life. We Observe and calculate the Moving A-C-B Object on behalf of mid-Pole C' into the elementary Observer.

First we define the geometric-like Fractioning of the Line on Target as of β = (C'-C) / (A-C) [m/m]: here we are on the A-side, where the Geometry of any Line is regular. In practice, we say that Pole C' of the Observer does not MATCH anymore the Pole C of the Target: from his own Relativistic POV, he reads a geometric-like discrepancy of C'-C, that we express in Fractional-terms as of our formal β [% coming from m/m].

Secondly, we assume that our general α-Fractioning as of Fig. 7, comes here by the β (β=α), and that the three different items below, basically coincide into the profound system:

- geometric-like β-Fractioning of the Line and of the Object on Target [m/m = %]; on the side of the Round, there is an equal Nongeometric Fractioning, so the β also corresponds to a same percent-ratio in terms of [(inverse-meters) / (inverse-meters)];
- β-Fractioning of the Frequency that the formal Observer can read into the same Line on Target [(inverse-seconds) / (inverse-seconds) = %];
- β-Fractioning of the Model c-constant [m/s], that we next associate to the regular relative-speed of the Target as we read humanly into the 3D, i.e. v = β · c [m/s], where the c is the geometric speed of light, and the β is the usual regular ratio v to c; the units of our formal β for the Relativistic Fractioning of the velocity-like [(m/s) / (m/s) = %], come here from the c-constant of the Model and from the regular speed into the 3D, where the c-constant is not a velocity, but a plain proportioning ratio between the Geometry-like and the Time-like Scales within the Line of any Object (see R15<Twin constant-ratios>); hence we assume explicitly that the %-Fractioning of the Model-c and of the regular speed of light keep equal also.

In short, we assume that our scheme for MATCH-comparing the two Objects as of Fig. 8.b, emulates the reading of the regular relative-velocity by the profound system: see the Comment below for a short justification of why we Modelers make the three terms above to coincide. In any case, such a Modeling artifice needs to be played along with our regular 3D-perceiving of the Moving of the Objects (Fig. 7.a).

iii. Inherent Borders of the MATCH: The third step is to use practically the sketch of Fig. 8.b, and see where it leads:

- When the Observing C' matches exactly the Observed C, we have no Fractioning, and this correspond for us to a zero relative-velocity in-between our two Units: they are of the kind Closed-and-Local, and this emulates the situation where two Massive bodies are static one another. Such a condition makes the first operating-Border of our formalism (the β cannot be less than 0%).

- When the system reads a C'-to-C discrepancy, this means for us some concrete β-Fractioning into the Relativistic view of the Observer (our β percent): hence we Modelers say that into the system, there is also a geometric-like speed of $v = \beta \cdot c$ [m/s], and this emulates the relative-Moving of our 2P-Units. Their concrete Relationship through the MATCH, takes a weigh of β into the Relativistic side of the formalism (the Proper-Objects sketching of Fig. 8.a, only expresses the Absolutistic side of the relative-velocity situation).
- Having the C' right onto the A, makes a logical and practical end-stop for the system: our Relativistic Fraction cannot be more than the Proper Object on Target (the β cannot exceed 100%). We take it as the second inherent Border of the formalism: operatively, no Massive-like Object of the kind 2P can exceed the speed of light into this first elementary block of the Model.

  Note: Showing that this 100% limit is just ideal, would require working by the Energy-block of the formalism, which is still under construction. For the moment, we Modelers only can say that the elementary Logic of the MATCH, prevents our 2P-type Objects to Fraction more than 100% relative to an outside Observer, and thus to exceed a c-equivalent speed relative to him.

iv. Assuming a Frequency situation: We also assume, independently, that our MATCH scheme determines a Frequency situation: in our Relativistic calculations, we must select the DEV as of R34<DEV-DEP balancing>, not the DEP. Our Procedure P1 for emulating Time dilation in Subsection 2.1, will therefore base on the Model Frequency, and on its Density of Evolution (the ν / τ in general).

This comes by Fig. 8.a, and from considering that the two Artifacts are in a YES, so they pertain to a same Logic-Layer: Pole C' of the Observer therefore Merges with Pole C of the Target, neither he can discriminate the two mid-mixed-Poles underneath the A and the B of his partner. In short, the C' Merges completely with the C-C-C system on bottom of his Target, so he cannot appreciate directly the one we Modelers call the τ_o. Instead, he sees clearly the A and the B of his Target, so distinguishes them when they Commutate, and reads directly the Frequency ν_o of his Partner. Such a Frequency-coupling comes by the YES-Logic of the MATCH, and it is specific to it into the profound system.

v. Routine calculations: When calculating, we will not care of the several illustrative details above and in the Comment below: see instead the practical instructions on bottom of Fig. 8.b. First we retain that the Target remains 2P and undisturbed in its Proper. Then the Observer, in his own Target view from the outside, sees it as a combination of:

- a 2P-Unit, which has remained YES-similar to him and Beats $\nu_o \cdot (1 - \beta)$ relative to him; plus
- another Unit, which Beats $\nu_o \cdot \beta$ relative to him and shows 1P-type, which is NOT-similar to him (it is similar to our formal light-like instead).

The β we use for such a Modeling artifice is our regular v/c, where v and c are the geometric speed of the Object, and the geometric speed of light in meters per second. Operatively, we play a formal Relativistic splitting of the Target into the Target view by an outside Observer. We see again that the way we Model, does not allow a Closed and Local Massive-like Target to flash faster than light relative to any Observer similar to it.

Comment: We work on elementary Nongeometric Slabs, which are single-valued by themselves. This makes our linear Rule for the β-Fractioning much intuitive (Point ii above): we take out a given part of the Proper Line for the Moving-Relationship, so we must put, into the Relationship, a same amount of the Proper Frequency that we Modelers associate to that Line. This concerns the Relativistic viewing-like of the Proper Object: the equal-Fractioning applies both to the inherent Target Line λ_o (run AC in Fig. 8.a), and to the Frequency ν_o we have on that same Line (by Point iv above, we are in a Frequency situation, and disregard the τ_o).

The assumption also illustrates by the following steps. First we consider the two Zones of Ambiguity ZA in Fig. 8.b,where the Root is Nongeometric and perfectly equal on both sides A-B. By our discrepancy, we mean that the C'-C part of the Target is a Line by the Proper of the Target (which is objective-like), but it registers onto the Round part of the Observer (which is same level of objectivity-like). NBM does not discriminate the Absolutistic and Relativistic POVs, so that part of the Object becomes contradictory into the system. The Observer therefore concludes that it cannot be neither a regular Line, nor a regular Round: this is the only consistent choice he has left, and that part of the Object must be something else to him (it does not fit anymore the 2P standard of the Target).

Secondly, we consider the left-right blindness of the Root, and the inherent Reverse-Twinning of the A and B sides of the Object. An identical discrepancy C-C" determines, if we Modelers imagine to switch Pole C' of the Observer in the C" position of the sketch. Hence we assume that the two parts C'-C and C-C" confuse in a common NOT-2P perceiving-like by the Observer. He cannot discriminate neither the left-Frequency from the right-Frequency of that part of the Object: this materializes into the two ZA shadows within the run C'-C" of Fig. 8.b.

The whole remains purely Relativistic: the ZA-effect only operates into the Target view of the Observer, and only involves a limited central-erosion of the Target as it shows to him. However, our profound 2P-Observer is not supposed to know, as he is an elementary Pole C', and only manages the kinds of the items he sees. Hence we assume that to his eyes-like, the situation is not structurally different from when he sees a fully-folded Unit of the kind 1P. We retain that for him, the ambiguous Line-Round-section in the middle of his Target, truly

folds in a single Double-Slab (Merging effect), and ultimately works the way we codify by our 1P standard.
This means a distinct Logic which is NOT-2P, and makes a logically-independent Beating to be allocated into the system (Relativistic side), and specifically into the Target view of the Observer. By the system (Absolutistic side), both Objects involved in the Observer-Observed pair qualify 2P in their Proper, so the Observer retains that the Relativistic 1P-Fraction (our ZA-in the sketch) is different both from himself, and from the original Object he has on Target. Hence the two portions C'-C and C-C'' behave logically-independent from the rest of the Target: into the eyes-like of our elementary Observer C', they stay Twinned for what they are (i.e. a separate 1P-Unit), and obey by themselves the general Rule of $\lambda \cdot \sigma = 1$. In short, we associate to the two Zones of Ambiguity ZA of Fig. 8.b, one fully-folded sub-Unit of the kind 1P, which qualify Relativistic only, but for the rest appears as an objective-like and logically-independent Beating into the Target view of our Observer.
We introduce the subscript 1P for the relative Moving-like into the profound system: it actualizes by such a new 1P-component of our MATCH Relationship, and it is the Relativistic Fraction that we Modelers imagine to extract from the Folding Zone of the Proper Object. We assume that it writes down as any other Beating does into the Model, and that by our Observer C' it quotes in general [λ_{1P}; σ_{1P}; τ_{1P}; ν_{1P}]. Nevertheless, our Observer is elementary, so he is not supposed to know of his origin as we Modelers depict it humanly. As the new 1P-component is logically-independent, we consider that our elementary Observer handles it equally as an integer, and just frames the new Relativistic-entry on the basis of the General Rules for the Beatings and their Parameters:

- There is a constant Space-like to Time-like ratio of any Lines into the Model, so he writes $\lambda_{1P} / \tau_{1P} = c$. He also writes in general $\lambda_{1P} \cdot \sigma_{1P} = 1$, and $\tau_{1P} \cdot \nu_{1P} = 1$.
- Then he derives $\lambda_{1P} / \tau_{1P} = \nu_{1P} / \sigma_{1P} = c$, which gives $\nu_{1P} = c \cdot \sigma_{1P}$: the Frequency ν_{1P} of the relative-Moving component, keeps proportional to the geometric-like Fraction of the Round that gets involved into Relativistic ZA-folding.
- This visualizes by the ratio of C-C'' to C-B in Fig. 8.b, where we Modelers and our elementary Observer work Nongeometrically by the Root Logics: the sketch refers to the Artifacts underneath the Objects, and the β-Fractioning of the Line and of the Round keeps equal there.
- Our Observer C' therefore writes $\sigma_{1P} = \beta \cdot \sigma_o$, where the β is the geometric-like Fractioning of the Object. From the above passages, and by applying the same general Rules to the Proper Line of his Target (specifically $\lambda_o / \tau_o = c$), he eventually derives: $\nu_{1P} = c \cdot \sigma_{1P} = (c \cdot \sigma_o) \cdot \beta = (\lambda_o / \tau_o \cdot \sigma_o) \cdot \beta = (1 / \tau_o) \cdot \beta$, i.e. $\nu_{1P} = \nu_o \cdot \beta$.

The NBM picture is therefore the one of a grey area into the apparent Target, which produces a Relativistic ZA-folding of the central part of the Object. This makes a 1P to the eyes-like of the elementary Observer, and carries a Frequency of $\nu_o \cdot \beta$, which is proportional to the geometric-like Fractioning of the Object. Next we know that in a Proto1 of the kind 2P, a 100% folding generates an integer 1P-Unit, and produces a formal sped of c [m/s] relative to any other Proto1. Such a mechanism is independent from the Parameters of the Proper Unit which makes a 100% switch between the two Logics 2P ↔ 1P. Even if now we are in the realm of Relativism, and fold just a β-Fraction of one 2P-Unit on Target, there are no reasons for the formal 1P we have here to work differently into the profound system. Hence we assume that a partial Relativistic folding of β into the Target, associates to an equal Fraction β of the speed of light, and thus to a regular velocity-like of $v = \beta \cdot c$ [m/s].

The linear assumption for correlating the Model β (geometric-like Fractioning of the Line), and the regular speed and regular $\beta = v / c$ (into the 3D), also illustrates by comparing the Proper Time-like stacking of a 2P-Unit in Fig. 4.c, with the sketch of Fig 9.f: there we imagine to relocate the 2P-Unit not only in Time (as it is Proper to it), but also in Space relative to another 2P-Observer (which is Relativistic). Into the regular 3D, this produces a geometric overlapping of the inherent L-R states of the Unit, that we Modelers can associate to our Zone of Ambiguity ZA into the profound system (Fig. 8.a). Next we quote it by regular Geometry, as of one relocation of $\lambda_o \cdot \beta$ meters per any Model pace of τ_o seconds, where we basically mean that the β associates to the geometric overlapping. As the true Unit works by its own Proper Time-like Scale and Proper Frequency of [τ_o; ν_o] (independent from the Observer and from the relative Moving), we can see the regular speed also in terms of the Model entity ($\lambda_o \cdot \beta$) and of the numbers of ZAs that we produce per any second (ν_o) relative to the Observer. Hence we write plainly $v = (\lambda_o \cdot \beta) \cdot \nu_o$, where the β is our Model-β [m/m] (geometric-like Fractioning of the Line into the profound system), and matches the usual definition of the regular β as of v / c [m/s]: the product $\lambda_o \cdot \nu_o$ in the above expression always gives the c-constant of the Model [m/s], which in turn obeys our opportunistic choice and always matches the regular speed of light [m/s].

I.21. The CROSS block for emulating the relative-distance

Note: So far, we Modelers have allocated to the Model only the elementary Objects, and the general Rules for relating them two-by-two (elementary Model Relationships). By self-consistency, the formalism does not contain the human concept of gravity, so we retain that the system and its inherent Logic do not know of it. Instead, we will set an explicit Logic of the Geometric Distance GD by our R40<CROSS balancing>: this makes the GD (Relativistic Parameter) to play concretely as a logical link in-between any two 2P-Units: it basically connects the two Poles $A=P_o$ of any two Massive-like Objects which engage each other in a CROSS. Our GD expresses in meters regularly, but for the rest it qualifies 100% as a concrete Model Relationship, so it makes an integral part of this first elementary block of the formalism (practical details and calculations by Subsection 2,2).

Note: The next Rule works like R36 for the relative-speed; before we start the Nongeometric handling of the CROSS, we need to translate the regular reading of the physical situation into the parallel language of the formalism.

R39. <formal distance> The NBM handling of a relative-distance situation is barely formal: it relies on the CROSS scheme as of Fig. 9, and on the details listed in R40<CROSS balancing>, where we focus on the Observer-Observed pair only. Such a Nongeometric Procedure cannot work alone, so we need visualizing in parallel the regular Massive bodies and their regular distance in the 3D (see for instance the well-familiar sketch of Fig. 7.a). For the moment, we prepare the general conceptual frame for mapping-back the formalism into real-life. Hereinafter this will support our geometrically-blind calculations of the CROSS.

The whole applies in general to any two Massive bodies. Nevertheless, we aim at our tentative Procedure P2 for emulating gravitational Time dilation as of Subsection 2.2. Hence we make the particular example of Fig. 11.a, where we sketch a Planet on the left, and a probe-clock in the regular tridimensional Space. Both are Massive bodies, and in general the clock can lay a fixed regular distance of r meters from the center of Mass of the Planet. Below we proceed by two distinct steps, where each one compares the regular picturing of the situation versus the Model. The first step concerns the Geometry of the situation, and the second the specific Time dilation we register. We limit to the Point-Mass scheme and to our NBM equivalent for composite A-B Objects.

Step 1 Geometry: We refer to the way we read the sketch of Fig. 11.a:

i. Regular: Our spontaneous framing privileges the Planet: we normally focus on its big Mass M, so the clock is given lesser importance. We figure ourselves onto the Planet and look around into the 3D, where a probe-clock stays a fixed distance away. Then we consider, in short, that our probe-clock slows down because of gravity produced by the Mass of the Planet. The whole is correct, and shall not change by NBM. On the contrary, we need this frame to guide our calculations, otherwise they would stay blind and meaningless.

ii. Nongeometric: In parallel, we switch out of Geometry and of any human contest: no preset frame into the Model beyond the Objects. We only have two Massive bodies which qualify Closed and Local: both fit equally the standard we call 2P-Unit (Proto1), and will be emulated as such. We do not mention gravity, and just care of the Model Parameter that we call the Geometric Distance GD: we know it is formal, but for the rest it works as our regular distance r [m]. Hence we count it from the Pole P_o of our first Object, to the Pole P_o of our second Object: this corresponds to the distance in meters of the two Center of Mass. A key point for us is the mutual Relationship as of Fig. 7: the Planet and the probe-clock play as an equal Observer-Observed pair. They both are Absolutistic in their Proper, whilst the Geometric Distance GD makes the Model Relationship, which is Relativistic. Therefore, the NBM problem contains three concrete items only, which are the two equal 2P-Objects (two Protos1), and the GD-Relationship in-between them. In short, our first step is to cancel the regular Geometry and any preset human scheme. Hence we translate the gravity situation into an abstract NBM problem, but the true regular scheme is always there in parallel.

Step 2 Time: From real-life, we know that the clock slows down if we place it close to the Planet: the same perfect clock on sea level, runs slower and measures less human Time than on top of a mountain. We sketch it on bottom of Fig. 11.a, as sort of ideal shrinking of human Time when approaching the Planet: the lessening of the clock-picture into the sketch is fictitious, and just makes concrete the idea. At a given theoretical position toward the Planet center (left), our probe-clock stops completely, so it ceases to count human Time: this limiting distance identifies by the Schwarzschild radius $r_o = (2 \cdot G \cdot M / c^2)$ [m], where M is the Mass of the Object producing gravitation [kg], c is the speed of light [m/s], and G is the gravitational constant $[m^3/(kg \cdot s^2)]$. NBM borrows the idea, and basically this explains why we set opportunistically our second Model constant as of $a = c^4/(G \cdot h)$ (see R15<Twin constant-ratios>).

To complement the above geometric-Nongeometric translation (Points ii vs. i), we now compare the two pictures of Time below (Points iv vs. iii). The first comes by a regular probe-clock, and the second by a Beating Unit of the kind 2P, where we Modeler imagine to rely on a formal Time-like counter on board (Absolutistic Model-Time as of R20<Time-like>):

iii. Regular: By Fig. 11.a, we imagine to have many perfect probe-clocks, and to place each one in a given fixed position r with regards to the Planet:
   - Limit 1: Only the end-clock at infinite distance works regularly: it stays ideally onto our Pole P_∞, and it counts the human Time as of one regular second after another regular second. The human second there, weight one second. Operatively, this makes a limiting condition for the operation of our clocks: no human clock can lay farther than that, and when it is there, it works exactly by the full measuring-rate which is inherent to all of them (i.e. the one which all clocks are designed for).
   - Intermediate: The actual Time-reading becomes less when the clock is close to the Planet: this shows more and more, when the particular probe-clock is closer and closer. Operatively, we see a concrete slowing down of any concrete clocks in a gravitational field, so we retain this makes a concrete shrinking-like of human Time all around the Planet. Its distribution is shown in Fig. 11.a (not to scale), and we refer to the well-known formula for gravitational Time dilation due to a non-rotating Massive sphere (details by Subsection 2.2, Eq. 2). Hence we schematize in terms of: Time-shrinking-like = $\sqrt{(1 - r_o / r)}$, where the r is our distance GD, and the r_o is the Schwarzschild radius. Our CROSS calculations will have to reflect this mathematics. Furthermore, we openly associate the shrinking-like of the reading of the clock (really a slowing down), to a lesser actual weight of the regular human Time. With regards to Limit 1 above, we retain that close to the Planet, the

human Time, the concrete clocks, and the human seconds [s], weigh less than we have right onto the P_∞ (infinite distance).

- Limit 2: If our perfect probe-clock stays exactly onto the theoretical Schwarzschild radius, the expression above writes $\sqrt{}$ $(1 - r_o / r_o) = 0$. We assume that this make another limit for the operation of any concrete clock: basically, we build such a device to count its own progressive states; the Logic of the counting is neutral, and it refers to whether the needle Changes its position with regards to the one it held before; we assume that the direction of such a counting is not a factor, and that the only point is whether there is a Change or not. Hence we retain that onto the Schwarzschild radius r_o, we attain another inherent limit of the human meaning of Time. Equivalently, we say that there, the weight of the Object-clock and of the human second has gone to exactly zero. This makes 0% of the weight which is inherent to our probe-clock, and that we see clear and undisturbed when we position the probe-clock right onto the P_∞.

iv. Nongeometric: We cancel all the rest, enter mentally the Model Logic, and visualize the Planet and the clock in terms of two Beating Units of the kind 2P-Proto1 (Closed and Local formal Objects). They relate through a formal GD-Relationship, which nevertheless coincides with our regular distance r [m]. The scheme is the general one of Fig. 7.b. Let's make now the Planet to play the Observer: from his position, he looks-like at the clock, which is another Object outside of him. In general, we Modelers assume to know the Objects in their Proper, so consider that the clock quotes [λ_{proper}; σ_{proper}; τ_{proper}; ν_{proper}]. From his position, the Planet reads the clock as a Beating [$\lambda_{relative}$; $\sigma_{relative}$; $\tau_{relative}$; $\nu_{relative}$], that we Modelers do not know and must calculate. In addition, we assume that the distance r is true-like into the Model, so our Planet reads it formally as a concrete GD-Relationship. Let's introduce a more suitable notation to help visualizing, where we base on the idea that any one of our 2P-Objects has a formal Time-like counter on board. Hence we focus on just the Time-function of our Unit emulating the clock, and say that by itself it quotes [τ_∞; ν_∞]: in its own Proper, and independently from the Planet, it Beats the regular full REV of 1 second per second = 100% weight of Model Time; by definition, those two Model Parameters and the REV stay always undisturbed in the Proper, so our formal clock always makes $\nu_\infty \cdot \tau_\infty = 1$ there. Then the point is what we see-like, if we look Relativistic through the eyes-like of the Planet. We now compare the regular Time-picture above (Point iii and Fig. 11.a), with the one we imagine to be taken by a Beating Object-Planet, who looks-like at another Beating Object-clock. Below we remain qualitative, whilst the formal calculations come by R40<CROSS balancing> and Fig. 9.

- Limit 1: First we imagine to position our Beating Object [τ_∞; ν_∞] right onto the P_∞(Fig. 11.a-right). As the physical distance is infinite, we assume that there is no concrete Relationship in-between the Planet and the clock (common sense criterion). Hence our formal GD-Relationship weighs zero, which makes 0% of the Beating Object that the Planet ideally see. In practice, our Planet-Observer sees no Relationship, and counts one formal item only, which is the other Object-clock by itself. Hence we assume that his ideal Relativistic quoting of the clock matches the Proper and makes [τ_∞; ν_∞], which is 100% of the Object and 100% of the REV. If the Planet-Observer could see the Beating-clock beyond that infinite distance, it would read its inherent undisturbed Time-like. As the Target view by the Observer matches the Object and its Proper, we retain that such a position works as a first inherent limit of our Relativistic Time-like: the Planet could not see more than the inherent Object he has on Target (self-consistency). By our formal calculations, we will see that in this condition, the Planet-Observer appreciates ideally the full Time-like Scale τ_∞ of our Beating-clock. The Logic is the one of Fig. 7.b: basically, there is no concrete Relationship because of the infinite distance, so our α-Parameter reduces to 0%, and the Relativistic reading by the Planet counts 100% of the Object on Target, which in turn expresses by its full τ_∞ and inherent REV of 1. This emulates the condition where the regular human clock is infinitely away from the Planet
- Intermediate: As soon as we get out of Pole P_∞, the physical distance r becomes finite (Fig. 11.a-middle). We assume that our concrete GD-Relationship between the Planet and the clock is no null any longer. Hence the Planet-Observer must count two formal items in his own Target view, which are the concrete Object on Target and the concrete Relationship with it. Into the Model, we play a concreteness criterion by the h, but do not allocate any h to the Relativistic side. Our GD-Relationship qualify Relativistic, and its concreteness-like can only come from the inherent h we have on board of the inherent Objects (Model-Modeler self-consistency). As the one who looks is the Planet, and as he sees two formal items, we assume he must cut out the relative Relationship from the relative Object he sees (conservation of the original Beating Object we have in the Proper). By the same Logic of Fig. 7.b, we retain that the GD-Relationship must take some concrete weight into the Target view by the Planet-Observer: this depends on the relative position r, and becomes more when the two are closer, which in turn means for us more concrete Relationship (common sense criterion). Operatively, we will make the Planet to account for a Residual Object of

(1 – α), and for a GD-Relationship of α, where the α expresses the formal-concrete weight of the GD-Relationship he has with his Target-clock. As the Target (1 – α) becomes less than the Proper Object [τ_∞; ν_∞], it will Beat to him less Time-like than when it is onto Pole P_∞. By our formal calculations, we will see that in any intermediate position (no null GD-Relationship), the Planet-Observer only sees a part of the inherent τ_∞ of his Target, while the rest goes into the GD-Relationship: the relative percent of the τ_∞ that the Planet sees in his own Target view, basically reduces by the inverse-distance 1/r in-between himself and the clock. The aim of our Procedure P2 in Subsection 2.2, is to reproduce the actual Time-shrinking-like as of $\sqrt{}$ (1 – r_o / r).

- Limit 2: When the clock is right onto the Schwarzschild radius r_o of the Planet, it ceases to count the human Time (Fig. 11.a-left). Into the Model, we emulate the Planet and the clock by two Closed and Local Objects of the kind 2P (Proto1 standard): both have a Local solid core, that we emulate by the Model Line, i.e. the Inner Slab of our composite Objects. By our opportunistic choice of setting the second Model constant as of a = $c^4/(G\cdot h)$ (see R15<Twin constant-ratios>), we make the equivalent elementary Scale of our Beating-Planet to coincide with its Schwarzschild radius r_o. Hence this Model Parameter makes a geometric-like Border for the equivalent physical situation: the Planet is a concrete Object, which in the Model formalizes by its elementary Local scale of r_o (equivalent Nongeometric thickness of its Inner Slab); the clock is another concrete Object, and having its P_o right onto the r_o (equivalent Planet Interface), determines a limiting condition for the Geometry-like of the two Objects (the solid-like Inner of the clock cannot enter the equivalent Inner of the Planet, and the A=P_o of the clock cannot stay into the solid-like core of the Planet that our Parameter $r_o$tracks). Next we assume that in that same position of r_o, the clock and the Planet have the strongest possible Relationship one another: we considered above that the physical Relationship between the two Objects is null upon an infinite distance; then we see gravity and the Time-shrinking-like to grow toward the Planet, so it come spontaneous to think that the Relationship grow by the inverse-distance, and touches its inherent maximum when the Object-clock touches its inherent geometric Border in r_o (commons-sense criterion). Into the Model, this second limiting condition = maximum possible GD-Relationship, writes as an α of 100% (compare with Fig. 7.b): only the weight-like of the Relationship dominates into the Target view by the Planet-Observer, and there the Residual Relativistic Object weights 0%, which operatively means that the Planet does not see any more his Target-clock. If he does not see it, the Objet-clock cannot Beat the Relativistic Time for him (the Target nevertheless Beats its inherent-undisturbed Time-like as of [τ_∞; ν_∞] in its own Proper). By our R40<CROSS balancing>, we will see that the Schwarzschild radius r_o makes an end-stop, and when the Object-clock stays precisely there, the Planet does not see anymore its inherent Time-like Scale τ_∞: the τ_∞ of the clock that we human-Modelers and the Planet read 100% undisturbed at infinite distance, now reads 0% into the Target view of that same clock by the Planet-Observer. We note that the r_o position makes an inherent Border also with regards to the self-consistency of the Model and of our particular Procedure for the CROSS: we define it specifically in the context of the Model Relationships in-between two concrete Objects, and we end in a condition where the Relationship is 100% but the Relativistic Object into the Target view vanishes; beyond this limit, our human idea-meaning of a two-Objects Relationship simply enter self-contradiction. Hence we assume that both Limit 1 (no true Relationship because of the infinite distance) and Limit 2 (no true Relationship because there is no Object left into the Target view by the Observer), plainly track the two inherent conceptual end-stops of the Model.

Comment: To help the mental handling of Model Time-like and support visualizing the problem, we add two instructions more.

Instruction 1: We will calculate a two-bodies situation as a bare distance-Relationship: in Subsection 2.2 we will limit to Time dilation, and carry out a blind Nongeometric Procedure as of R40<CROSS balancing>. Our Observer-Observed pair is always equal and symmetric by itself. We however map-back the 3D-situation as of Fig. 11.a, which is an unequal but much familiar picture of our two bodies. There, we imagine explicitly to stay into the Planet, and to coincide with its Center of Mass: this is our Nongeometric Pole $A=P_o$, and the Planet plays the elementary Observer on our behalf. From there, we see the clock r meters away, and emulate it as a second Beating Object: that clock is therefore our external Target (Relativistic), and we Planet Observe it formally by a fixed Geometric Distance GD of r meters from ourselves (see also the general Relationship scheme of Fig. 7). Our Nongeometric scheme and the Procedure for the CROSS, do not concern specifically the clocks, but apply in general to any couple of Closed and Local Massive Objects. Hence we cancel all the rest, and calculate by three concrete items only. The first two pertain to the Absolutistic side of the formalism, and the third stays separately into the Relativistic compartment:

i. Planet = first Beating Object of the kind 2P (our Proto1 standard). We consider it is allocated into the Proper as a first 2P-Unit of [λ_o=r_o; σ_o; τ_o; ν_o]. We assume that in this problem, our Model Parameter λ_o matches the Schwarzschild radius r_o of the Planet [m]: the r_o is a regular limiting length which associates to a regular body, but in practice we identify the two, and just write r_o instead of λ_o during the calculations.

ii. Clock = Closed and Local Massive body whatsoever = second Beating Object of the kind 2P (our Proto1 standard = same elementary kind of the Planet-Object who Observes). We handle it as an independent and self-standing Beating Unit: it is external to the Planet, and it is an integer in its Proper, where it quotes [λ_∞; σ_∞; τ_∞; ν_∞]. This makes the Relativistic Target-Object that the Planet handles formally by his own Target view: such a Target view is a Modeling-environment which is part of the Relativism, so it keeps logically distinct from the Proper of the Object by itself (the original Object into its own Proper, remains a fixed 2P-Unit by definition). In practice, we assume that the Planet-Observer (Relativistic-status) cannot touch at the original-Object (Proper-status), neither he can disturb its original Parameters [λ_∞; σ_∞; τ_∞; ν_∞]. The subscript ∞ recalls us that our elementary Observer-Planet, basically sees the pure inherent Object (100% weight) only when it stay infinitely-away (see above Point iv of R39, Limit 1). Otherwise, he sees only a given percent of his Target, where our percent refers in general to the original Object in its own undisturbed Proper. In the case of the CROSS (distance-Relationship), the percent that the Planet sees depends on the distance, and the relevant Parameter is the original inherent τ_∞ of our clock-like Target (see calculations hereinafter).

iii. Regular relative-distance = GD-Parameter of the Model = regular meters [m]. First, we accept openly that the physical distances in Nature are a physical item as concrete as the Objects. Secondly, we adopt a specific h-criterion to classify concrete an item whatsoever into the Model (see R1<concreteness>, and R16<integer h>). Third, we allocate our Model-h only to the Absolutistic side of the Model, and only to the original Proper Objects in their Proper. Next we Model the situation by assuming that the GD-distance is Relativistic by definition, so it has no original h in itself. Furthermore, when we set mentally into the Model, we only give credit to what we Modelers have defined and allocated explicitly (self-consistency + empty-Model criterion). Hence we have that into the Model, the GD-Parameter has to be cut out from the Object on Target (otherwise it would not qualify concrete-like in this context). In our Planet-clock example, the Planet basically sees less than the original clock (and less Time-like), just because he sees the distance-Relationship also. The key aim of our formal balance, is to make sure that into the Relativistic section of the Model, our elementary Observer (the Planet-Object in the example), sees globally and in any case no-less-no-more than the 1h-weight of the original Target-Object in its own Proper.

Instruction 2: In NBM, we make a special effort to give a concrete human meaning to anything we think of in human terms. First we note a point: when we claim that we are measuring the human Time, we operate by a concrete physical Object, which is the specific clock we are using for that. For we to measure a given amount of human Time, that particular Object-clock must be concretely there (first condition), and must remain suitable-available the same amount that we mean measuring Time (second condition). Hence we retain that there is a strong correspondence between the concrete human Time, and the individual Object-clock which actualize it.

Next we stay pragmatic and adopt a concrete meaning of our unusual Model Time, so this may help illustrating-visualizing the formal Time dilation we calculate by our Beating Units: the criterion is much trivial, and it is the one of matching abstract Time with the concrete item which actualizes-and-expresses it humanly. Hence we assume that the human Time, in the very end quotes the total amount that a given and particular Object-clock, has been concretely Present and available for measuring the human Time during that same measuring-interval. We also assume that this applies not only to the clocks, but in general to any Closed and Local Object, which in turn translates into our Modeling Units of the kind 2P (Proto 1 standard). Operatively, we associate the human-unit of 1 second, with a same Presence-weight of a Closed and Local Massive Object, where the Object is an individual Object whatsoever, and the human-second quotes in general the amount-duration of its physical-Presence.

In NBM, we only work by concrete Objects, so we cannot infer more than we see on the particular Object we are watching at the moment. Let's say we measure the human Time by a concrete clock, AND this clock is a Closed and Local Object as we mean in human terms. Normally we measure 1 second per second, so we give the Object-clock and its human Time a weight of 100%. If that same Object-clock is disturbed (e.g. because of gravity or of relative-velocity), we read less. Let's imagine for instance that the reading is of 0,85 regular seconds only. In that physical condition, we have to give the Object-clock and its human Time a weight of 85% with regards to the standard. Hence we have that for the missing 15%, something happened to the Object-clock during that same measuring interval of 1 regular second.

In NBM, we basically accept not to know what happened to the true Object. Instead, we Model the situation by saying that our 2P-Unit of the kind Closed and Local was correct during 0,85 seconds, so it worked as a true 2P, and was available for counting the Model-Time for 85% only of the regular human second. For the equivalent of 0,15 seconds during that same interval of 1 regular human second, our 2P-Unit or part of it was something else and worked differently, so it was NOT a 2P-standard, and was NOT available for counting the regular Model-Time.

Then we apply this very particular Modeling picture not only to clocks, but to all Closed and Local Objects in general. In short, we assume that the concrete Time dilation into the Model, comes from upsetting the way our 2P-Units work into the Relativistic compartment with regards to the Proper. Such a discrepancy is Relativistic by itself, and it registers into the Target view of a 2P-Unit by an Outside Observer, whilst the original 2P-Object remains 100% 2P-tipe = Time-like in its own Proper. Therefore, its discrepancy-unavailability in

Beating the Time-progressing relative to the Observer, quotes as a percent of the inherent Time-like Parameters of the Object into the Proper.

Our picture becomes handy if we just assume that the human measure of the human Time, basically expresses the amount of physical Presence of an Object-clock, that in real-life we know to be of the kind Closed and Local. Into the formalism, we require that our 2P-emulator for such a category of physical Objects, remains a complete and well-shaped 2P-Unit, and work regularly 2P during our Time-like interval. Otherwise, it could not count the Model Time for what we define into the Model, and at the end of the Time-interval, we may read a discrepancy with regards to the full regular weight of 1 human second per any human second.

By definition, the 2P-Presence of our 2P-Units is always complete and correct into their own Proper. There, any one of them proceeds by Beating automatically the Model REV of 1 second per second, which corresponds to 100% of the inherent Time-like weight that our Objects have into the Proper environment. This associates to the full undisturbed Parameters of the Object, which are the Time-like Scale τ_{proper}, and the Model Frequency ν_{proper}. Their product is the third inherent constant of the Model (our REV 1), and always reads into the Proper Object as one compete and regular second per any human second.

When we get into Relativism, we operate into the Target view of that same 2P-Object by an outside elementary Observer. Our REV-Rule of 1 no longer applies, and the relative Time-like weight of the 2P Object we have on Target, is generally less than 100%. The situation of two-bodies AND one-distance, traduces to our elementary Observer in 1 Time-like Target + 1 Geometric Distance. In that case, we Model by the CROSS and calculate as of Subsection 2.2, so we will form a picture where the elementary Observer sees only a part $\tau_{relativistic}$, of the one which is the original τ_{proper} that his Target-Object has by itself. Hence the original Object on Target always paces the same, because it Beats complete and correct into the Proper. Conversely, the Observer counts a pacing of $\tau_{relativistic}$ where some part of the 2P-Unit misses with regards to its own τ_{proper}. This results in a Relativistic stretching of Model Time-like as it is appreciated by our elementary Observer into the Planet (Fig. 11.a). More properly, we do not have a true Time-like distribution into the Model, and our findings apply exclusively to the particular probe-clock we are using at the moment (or to any other individual Closed and Local Object which lays static r meters away from the Planet).

The NBM Time-like resides exclusively into the Objects, and basically coincides with them. Moreover, this only concerns the ones we classify Closed and Local of the kind 2P (Proto1 standard). We can make explicit the idea by an intuitive step more, which helps handling mentally our Time-like notion into the Model. When we say humanly one Object, there is at least another Object into play, which is the human Observer-Modeler (also 2P-type). More in general, we consider that any single concrete Object, has at least a concrete Relationship with all-the-rest, which is NOT that Object (formally the Model-Outside, which basically qualifies NOT-Inside = NOT-Proper of the Object itself). As a matter of facts, when we count humanly one Object, we count one Relationship also. Hence our Model Time-like Scale τ [s], quotes in general the amount of Relationship, and also the amount of 2P-Object that we have had in the Relationship during that same Time-like interval of τ seconds. We note that we express it in regular seconds, but our Model τ basically actualizes the total amount of 2P-Object which qualify complete, correct, and well-defined as a true 2P-Object for what we mean into the formalism. Such a Model definition and practical reading of the τ, applies equally to either a Relativistic POV-Observer, who operates the 2P-Object in his own Target view from the outside, or to an Absolutistic supporting-POV, who reads the same 2P-Object from the inside.

Note: Our elementary Relativism is made of the relative-speed, and of the relative-distance. The next Rule is the operating twin of R38<MATCH balancing>). In the MATCH, our Logic-drive lays in the Local side of the Model, and we Fraction the Line of the Object that Moves. In the CROSS right below, the Logic-drive lays in the Nonlocal side, and we Fraction the Round of the Object which stays a given distance away.

R40. <CROSS balancing> The Nongeometric CROSS scheme of Fig. 9 (or equivalent human Modeling artifice) provides a practical example of how we calculate the relative-distance Relationships in NBM (formally our Geometric Distance GD). This concerns any pair of Massive-like Objects of the kind 2P (Proto1), where we Modeler make to play one Unit as the formal Observer, and the other as the 2P-Object on Target: the two are same-kind, and this same kind is 2P. Such a CROSS scheme is specific for emulating the regular distance r [m] in-between the two Units (details by R39<formal distance>); it obeys the general NBM framing of Model Relationships as of Fig. 7 and R33<relative Fractioning>). The key instructions for balancing the Relativistic 2P-Object into the Target view of the 2P-Observer, summarize below:

i. Defining the CROSS: We Modelers work in the Root, and compare the two Artifacts as of Fig. 9.a:
   - Our 2P-Observer sketches on top, by highlighting his own three-Poles system A'-C'-B': he reads-like his relative-distance partner, and does not influence it. The Observer is an integer 2P-Beating which quotes in its Proper [λ_o=r_o; σ_o; τ_o; ν_o]: only its Line-Parameter λ_o=r_o will enter our calculations, and we associate it to the Schwarzschild radius of our Observer, i.e. $r_o = (2 \cdot G \cdot M / c^2)$ [m], where M is its Mass [kg], c is the speed of light [m/s], and G is the gravitational constant [$m^3/(kg \cdot s^2)$]. Our λ_o=r_o Parameter reads regularly in meters into the Local side of the formalism (Geometry A); by NBM, it relates to its Nonlocal Twin σ_o [1/m] as of $\lambda_o = r_o = 1/\sigma_o$ (Geometry B).
   - The 2P-Target shows to him on bottom, and we highlight the three-Poles system A-C-B of such a second Object: into the Proper, it is same-kind of the Observer, which means same 2P-Logic and same Time-like Beating as of any Proto1. Hence the two are similar into the Proper, and Beat by the constant Model REV of 1 second per second. The 2P-Unit

on Target is an integer by itself, and it quotes in general [λ_∞; σ_∞; τ_∞; ν_∞]: these are the Proper values that we Modelers, and thus the system, have allocated to the inherent Object. The Observer, in turn, wants to quote this same Object from his own Relativistic POV outside of it. The unusual subscript ∞ is practical to mark the Proper of the Target-Object: our NBM emulation will only depend on its Proper Time-like Scale τ_∞ [s]; this value is inherent to the Object on Target, and shows ideally to the elementary Observer when the two are an infinite distance apart; the τ_∞ by itself does not depend on the Relativistic viewing of it, neither does it change when we process it into the Target view on behalf of the Observer. The Observer-Object adopts in turn the usual o-subscript for his own Proper, and only his two geometric-like parameters $\lambda_o=r_o$, and σ_o will enter our calculations; his own inherent Time-like on board [τ_o; ν_o] will not influence his viewing-like of the Target, so it will not appear in our formal handling of the CROSS.

The formal comparison carries out Pole-by-Pole (A' with A, B' with B, and C' with C), and by using a NOT Logic (as we show in the sketch). The operating scheme is Nongeometric and left-right symmetrical, as it is for the Root and for NBM in general.

ii. Comparing with the MATCH: We flag out that here, the Relativistic Logic is a NOT, so it is the inverse of the YES-Logic we use to emulate the relative-speed by the MATCH (Fig. 8). First, we assume that our two relational-couplings as of Figs. 8.a and 9.a work in general onto the same pair of 2P-Objects, and that both the MATCH and the CROSS applies contextually to any pair of 2P-Objects in the Model. Secondly, we assume that because of the YES-NOT Reversing of the inherent relational-Logic, the MATCH and the CROSS occupies two distinct Layers of the formalism. In short, the Logic of the CROSS-distance keeps apart, and stays operatively independent from the Logic of the MATCH-speed.

We also assume that any elementary Observer of the kind 2P, can watch-relate to any other Object of the same kind 2P, both:

- through the CROSS, where he sees the distance-like of the partner + the partner itself in a given NOT-way,

AND in parallel-contextually

- through the MATCH, where he sees the speed-like of that same partner (including zero = static) + the partner itself in another distinct YES-way.

Either Relativistic pictures-like of the (partner-NOT + distance), or of the (partner-YES + speed), are handled into two logically-distinct Target views of the elementary Observer: those two Modeling-environments are allocated respectively to our Model-CROSS, and to our Model-MATCH.

iii. Operating the CROSS: Now we define explicitly the situation we assume to determine in Fig. 9.a, because of our NOT-Logic (see also the Comment below for a short justification):

- Pole A of the Target is objectively A (Proper), but it must relate NOT-A=B to the Observer (Relativistic): the two instructions are conflictual, so the system adds another Layer and mediate a mixed-Pole C=AB into the eyes-like of the CROSS-Observer. The same applies formally to Pole B of the Target, so the CROSS-Observer ends to see a C-C-C system into his partner-Artifact. Such a picture is Relativistic, forms on a separate Layer by a dedicated NOT-Target-view, and it is just the NOT of the original Object on Target (the MATCH Target-view is also Relativistic, but it is the YES of that same Partner).
- In short, our Relativistic Observer now loses any track of the Geometry of his partner: the original and concrete 2P-Object basically transforms to his NOT-eyes-like, and the CROSS makes the partner-Artifact to show upside-down to him (compare with Fig. 1.b for the regular Artifact, and imagine that the C-C-C system, which is Time-like, now stays up, whilst the geometric side A-C-B of the 2P-Object, just hides underneath).
- Next we set as usual our elementary Observer into Pole C' of the Observing Object (same of the MATCH). Hence he sees, onto the separate relational-Layer of the CROSS (distinct Target view), a concrete C-C-C Artifact where just two equal Time-like Scales τ_∞-τ_∞ show. Note that we are in the Root, but refrain here from applying the Model Merging to our four identical mid-mixed-Poles C' and C-C-C. First, we have that the C' and the Relativistic C-C-C system are in a NOT and thus occupy two logically-distinct relational-Layers, so they keep apart in any case. Secondly, the true Object on Target is nevertheless a concrete 2P-Unit, with its own A-B Geometry already allocated on board of its Proper. Hence we accept explicitly the idea that the system does not Merge-in-one the viewing-like of the four identical C (the C' and the Relativistic C-C-C triplet): otherwise, the whole Relativistic picture by the Observer would collapse into the Root (the Relativistic C-C-C triplet would confuse with himself Pole C', and he would see-like nothing more than himself). Globally, we assume that the Relativistic τ_∞-τ_∞ pair, which emerges from the NOT-Logic of the assembly, remains in any case clean-and-tidy to the profound Observer C', so it makes our sole and concrete Time-like Parameter of the CROSS situation: it expresses nonetheless the concrete Geometry of the original Object on Target, even if such a Geometry becomes hidden-like into the CROSS. In short, we assume that in the eyes-like of our Relativistic Observer C', the CROSS transforms the inherent geometric-

feature of the Target into a barely Time-like feature of τ_∞-τ_∞. This is the Proper value of the upside-down partner, that the system allocates into the Target view of the CROSS: hence it makes also our concrete 100% basis for calculating such a specific NOT-Relationship.

iv. Assuming a Time-like Scale situation: In Fig. 9.a, we nevertheless retain that the profound system and our Observer Pole C', cannot really distinguish the AB=C on the left, from the BA=C on the right. This does not contradict the assumption above, i.e. that Pole C' knows that the C-C-C system is distinct from himself, and that the three-C stay open to reflect the inherent τ_∞-τ_∞ Scale of the Target; this Model-picture is consistent, but those two Scales are equal and left-right irrelevant, as are the two end-Poles C of the NOT-Artifact (see Fig. 9.a: those two extreme C-ends of the partner-in-a-CROSS, classify identical-kind to our elementary Observer, and are no longer an A and a B to him).

In short, the two key-Geometries A and B of our typical Proto1-Artifact, transforms to him in a pure Time-like, which is by itself equal and symmetric across the Local-Nonlocal part. This also aligns with the idea above that upon the NOT-Logic of the CROSS, Pole C' loses any track of the actual Geometry of his partner, even if that 2P-Object is a regular A-C-B system in its own Proper. To his eyes-like, the Line and the Round L-R of the original Object confuses, so there is no way for him to know when they Commutate. Hence we assume that the CROSS-Observer does not appreciate the Model Frequency of his Target, neither he could: he sees the Object on Target as a bare Time-like Scale, which in any case makes a concrete Time-like Presence in his surroundings. To him, the complete NBM quoting of his Relativistic Target reduces to only [τ_∞-τ_∞] into the Proper (100% of the Target), and to only [τ_r-τ_r] when his partner is r meters away from him (details right below).

Hence we assume also, independently, that our CROSS scheme determines a Time-like Scale situation: in our Relativistic calculations, we must select the DEP as of R34<DEV-DEP balancing>, not the DEV. Our Procedure P2 for emulating Time dilation in Subsection 2.2, will therefore base on the Model Time-like Scale, and on its Density of Presence (the τ / ν in general).

Globally, we assume that the CROSS-Observer does not perceive-like the Target as a geometric body, but just as some concrete Presence that quotes τ_∞seconds in its own Proper. Into the 3D, such a profound NBM item corresponds for instance to our probe-clock of Fig. 11.a, or to a Massive body whatsoever which stays in general a fixed distance of r meters from our Planet-Observer.

v. Geometry by mid-Pole C': Up to now, we formalized the Relativistic picture of the Target for what it is into the eyes-like of our elementary Observer Pole C' (our first sketch as of Fig. 9.a). Below we Model the way Pole C' relates geometrically with his Target. Hence we switch to our second sketch in Fig. 9.b, which is a hybrid geometric-Nongeometric picture of the CROSS assembly (not to scale). There, we imagine what our profound Observer would see-like and conclude logically from his own Relativistic POV in C':

- First, we assume that from a strict geometric standpoint, the two Poles we sketch in human terms as C_L on the left (former A on Target in the Local side), and C_R on the right (former B on Target in the Nonlocal side), do not really distinguish into the Root. We look at them humanly, but should consider instead that they both confuse in a single mid-mixed-Pole C, and Merge with the original C in the Middle of the Target. We stress that we are considering now the Geometry-like of the assembly, so this conclusion does not contradict the assumptions above, and on the contrary aligns: we claimed that our elementary Observer loses any track of the Geometry-like of his partner, but keeps track of the τ_∞-τ_∞ Scale into the realm of Time-like, just because there is a concrete partner-Object behind (conservation and self-consistency); this expresses by a triplet of identical mid-mixed-Poles C, which by definition cannot carry geometric-like information, neither they can support a geometric-like reading of the situation by the elementary Observer. Above, we were concerned with the inherent Parameters that we Modelers should allocate into the NOT-Target view to start our CROSS, and we concluded that we care only of the τ_∞, but not of the Geometry-like of the Target. Here, we consider the Geometry-like of the whole assembly, and in it, the Target shows as we have just proposed, i.e. as a triplet of C, which map here geometrically into a single Point-equivalent (in such a kind of sketches, thinking that the C-triplet Merges geometrically onto C_L, or onto the central C, or onto the C_R, does not really matter).
- Those three confused-indistinct Poles, are C-kind in any case. We Modelers can think of drawing a Relativistic Line L_{GD} from Pole A' of the Observer to the C_L=C=C_R on Target, and then a Relativistic Round R_{GD} from there to Pole B' of the Observer. Hence we form a barely theoretical Relativistic item, that we Modeler claim to make our formal GD-Relationship in-between the Target and the Observer. Such a new Relativistic item L_{GD}-R_{GD}, basically qualifies as an A'-(C_L=C=C_R)-B', where the end-Poles A' and B' pertain to the Observer, and the mid-mixed-Pole C_L=C=C_R is part of the Target. For the rest, it is formally same-kind and fits very well our idea of an A-C-B system, which makes in general a geometric-like 2P-Object of the kind of Proto1. In such a case, the Object is markedly Relativistic and it is not allocated to any Proper, but we assume that the profound system cannot make the difference, and handles it as a regular 2P-Object of the kind A-C-B.

- To fit real-life, we stay opportunistic, and say that our new Line L_{GD} plays the regular distance r in meters, whilst its Nonlocal Twin R_{GD} expresses normally by $\sigma_r = 1/r$ in inverse-meters. We also switch a moment to our regular picture of the Planet and the clock (e.g. Fig.11.a), and say that when their regular relative-distance is r, the size of our Relativistic Line L_{GD} is the same r in meters. Next we say also that when then the Target stays still in that precise position of $r=L_{GD}$ meters from the Observer, it shows to him a Relativistic Time-like Scale of τ_r seconds. Hence we associate the r in real-life, the Relativistic Line L_{GD} of our sketch, and the Relativistic Time-like Scale τ_r. In NBM, we mean that such a τ_r is just the waythat a probe-clock or a Massive body whatsoever, Beat in Time relative to our CROSS-Observer: the Target Beats by itself as of τ_∞ in its own Proper, but the CROSS-Observer sees it as a τ_r, which in turn associates to our regular distance $r=L_{GD}$.
- Till now, we Modelers have just imagined in the abstract such a geometric-like assembly of the Observer-Observed pair in a CROSS. For the GD-Relationship to qualify concrete, the Relativistic Object L_{GD}-R_{GD} must be concrete, so we Modelers must manage for allocating some h or part of the h to it. We assume that the system does not allocate extra h-weight to the Relativistic block, so the h or part of it must cut out and balance from the original Proper Object on Target.

vi. Calculating the CROSS: Then we switch to our third sketch in Fig. 9.c, and establish a simple linear Rule for calculating the part of the inherent Object on Target, which Fractions relative to our formal Observer. The sketch is Nongeometric and not to scale:
  - On top, we have our elementary Observer A'-C'-B' (e.g. the Planet of Fig.11.a), who looks down and quotes-like his Target (e.g. a probe-clock or a Massive Body whatsoever), by using his own mid-Pole C' (we Modelers calculate on his behalf).
  - Below the Observer, we sketch the several fixed positions that his Target can take in terms of the relative-distance $r=L_{GD}$ (even if not-to-scale, this reads regularly in meters on the left, whilst the right-part of the sketch expresses the Nonlocal and reads in inverse-meters).
  - The inherent Object shows already filtered by the NOT-Logic of the CROSS as of Figs. 9.a,b: to the eyes-like of the Observer, it makes a bare Time-like C-C-C system, that we Modelers sketch pragmatically in geometric-like terms as of $C_L=C=C_R$, and whose inherent Scale is τ_∞ seconds (the Observer does not see it in fact, but reads a Relativistic τ_r depending on the relative-distance).

From now on, we enter and operate into the Relativistic Target view of the CROSS-Relationship by our elementary Observer Pole C'. We also refer to

Fig.11.a for the 3D, and to Fig. 7.b for our general scheme where we split formally the Relativistic Target in a first α-Fraction, and in a second $(1 - \alpha)$-Residual relative to the elementary Observer. Then we work on the inherent τ_∞ of the CROSS-Object, and associate:

- $(1 - \alpha)$-Fraction: The τ_r is the Residual Time-like Scale that the CROSS-Observer registers into his partner-Object when it stays still r meters away.
- α-Fraction: We call τ_α, the part of the inherent τ_∞ that we Modelers claim to Fraction, and to cut away from the Time-like Scale that the CROSS-Observer sees. The two balance to the Proper of the partner Object as of $\tau_r + \tau_\alpha = \tau_\infty$.

Into the sketch, we Modelers basically visualize translating up-and-down the Target: it is the inherent C_L=C=C_R Object as of Figs. 9.a,b, and its two key-Scales τ_∞- τ_∞ stay fixed in any case. Then we read, ideally into the middle of the Object, the α-Fractioning of its Local and Nonlocal side: they stay equal as it is for the Root and for NBM in general. Such a Nongeometric α-Fractioning means for us the concrete weigh of the GD-Relationship in-between the two 2P-Objects. Their regular relative-distance r into the 3D reads regularly on the left: this is our r=L_{GD} in meters, but by evidence it is not to scale into the sketch. The size of the GD-Relativistic-Object into the Nonlocal, is our σ_r=R_{GD} = 1/r: it reads Nongeometrically in inverse-meters on the right of the sketch, where we may want to visualize the zero of the σ_r on bottom, i.e. opposite-direction with regards to the zero of our straight r-direction (both Parameters are Relativistic of the couple, but if we take the elementary POV of the Observer, we start visualizing the r=L_{GD} from top-left, so we must think of some Reverse-scale if we want to somehow appreciate the σ_r=R_{GD} in that same hybrid sketch: in principle, we could not draw them in a same geometric drawing).

vii. Balancing the r-Relationship: In NBM, we assume openly that the geometric-like Presence of the concrete r [m] in-between the two Objects of a CROSS, comes by a direct conversion of the original Time-like Presence τ_∞ [s] of the Object on Target: the whole qualify Relativistic only, and takes place into the Target view that the CROSS-Observer applies onto his CROSS-partner.

Into this same Relativistic Target view, the two Time-like and geometric-like items balance to the inherent integer τ_∞ [s]: this is the only Proper Parameter which the Observer can concretely rely upon. The logical scheme is trivial, and may for instance write (in principle) τ_∞ [s] $\rightarrow \tau_r$ [s] + r [m], where:

- $(1 - \alpha)$-Fraction: The first term on the right, basically associates to the Residual of the original Beating; it remains same-kind and produces the same Time-like effects to the eyes-like of the CROSS-Observer (in the problem, both the Target and the Observer are 2P-type Units, which by themselves Beat in Time).

- α-Fraction: The second term on the right, is the part which Fractions relative to the Observer, and thus converts to a concrete geometric distance in-between the Observer and the Observed Object. In NBM, this reads as an L_{GD}-R_{GD} assembly, which is purely Relativistic (no Proper and no inherent h allocated), but takes in any case a cut-out Fraction of the h on Target. For the rest, the Object-assembly is not formally different from a 2P-Object: it makes a complete and well-shaped A'-(C_L=C=C_R)-B' system, which into the Root is just of the regular kind A-C-B.

The Logic we follow here is illustrative, and bases on self-consistency by the Modeler. In short, we require h-concrete items only, and assume that the system allocates the h to the Absolutism, but not to the Relativism. Hence the L_{GD}-R_{GD} assembly has no h by itself, and to make it to qualify concrete in any case, we Modelers imagine to cut out and use some h-Fraction from the inherent Object on Target. Next this actualizes practically onto the reference Scale of the problem, which in this case is the Absolutistic τ_∞ of the Target. This is the item which truly carries the h, and that the elementary Observer has to balance concretely in his own Relativistic Target view of that same Proper Object.

We assume also that in a CROSS, the relative α-Fractioning of the τ_∞, is proportional to the $\sigma_r = 1/r$ [1/m]: this Parameter expresses the B-size of the L_{GD}–R_{GD} assembly, and means for us the Nonlocal weight of the item we Modelers claim to make our GD-Relationship; it corresponds by a simple Reverse to the regular distance of r meters on the Local side of the formalism, but in the case of a CROSS, it seems more practical to calculate directly by the σ_r. Our linear Rule for the τ_α - σ_r correlation during the Relativistic Fractioning, illustrates below:

- First we consider that all our 2P-type Objects of the kind of Proto1, arrange so that $\sigma / \tau = a$ in general, where the a [1/(m•s)] is the structural constant of the formalism on the side of its B-Geometry. The new L_{GD}-R_{GD} assembly fits formally the same category, and basically qualifies as a Relativistic Proto1. If we call τ_α its Time-like Scale, our particular GD-Object of Fig. 9.b quotes [r; $\sigma_r = 1/r$; τ_α]. We can therefore write $\sigma_r / \tau_\alpha = a$, and this gives $\tau_\alpha = (1/a) \cdot \sigma_r$, where the (1/a) is a constant in any case. Our cut-out Fraction τ_α, tends therefore to grow linearly with the σ_r. We Modelers could for instance regard such a Nonlocal σ_r-Parameter, as just as the profound geometric-like weight which makes concrete our CROSS-Relationship. We note also that our Logic-drive comes now from Geometry B, as opposite to the MATCH, where we basically work onto the Local side of our Relativistic 2P-Object (compare with Fig. 8).

- If we next look at real-life, and compare with the 3D picture of the situation (e.g. as of Fig. 11.a), it is intuitive that when the r is almost infinite, our $\sigma_r = 1/r$ is almost zero, so we can claim that the concrete weight of our GD-Relationship basically vanishes: the τ_α vanishes also, because of the r going to infinity, and the σ_r going to zero. As a matter of facts, when we think humanly of two Objects infinitely away, we consider that they relate little or nothing one another, so that the combined picture by NBM and the regular 3D keeps consistent.
- It remains to quote properly the σ_r into the profound system: such a Root-value is relative to our elementary Observer, and must be quoted on his behalf. We assumed above that in a CROSS, the relevant Observer is Pole C', and he does not see the Geometry-like of his Target: he only registers the Time-like features of his CROSS-partner, plus some extra L_{GD}-R_{GD} assembly that we humanly call the distance in-between the two Objects. As such, the only concrete measuring Scale that the CROSS-Observer has on hand, is his own Proper Round σ_o. We basically assume that relative to him, the natural geometric-like weight of the GD-assembly, expresses in percent by just making σ_r / σ_o [dimensionless or %]. In practice, the measuring-criterion of our CROSS-Observer bases on the thickness of his own Proper Round σ_o, that by the start we Modeler specified opportunistically to fit the inverse Schwarzschild radius r_o as of $1/\sigma_o = r_o$ [1/m]. Hence the formalism attempts reflecting also such a well-established human idea.
- The ultimate practical Rule for calculating the Fraction of the Target which we are interested to, comes out trivially from above: first we concluded that in human terms, the τ_α is proportional to the σ_r as of $\tau_\alpha = (1/a) \cdot \sigma_r$ [s]; next we assumed that into the system, the proper quoting of the σ_r by the elementary Observer, comes out as a percent of his own Round σ_o, i.e. in terms of σ_r / σ_o [%]. Hence we write that the Time-Like percent-weight of the concrete Target [τ_∞-τ_∞], which Fractions into making the GD-Relationship (the L_{GD}-R_{GD} assembly that we Modelers associate to the τ_α), is same-percent of the Relationship itself with regards to the Geometry-like of the Observer, where this second geometric-weight quotes proportionally into the Nonlocal: such a plain Nongeometric instruction gives $(\tau_\alpha / \tau_\infty) = (\sigma_r / \sigma_o)$ [%], so we obtain $\tau_\alpha = \tau_\infty \cdot (\sigma_r / \sigma_o) = \tau_\infty \cdot (r_o / r)$ [s]. This corresponds to the α-Fraction of our general R33<relative Fractioning> and Fig. 7.b for the Model Relationships. Hence it is the Fraction which, by the eyes-like of the CROSS-Observer, cuts out from the Time-like behavior of the Target, and becomes logically a Relativistic L_{GD}-R_{GD} assembly, i.e. a concrete GD-Relationship with his partner.

viii. Routine calculations and Borders: When calculating normally, we do not really need to recall the many illustrative details above. Our CROSS-Target basically makes an inherent τ_∞-τ_∞ Object as of Figs. 9.a,b,c. Calculating it on behalf of the profound CROSS-Observer, stay very handy and linear if we think of side B of our Observer-Observed pair. Below we take the POV of Pole C' (e.g. into a Planet), and compare also with Limit 1, Intermediate, and Limit 2 as of R39<formal distance> and Fig. 11.a:

- Limit 1: When the Target is an infinite distance away (ideally onto our P_∞), the Observer reads the Target only (one item), and it makes τ_∞ (no term to cut away in the balance). In practice, we have $\sigma_r = 1/r_\infty = 0$, so we start writing from above $\tau_\alpha = \tau_\infty \cdot (\sigma_r / \sigma_o) = \tau_\infty \cdot (0 / \sigma_o) = 0$: the L_{GD}-R_{GD} assembly is huge on the Local side, but it has no concrete weight into the system. Equivalently, we may calculate on the Local side $\tau_\alpha = \tau_\infty \cdot (r_o / r_\infty) = 0$. As the τ_α is zero, we get for the Residual that the Observer ultimately sees: $\tau_r = \tau_\infty - \tau_\alpha = \tau_\infty - 0 = \tau_\infty = 100\%$ of the inherent Target-Object and of its REV 1. We retain this is a first inherent operating-Border of our CROSS, which is both logical and practical: no 2P-Object can have a Relationship less than no-Relationship with another 2P-Object, and no concrete Object can stay more than an infinite distance away from another concrete Object. By our example of the Planet and the clock, this same Limit 1 corresponds to when the probe-clock stays ideally an infinite distance away from the Planet-Observer. Hence we say currently that it gets out of reach of the gravitational field, so there is no stretching-like-effect, and we see the human Time upon the probe-clock to flow regularly. This is the 100% weight of the regular definition of 1 human second per human second, and it goes on concretely into the clock: the human Time cannot go by a rate more than that, so that no Relativistic Observer can read more than that from outside the clock.
- Intermediate: When the Target stays apart a given finite distance of r meters, the Observer sees two physical items, which are the Target and its relative-distance. We require that both qualify concrete-like into the Model, and allocate a geometric-like weight of $\sigma_r = 1/r$ to our presumed Model Relationship of r meters: by NBM, this σ_r-Parameter reads as the Nonlocal weight of the Relativistic L_{GD}-R_{GD} assembly, and thus of the GD-Relationship in-between the two bodies. In short, we know automatically the σ_r into the Nonlocal because of our NBM Twinning $\sigma_r = 1/r$. Hence we write $\tau_\alpha = \tau_\infty \cdot (\sigma_r / \sigma_o)$, and we derive immediately the Residual Time-like Scale that the elementary Observer allocates to his partner upon a geometric distance of r: $\tau_r = \tau_\infty - \tau_\alpha = \tau_\infty - \tau_\infty \cdot (\sigma_r / \sigma_o) = \tau_\infty \cdot [\, 1 - (\sigma_r / \sigma_o)]$. Next we associate the Nonlocal Slab σ_o of the Massive

Observer, to the Reverse = logical-inverse of his own Schwarzschild radius r_o, and recall the inherent Local-Nonlocal Twinning as of $1/\sigma_o = r_o$. Hence we ultimately derive our Relativistic Parameter τ_r [s], in terms of the inherent Time-like Scale of the Target, of the inherent Schwarzschild radius of the Observer, and of the actual relative-distance in-between those two Modeling Units: $\tau_r = \tau_\infty \cdot [1 - (r_o / r)]$, where $r = 1/\sigma_r$, and $r_o = 1/\sigma_o$. By NBM, the r_o reads also as the equivalent elementary thickness of the Line into the Local part of our elementary Massive Observer ($r_o=\lambda_o$ by our usual A-B notation). Hence the overall picture is very straight: when the Target stays closer than the infinity, the Observer sees two things at once, and both qualify concrete-like; one of them is geometric, so he must see less Time-like into his Target; the Relationship is geometrically-inverse, in the sense that its physical-like weight grows when the Target stays closer; hence the Rule becomes automatically linear if we work into the Nonlocal by the σ. If we now look at Fig. 11.a, the Relativistic balance above covers the whole range from geometric infinity (our P_∞) to the Schwarzschild radius of the Observer (our $r_o=\lambda_o$): along that run we normally see-consider the stretching-like of human Time in terms of some abstract distribution into the 3D, whilst our NBM idea refers to only the particular clock or to the particular Massive body we are watching or working on at the moment. In Section 2.2, we will complete our benchmark calculations, and attempt emulating the special square-root behavior we see in real-life for the stretching-like of human Time around a Massive body.

- Limit 2: When the Target stays exactly onto the theoretical Schwarzschild radius of the Observer (our $r_o=\lambda_o$), we have $r = r_o$, so $\sigma_r = 1/r_o = \sigma_o$. Hence we can write directly $\tau_r = \tau_\infty \cdot [1 - (r_o / r_o)] = \tau_\infty \cdot [1 - (\sigma_o / \sigma_o)] = 0$. We stress this is not a relevant result, as NBM flagrantly copies both the idea and the key-meaning of the Schwarzschild radius, as the point where a human clock ceases to clock. We only add a possible Nongeometric reading, that in any case we must check-and-fit strictly on the well-established picture of the physical situation. A first unusual point is that by the formalism, the 2P-Object on Target carries a Time-function on board and continues to Beat regularly its own Time-like into the Proper. The relative-Fraction that we Modelers convert into the relative-distance, and into our GD-Relationship, now writes $\tau_\alpha = \tau_\infty \cdot (\sigma_o / \sigma_o) = \tau_\infty \cdot (r_o / r_o) = \tau_\infty$, so it takes out 100% of the original Time-like weight of the Target. Hence the problem with the Relativistic Observer, is that he does not see any longer the partner-Object, and only sees the Relationship with it. This is the maximum our self-consistency can tolerate, as we derived the result in the context of a pair-Relationship:

such a Modeling-concept loses consistency when we enter a Relationship where the Object misses completely, and only the Relationship dominates at 100%. If we look at Fig. 9.c, we see that upon such an extreme condition (τ_α = 100% and τ_r = 0%), the Relativistic Target disappears and the Relativistic L_{GD}-R_{GD} assembly quotes [r_o; σ_o]: its formal quoting becomes identical to the geometry-like of the Observer. Above, we assumed explicitly that our L_{GD}-R_{GD} assembly classifies regularly as an A-C-B system in the Root, which is also the case for the Observer. Therefore, we have that the Observer and the Relativistic L_{GD}-R_{GD} assembly matches completely, so we must assume that the profound system cannot distinguishing them anymore; hence the Observer neither, can read Relativistically an item which identifies-Merges 100% with himself. This makes another limiting condition in the Logic itself of the CROSS: we started by a NOT-requirement, and produced an extra-Object which now identify-YES with the Observer. In addition, we must recall our inherent A-B Geometry, and that both Objects are 2P-type with a solid core allocated into their Proper (Absolutistic block): this comes before we enter the domain of their mutual Relationship (Relativistic block). Hence we consider that both Lines of both Objects (their A-part into the Local) are Inner-type, so they cannot enter one another, and their two Schwarzschild radii make a natural end-stop. Lastly, we have a Model which depicts, right onto the Schwarzschild radius r_o, the strongest possible GD-Relationship that the Model itself can ever describe. This is 100% Relationship and 0% Object, so by just common sense we accept that the Model cannot go further than that. Globally, we retain that the whole makes a second inherent Border for combining a whatsoever pair of 2P-Objects in a CROSS-Relationship. Once again, we consider that such an operational limit of the formalism, is both logical and practical within this first elementary block of the Model.

Comment: To make an example, we reconsider for a moment and double-check our key-assumption of Point iii above, i.e. the idea that the NOT-Logic of the CROSS forms a Relativistic C-C-C triplet in Fig. 9.a. Let's use regular Logic, and suppose that the double-NOT of the CROSS, just makes the Observer to see B instead of A, and A instead of B into the partner. Hence Pole C' would see a B-C-A system, instead of the original one which is an A-C-B: this in fact makes no difference into the Root, neither can it be compared to our Commuting artifice for emulating the Time-like progressing into the Proper of an Object. Such a solution thus enters the ones we can imagine humanly, but for the rest it qualifies dummy. As a general Rule, in NMB we assume that the system indeed accepts-and-solve automatically the elementary logical-conflicts we postulate here: this allows both arranging the situation and generating new configurations (adaptive-Logic criterion). The NBM technique is trivial, and comes in general from our R3<Logic-Layering>: in the CROSS (but also in the MATCH) we base on the idea that upon our Absolutism-Relativism conflict (POV of the Object vs. POV of the Observer), the system allocates a Layer more, and makes there a mid-point compromise, i.e. 50% + 50% of the two truth-like by the two conflicting POVs. In shorth, a normally irreconcilable neither-A-nor-B, can positively read as a concrete AB=C, provided it stays on another Logic-Layer which solves the conflict.

Note: We find two inherent operating-Borders both in the MATCH and in the CROSS: this reflects the logical Twinning of those two Model Relationships. The forms their Borders take, are however very different. For the MATCH, they correspond to when any two 2P-Objects stays either still-static, or have a theoretical c-speed relative each other. For the CROSS, they correspond to when another body is either infinitely away, or so close to the Observer that it touches his Schwarzschild radius.

II. PROCEDURES P1 AND P2 AS TWO PRACTICAL EXERCISES ON TIME DILATION

Below we present two possible step-by-step Procedures for emulating Time dilation in NBM. We flag out that we trust exclusively the two concrete bodies we work on, their usual framing into the 3D, and the well-established human knowledge-formulae for Time dilation. Next to that, we add and combine in parallel our Nongeometric Model, so we can test the results it gives. The NBM proposal, as well as the two Procedures below, remain in any case unchecked and unproven at present.

II.1. P1-emulation of Time dilation due to relative-velocity in-between two Objects

Note: Below we use a very particular artifice for calculating the relative-speed situation: we assume that the β-Fraction corresponding to the formal Moving (our 1P-component), simply get out of the Line of the Object on Target, and adds to the Round of that same Object. This is just practical to handle, and it allows deriving quickly a reasonable argument for obtaining the emulator-equation we want to obtain here.

S1. The physical situation we attempt emulating by NBM is the one we sketch in Fig. 10.a: we want to reproduce the relative slowing down of a Target-clock T, which Moves by a regular constant speed of v [m/s] relative to an Observer O. Then we switch to a barely formal handling, but keep in mind the physical situation in regular 3D: R36<formal speed> gives detailed instructions on that. Hence we work in parallel by two concretes bodies into the 3D, and by two Beating-Units into the Model. The two Massive bodies are Closed and Local, so they traduce into the Model by two Proper Units of the kind 2P-Proto1: regular and complete A-C-B system on board, and regular Time-function which Beats 100% of the REV 1 into the Object.

S2. The case-study formula we want to emulate is the one for Time dilation due to relative-velocity (Fig. 10.a):

$$(1) \quad \frac{\Delta t_v}{\Delta t_0} = \frac{1}{\sqrt{1-\frac{v^2}{c^2}}} = \frac{1}{\sqrt{1-\beta^2}}$$

where:

- Δt_o [s] is the Proper Time-interval, as we could measure it on board of the Observer or on board of the Target: the two are equivalent, and we know that the Proper Time-rate is always the maximum we can Observe. In a relatively Moving body, we always find less.
- Δt_v [s] is the Time-interval as measured by a Target Object T, which Moves relative to our Observer o. The relatively shrunk-clock we sketch on board of the Target in Fig. 10.a, only wants to make concrete the idea: in real-life, that clock just slows down relatively to the Observer. We note that in the formula, we refer to a same-and-true human second and human Time: e.g. the concrete Time for a coin to fall from the table to the floor. Next we compare the two different readings of the true thing by the Observer and by the Moving Target, so the formula works inversely to the actual-and-true slowing down of the clock: the idea is that the Moving clock counts less frequently, so it takes longer to count the same true-and-regular human second. As such, its Δt_v is in general more than the Δt_o, and this reflects in the formula above (the second term is always greater than 1). The effect increases by the v and the β, and it becomes impressive when the second Object we are looking at, approaches the speed of light. Below we keep in line with the well-established reading of the physical situation, and assume that such a discrepancy does not concerns only the clocks: instead, it is inherent in Nature, and the way the human Time works in a body when it Moves, is objectively different. In any case, we limit to a barely formal emulation, and cannot express on the actual meaning of human Time: if we would attempt, we would enter automatically a self-nonsense condition by the Modeler.
- v and c [m/s] are respectively the geometric-speed of the Moving Object on Target, and the geometric-speed of light relative to the Observer: the c is always c, and it is a physical constant. Hence it is practical to quote the v as a percent-Fraction of the speed of light, which corresponds to the regular β-Parameter as of $\beta = v/c$ [dimensionless].

Beside the effects of their relative Moving or of gravity (Subsection 2.2), two exact and reliable clocks always maintain synchronous. Our 2P-Units of the kind of Proto1 inspire to that, and always keep synchronous in their own Proper, where they proceed in Time and Beat a Model REV of exactly 1 regular human second per any regular human second (R20<Time-like> and R21<Model REV>). Therefore, in NBM we can refer the upset Time-like Parameters of the Moving Unit, indifferently to either our static Observer O, or to the Proper of the Moving Object T. The Proper is a Modeling-environment which is specific to NBM: it resides into the Absolutistic block, and it is where the formal Object is allocated for what it is. There we consider that the Proper Object remains always fixed, neither the Model Relativism can change its inherent Parameters, both because the Relativism resides outside the Object, and because it comes logically-downstream into the formalism hierarchy. In any case both blocks work contextually, so below we count on they both, and basically derive our Time dilation by just comparing-and-matching them to a 100% mutual-consistency.

S3. We assume we can derive an identical formula, by just using our elementary Nongeometric Logics onto our two Beating Units of the kind 2P-Proto1, where one of them Moves relatively. By NBM, the two Units entertain a relative-velocity Relationship, so we apply our MATCH-Logic, and compare the two elementary Objects Pole-by Pole through a YES. This visualizes in Fig. 8 with details by R36<formal speed>, R37<limiting speed-like>, and R38<MATCH balancing>.

S4. Furthermore, our practical handling of the MATCH-situation reflects the general scheme for the elementary NBM Relationships, which is shown in Fig. 7 with details by R33<relative Fractioning>, and R34<DEV-DEP balancing>. The idea is to operate into the Relativistic Target view of the outside Observer: there we act on his behalf, so we Fraction and balance formally the Object he has on Target. Such a particular Modeling artifice also repeats in Procedure P2 and Subsection 2.2, where we use the CROSS-Logic to emulate Time dilation coming from relative-distance. Our MATCH and CROSS are Reverse-symmetric, so they act basically the same way and contextually on any pair of Closed and Local 2P-Objects (Proto1 standard).

S5. In the case of the MATCH, we have the solution prepared in R38<MATCH balancing>Point v: see especially the practical instructions on bottom of Fig. 8.b. The inherent 2P-type Moving Object is an integer Beating, which quotes in general [λ_o; σ_o; τ_o; ν_o] in its own Proper (Absolutistic side of the Model). Hence we imagine to split relatively the Moving Beating, and we work explicitly on its Proper Frequency ν_o: in a speed-MATCH situation, the ν_o of the Target is our relevant Parameter of origin. Next we express practically the relative elementary Fractioning by the regular $\beta = v/c$: this passage relies on our assumption that in the profound system, the % Fractioning is equal and linear onto the Line of the Target, onto the inherent Frequency it carries, and onto its capability of producing 100% of the light-like upon folding completely in a 1P. Into the Target view of the Observer, the formal share of the Object on Target as of Fig. 8.b-bottom, produces:

i. A first 1P-type Moving-like component, that we Modelers associate to the geometric speed v and to the regular β: it makes a Relativistic Beating Unit, which works by a Model Frequency of $\nu_o \cdot \beta$. We adopt the subscript 1P for the Moving-like component, so we write $\nu_{1P} = \nu_o \cdot \beta$.

ii. A second 2P-type Still-like Residual: this part keeps the 2P-feature we have in the original Object on Target, so it continues to Beat in Time as usual to the eyes-like of the elementary Observer (the 1P-componet above, obey a different Logic and does not). The Residual 2P-Unit keeps the rest of the original ν_o, and upon adopting the subscript 2P, we write $\nu_{2P} = \nu_o \cdot (1 - \beta)$.

Operatively, the two components that we Modelers allocate into the relative Target view by the Observer, balance automatically to the original Object into its own Proper (total Frequency = ν_o).

S6. We also recall R38<MATCH balancing>Point iv: we handle the speed-MATCH as a Frequency situation, so we must calculate by the Model DEV (not the DEP). As a general Rule, we enter our Model Relationships (Relativistic side), after having allocated our formal Objects into the Proper (Absolutistic side). Hence we assume that in our case (self-consistency), we have into the Proper a concrete 2P-Object (our emulator of the Moving one), which carries one integer h on Board, and Beats by its own Proper Frequency ν_o. The actual Density we have into the system is $DEV_o = \nu_o / \tau_o = \nu_o^2$ [$1/s^2$], so this is the concrete value we expect to conserve into the eyes-like of the elementary Observer when we next calculate on his behalf.

S7. We now present a very particular artifice for balancing the original 2P-Object on Target (see the Note above). This sketches in Fig. 10.c, and basically consist of assuming that the two Fractions of Step S5, which visualize in Fig. 10.b, can recombine in a properly distorted Beating to the eyes-like of the Observer. In any case, this limits to our pragmatic handling of the Model Relativism into the Target view by the Observer, whilst the original Object stays unaffected in its Proper. Hence we get a fictitious working Beating:

i. whose Line L under-Beats as of $\nu_o \cdot (1 - \beta)$ relative to its own Proper ν_o, and
ii. whose Round R over-Beats as of $\nu_o \cdot (1 + \beta)$ relative to its own Proper ν_o.

Here we consider that we Modelers allocate the ν_o to the Proper of the Object on Target, so we want it to conserve in the eyes-like of the relative Observer. Next we have that our 1P-Fraction, which expresses the Moving-like as of $\nu_o \cdot \beta$, basically qualifies light-like and Nonlocal-equivalent. Our Relativistic handling, basically consist of folding a Fraction β of the original into a 1P, so we extract the Frequency $\nu_o \cdot \beta$ from the Line = Local side of the Object. As the cut-out Frequency becomes 1P-type and Nonlocal-equivalent, it comes spontaneous to add up this folded-Fraction of $\nu_o \cdot \beta$ to the Round = Nonlocal side of that same Object. In short, the Round of the Target-Object is by itself Nonlocal, so it includes the whole regular Geometry: if the $\nu_o \cdot \beta$ disappears from the Relativistic-Local, it must stay in its logical-complement which is the Relativistic-Nonlocal.

S8. In any case, the anomalous L-R assembly which under-Beats in the Line, and over-Beats in the Round (Fig. 10.c), is a Relativistic product that we Modelers associate pragmatically to the Target view of the elementary Observer. There is a discrepancy tough, with regards to our protocol for having a 2P-Unit properly defined into the Model. A 2P-Object of the kind of Proto1 is by itself Closed and Local, and it Beats Time-like, but we requite both halves A-AND-B to be contextually there for the Object to qualify well-shaped and complete. If the two Relativistic-halves under-Beats and over-Beats, they do not match formally, so the elementary Observer cannot claim for a complete and correct A-C-B system to be into his Target view. We assume that he and the system, check first the actual concrete Presence of that Relativistic Line and of that Relativistic Round, in terms of their respective Time-like Scales. Both calculate as usual, i.e. by just making the inverse of their two Relativistic Model Frequencies:

i. Our working Line, which under-Beats, would last longer as of $\tau_{2P} = 1 / [\nu_o \cdot (1 - \beta)]$.
ii. Our working Round, which over-Beats, would last less as of τ_{2P} $1 / [\nu_o \cdot (1 + \beta)]$.

This is logically-conflictual. Then the Observer recalls R13<geometric-like Scales> and R23<Presence-cut>, so he considers consistent with a true 2P-kind, only the minimum Time-like Scale that the two halves A and B of his Target have in common: this is the actual Time-like they both stay Present at once in a Model cycle (A-AND-B requirement). A Time-like Scale of $\tau_{2P} = 1 / [\nu_o (1 + \beta)]$, is the appropriate Time-like interval he can claim that a formally correct and complete 2P-Object is Present into his own Target view. Hence we Modelers retain that this is the correct Time-like Scale to count below. Next we know that in the Proper of the Target, its τ_o and ν_o relate as usual as of $\tau_o = 1/\nu_o$, so we derive immediately $\tau_{2P} = \tau_o / (1 + \beta)$.

S9. We assume that the working Beating with that compatible Time-like Scale, is the one that the Observer recognizes as a genuine 2P-Unit similar to him, and thus which Beats in Time like him. It therefore quotes:

i. Fictitious Modeling Line = $[\tau_o / (1 + \beta); \nu_o \cdot (1 - \beta)]$: these are the relevant Parameters for the Relativistic 2P-component we want to calculate as of $[\tau_{2P}; \nu_{2P}]$.
ii. Fictitious Modeling Round = $[\tau_o / (1 + \beta); \nu_o \cdot (1 + \beta)]$.

S10. Such a working Beating remains a pragmatic Modeling artifice, so it has no special meaning by itself. It expresses the Relativistic Time-like component that the Observer can read into his Target $[\lambda_o; \sigma_o; \tau_o; \nu_o]$, when the Target Moves β relative to him. His overall MATCH-balance of the Relativistic Object on Target, may visualize for instance by the parametric curve of Fig. 10.d, where we read the situation based on a given fixed value of the $\beta = v/c$. There we compare our two Relativistic components 2P = Time-like, and 1P = Moving-like, with the inherent curve $\tau \cdot \nu = 1$ of the Beating. Point K shows the integer and undisturbed Beating of the 2P-Object on Target in its own Proper, so it corresponds to: $\tau_o \cdot \nu_o = 1$ = Model REV = 100% weight of our Model Time-like. This makes our fixed concrete basis for quoting the Object when it Moves β relative to an outside Observer whatsoever (just consider the Object as a 2P-Beating Unit of [τ_o; ν_o]):

i. The run NK reflects the Relativistic β-Fraction = cut-out 1P-Unit, which emulates the relative Moving of the Target: we assume it to be logically-independent (1P = NOT-2P), so it follows plainly the $\tau \cdot \nu = 1$ curve as any other regular Beating into the Model. When the β becomes very small toward N, the 1P-Fraction has a very large Time-like Scale and a very large λ_{1P}. Its actual concrete weight vanishes for $\beta = 0$. Its other theoretical limit visualizes onto K, where the β reads 1: there the Target results to have fully-folded relative to the Observer, so it behaves to him as a 100% 1P-Unit (see also R37<limiting speed-like>).

ii. The two runs KL-KM read together, and track our working 2P-component: they reflect our consistency-criterion S8 for the two halves of the Target to Beat together, and to be Present at once into the Target view of the Observer, where they must make a complete and correct A-AND-B Relativistic Geometry. When the 1P Moving-like components takes more weight on its N→K run, the Relativistic Time-like weight of the Target reduces along K→L and K→M, where both the Relativistic Frequency and the Relativistic Time-like Scale of the 2P-component reduce into the Target view by the Observer. We Modelers in fact know this is a Modeling artifice, so we focus only on the Local side of our Relativistic 2P-Unit. We will see right below that its Density DEV reduces progressively when the β-Fractioning increases along K→L, until it goes down dramatically toward point L of the parametric curve.

iii. The tree runs read contextually, so the first inherent Border expresses by Points N and K: the P1 is null in N, and the Relativistic picture matches the Proper Target in K, which emulates a static condition of the two bodies. The second Border reads theoretically by Points K and L-M: the P1 is 100% of the Proper Target in K, so the solid Time-like Residual ultimately disappear to the Observer in L-M.

S11. By the passages above, we got ready to write down the two Densities that the relative Observer sees-like, respectively, into the cut-out Moving part (1P-component), and into the Line of the Residual Object he has on Target (2P-component). Beyond the general assumptions of NBM and of the MATCH, the result will reflect our very particular artifice above for recombining the two halves of the Relativistic Target-Object. Furthermore, we refer specifically to the DEV (not to the DEV), and assume openly that into the Target view by the Observer, the 1P-component becomes logically-independent, so it follows the inherent $\tau \cdot \nu = 1$ curve of the Beating as of $\tau_{1P} = 1/\nu_{1P}$. Hence we use our definition of the Model DEV as of DEV = ν / τ, and calculate from S5.i and S9.i:

i. 1P Moving: $DEV_{1P} = \nu_{1P} / \tau_{1P} = (\nu_{1P})^2 = (\nu_o\beta)^2 = \nu_o^2\beta^2$.

ii. 2P Residual: $DEV_{2P} = \nu_{2P} / \tau_{2P} = [\nu_o (1 - \beta)] / [\tau_o / (1 + \beta)] = \nu_o^2 (1 - \beta^2)$.

S12. By comparing with S6 (total system-Density of ν_o^2), we note that inside the Target view by an outside Observer whatsoever, the two Relativistic Densities of the 1P and of the 2P, sum up automatically to the Density ν_o^2 that the Object on Target has in its own Proper. We Modelers prescribed explicitly the balance of the Object in terms of its Proper Frequency ν_o, but did not with regards to the DEV. Instead, the balance of the DEV came out spontaneously through the formal calculations above. When we handle mentally the MATCH, it is nevertheless practical to think of a balance of the DEV as we normally do in human terms. Hence we confirm from above: $DEV_{1P} + DEV_{2P} = \nu_o^2\beta^2 + \nu_o^2 (1 - \beta^2) = \nu_o^2 = DEV_o$ (see also R34<DEV-DEP balancing>).

S13. This mathematics is specific to the MATCH. The whole can be pictured in human terms as we do for instance in Fig. 10.e: a Pythagoras' sketching of our relative-velocity problem, shows that the Model DEVs are quadratic, and basically balance by three squares onto a rectangular triangle. This also reflects the NBM idea of a double-level balance, where the Model Frequencies show horizontally, and balance at once onto the hypotenuse.

S14. Now we use the NBM assumption that an elementary Observer, cannot in fact know whether the Beating he is facing in the profound, is a Proper integer or a partial Relativistic product. Hence he tends to apply an equal Rule to anyone, and calculates his partner by our R34<DEV-DEP balancing>Point iii. The practical equivalence writes in general $\nu^{eq} = \sqrt{DEV}$, so we focus on the 2P-component which Beats the concrete Time-like progressing to the Observer, and from S11.ii we obtain an equivalent Relativistic Frequency of: $\nu_{2P}^{eq} = \sqrt{DEV_{2P}} = \nu_o \sqrt{(1 - \beta^2)}$.

S15. By the same idea, we assume that the elementary Observer converts in any case the Relativistic Beating to a Proper-equivalent. Furthermore, that Unit on Target is external and thus logically-independent from himself, so he applies the $\tau \cdot \nu = 1$ curve as usual. Hence we derive on his behalf: $\tau_{2P}^{eq} = 1/ \nu_{2P}^{eq} = [1/ \nu_o \sqrt{(1 - \beta^2)}] = \tau_o [1/ \sqrt{(1 - \beta^2)}]$.

S16. The last passage is to write the expression above as of $\tau_{2P}^{eq} / \tau_o = [1/ \sqrt{(1 - \beta^2)}]$, so we obtain the NBM-equivalent of Eq. (1). The Model picture matches the well-established one: the Time-like Scale of a Moving body or of a Moving Observer (Closed and Local 2P-type Objects), stretches both with regards to the regular Time of another 2P-

Observer, and with regards to the REV-pacing that the Model keeps nevertheless into the Proper of the Moving Object. In practice, a β-Moving Object behaves, with regards to the Observer, less-Evolutive = less-Changing, and more-stationary = more Present, so it takes more to count one human second. Our logical-drive comes however from the idea that the Time-useful Frequency on Target reduces, which means that the Relativistic Observer reads a lesser Changing-rate into the Moving Object: he basically sees a β-part of the original and concrete Frequency ν_o that the system contains into the Proper, in the form of a 1P-Unit which Beats in Space, so he can-NOT see that same β-Frequency as a Beating in Time.

S17. A regular human clock is designed to keep a strictly fixed pace. Our Modeling Units emulate it, but are flexible. If we reduce the working Frequency of a rigid clock, we get the idea that the human Time dilatates: for instance, our personal 8-hrs shift at work would be longer, if we use a slow clock. The Beatings do not work that way, and we assume explicitly that the elementary Observer Models a Fractioned Relativistic Beating as an equal integer, so he always applies the Rule of $\tau \cdot \nu = 1$. This works as a consistency-requirement into the system, as we assume that the Presence and the Change of an Object are logically-Twinned, so they must balance in any case. The NBM Time-like distorts in terms of both the Relativistic Frequency and the Relativistic Time-like Scale, but never slows down concretely: all elementary 2P-Objects of the kind Closed and Local, keep synchronous in any condition within this first elementary block. This expresses in general by the actual Rate of Evolution of the Object, which is the Model REV. We already know it is 1 by definition into the Proper, and that this means one regular human second per any regular human second. Into the Model, this holds also for a Relativistic non-integer Beating, and this is just because we Modelers assume this point explicitly (Present-Change criterion). As an exercise, we nevertheless calculate the Relativistic REV of the 2P component as of S14, 15, so we can confirm: $REV_{2P} = \tau_{2P}^{eq} \cdot \nu_{2P}^{eq} = \tau_o\ [1/ \sqrt{(1 - \beta^2)}] \cdot \nu_o \sqrt{(1 - \beta^2)} = \tau_o \cdot \nu_o = 1$. Hence the REV 1 is a key Model constant for any Beating of the kind 2P-Proto1, either integer-Absolutistic or Fractioned-Relativistic.

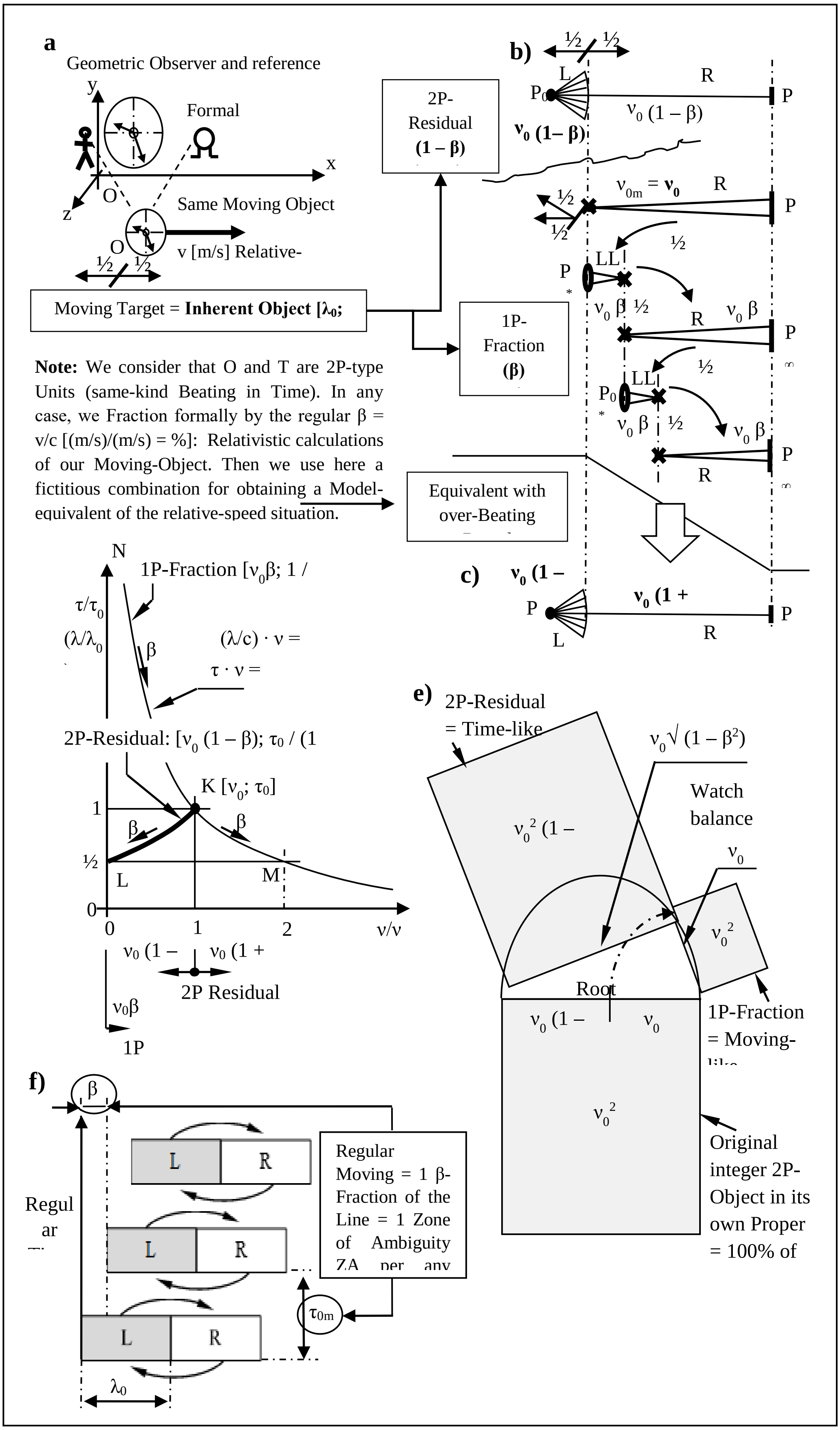

a
Geometric Observer and reference
y
Formal
x
O
z
Same Moving Object
O
v [m/s] Relative-
½ ½
Moving Target = Inherent Object [λ0;
Note: We consider that O and T are 2P-type Units (same-kind Beating in Time). In any case, we Fraction formally by the regular β = v/c [(m/s)/(m/s) = %]: Relativistic calculations of our Moving-Object. Then we use here a fictitious combination for obtaining a Model-equivalent of the relative-speed situation.
b)
½ ½
L
R
P0
P
2P-Residual (1 – β)
ν0 (1 – β)
ν0 (1– β)
ν0m = ν0
R
½
P
½
½
LL
P*
1P-Fraction (β)
ν0 β ½
R
ν0 β
P
½
LL
P0*
ν0 β ½
ν0 β
P
R
Equivalent with over-Beating
c)
ν0 (1 –
ν0 (1 +
P
P
L
R
N
1P-Fraction [ν0β; 1 /
τ/τ0
(λ/λ0
β
(λ/c) · ν =
τ · ν =
2P-Residual: [ν0 (1 – β); τ0 / (1
K [ν0; τ0]
1
β
β
½
L
M
0
0
1
2
ν/ν
ν0 (1 –
ν0 (1 +
2P Residual
ν0β
1P
e)
2P-Residual = Time-like
ν0√ (1 – β2)
Watch balance
ν0² (1 –
ν0
ν0²
Root
ν0 (1 –
ν0
1P-Fraction = Moving-like
ν0²
Original integer 2P-Object in its own Proper = 100% of
f)
β
L R
L R
L R
Regular
Regular Moving = 1 β-Fraction of the Line = 1 Zone of Ambiguity ZA per any
τ0m
λ0

Fig. 10: Details for a quick formal handling of the speed-MATCH-Relationships.

II.2. P2-emulating Time dilation due to relative geometric distance in-between the Objects

S1. The physical situation we attempt emulating by NBM is the one sketched in Fig. 11.a: we want to reproduce the inherent slowing down of a clock in a gravitational field around a Massive body M (e.g. a Planet). Then we switch to a barely formal handling, but keep in mind the physical situation in regular 3D: R39<formal distance> gives detailed instructions on that. Hence we work in parallel by two concretes bodies into the 3D, and by two Beating-Units into the Model. The two Massive bodies are Closed and Local, so they traduce into the Model by two Proper Units of the kind 2P-Proto1: regular and complete A-C-B system on board, and regular Time-function which Beats 100% of the REV 1 into the Object.

S2. The case study formula we want to emulate is the one for Time dilation due to gravity. The equation comes from the Schwarzschild metric around a non-rotating Massive sphere M, which also plays our 2P formal Observer (Fig. 11.a):

(2) $$\Delta t_r / \Delta t_\infty = \sqrt{1 - {2GM}/{rc^2}} = \sqrt{1 - {r_0}/{r}} = \sqrt{1 - {\sigma_r}/{\sigma_0}}$$

where:

- M [kg] is the Mass of the body which produces the gravitational field (e.g. a Planet or a spherical Mass whatsoever). By our NBM scheme, the Massive body M plays the elementary Observer of the relative-distance situation. We schematize it as an integer Beating which quotes in general [λ_o=r_o; σ_o; τ_o; ν_o]. We assume that in this problem, our Model Parameter λ_o matches the Schwarzschild radius r_o of the Planet [m]: the r_o is a regular limiting length which associates to a regular body, but in practice we identify the two, and just write r_o instead of λ_o during the calculations.
- Δt_∞ is the Proper Time-interval as we could measure it on board of the Target-Object T (e.g. a probe-clock), when it is far away and basically out of reach of body M (ideally at infinite distance, where we assume that is not disturbed by the Mass M and its gravitational field, so it ticks regularly the 100% of the human Time it is designed for).
- Δt_r is the Proper Time-interval on board of the same Target-Object T (e.g. our probe-clock), when it stays a finite distance of r [m] from the Massive body M: the Δt_r in the r-position always reduces with regards to the inherent and undisturbed Δt_∞ of that same Object. The equation applies to when both Objects

M and T are static one another. We quote as usual their relative-distance r by their two centers of Mass.

- G is the gravitational constant [m^3/ (kg s^2)].
- c is the speed of light [m/s].
- The group r_o = $2GM/c^2$ [m] is the Schwarzschild radius (usual notation), that we associate opportunistically to the λ_o-Scale of the formalism (equivalent-size of our formal Object M on the Local side A of the formalism): in practice, we neglect the actual Geometry and large volume of body M, and we consider as if it had shrunk ideally to its own Schwarzschild radius λ_o=r_o.

S3. We assume we can derive an identical formula, by just using our elementary Nongeometric Logics onto our two Beating Units of the kind 2P-Proto1, where the two stay apart a distance of r meters. By NBM, the two Units entertain a geometric-distance GD-Relationship, so we apply our CROSS-Logic, and compare the two elementary Objects Pole-by Pole through a NOT. This visualizes in Fig. 9 with details by R39<formal distance> and R40<CROSS balancing>.

S4. Furthermore, our practical handling of the CROSS-situation reflects the general scheme for the elementary NBM Relationships, which is shown in Fig. 7 with details by R33<relative Fractioning>, and R34<DEV-DEP balancing>. The idea is to operate into the Relativistic Target view of the outside Observer: there we act on his behalf, so we Fraction and balance formally the Object he has on Target. Such a particular Modeling artifice is the same we adopt in Procedure P1 and Subsection 2.1, where we use the MATCH-Logic to emulate Time dilation coming from the relative-velocity. Our MATCH and CROSS are Reverse-symmetric, so they act basically the same way and contextually on any pair of Closed and Local 2P-Objects (Proto1 standard).

S5. In the case of the CROSS, we have the solution prepared in R40<CROSS balancing>Point viii-Intermediate. The inherent 2P-type Object that the elementary Observer sees r meters away from himself, is an integer Beating which quotes in general [λ_∞; σ_∞; τ_∞; ν_∞] in its own Proper (Absolutistic side of the Model). By the CROSS-Logic, the Observer basically loses any track of the Geometry-like of his partner-Object, so the relevant Model Parameters reduce to [τ_∞; ν_∞]. Hence we imagine to split relatively the 2P-Object when it Beats exactly r meters away from the Observer, and we work explicitly on its Proper Time-like Scale τ_∞: in a distance-CROSS situation, the τ_∞ of the Target is our relevant Parameter of origin.

Next we work in inverse-meters into the Nonlocal, and express the α-Fraction (our Relativistic %) as the straight ratio of:

- the Relativistic Round σ_r that we Modelers associate to the distance r (σ_r = 1/r), to

- the inherent Proper Round σ_o of the Object who Observes ($\sigma_o = 1/r_o$, where the r_o is his own Schwarzschild radius, and coincides with the inherent Local-core λ_o of our composite A-B Observer).

Hence we have $\alpha = (\sigma_r / \sigma_o)$, where the σ_o is always a fixed nonzero Absolutistic Scale (independently on which Object plays the Observer in the Pair), and the σ_r is a Relativistic Parameter which associates to our relative-distance GD (always zero when $r = \infty$ and there is no concrete Relationship). In the Model, the α quotes the concrete weight of the GD-Relationship in-between any two Massive bodies (e.g. a Planet and a probe-clock). We assume that the physical distance are a concrete part of Nature, and our CROSS scheme basically attempts emulating them.

Into the Target view of the Observer, the formal share of the Object on Target produces:

i. α-Fraction: A first component, which qualify geometric-like = NOT-Time-like to our Relativistic Observer (e.g. the Planet-Object of our Fig. 11.a). This Beating-component is the one we call τ_α, so we write $\tau_\alpha = \tau_\infty \cdot \alpha = \tau_\infty \cdot (\sigma_r / \sigma_o)$. This is the part of the Target that we Modelers claim to cut away from the Time-like Scale that the CROSS-Observer sees. In the Model, this α-part makes our concrete GD-Relationship in-between the Observer and his Partner, when the two stay apart a distance of r meters one another.

ii. $(1 - \alpha)$-Fraction: Our Relativistic-splitting always balance automatically to the original Object on Target: the Residual Time-like Scale τ_r that the Observer sees when his Partner is r meter away from himself, is the $(1 - \alpha)$, so it must write $\tau_r = \tau_\infty - \tau_\alpha = \tau_\infty - \tau_\infty \cdot \alpha = \tau_\infty (1 - \alpha)$. From the above expressions of α, τ_α, σ_r, and σ_o, we obtain immediately $\tau_r = \tau_\infty \cdot [1 - (\sigma_r / \sigma_o)] = \tau_\infty \cdot [1 - (r_o / r)]$. This Relativistic Parameter quotes the Residual-part of the partner-Object, which does not change its classification to the eyes-like of the elementary Observer, so it continues to behave Time-like as the original Proper Object τ_∞. (the α-part above changes from inherent Time-like to a Relativistic-Geometry-like, so it does NOT Beat in Time any longer within the Target view by the Observer).

S6. Next we recall R40<CROSS balancing>Point iv: we handle the distance-CROSS as a Time-like Scale situation, so we must calculate by the Model DEP (not the DEV). As a general Rule, we enter our Model Relationships (Relativistic side), after having allocated our formal Objects into the Proper (Absolutistic side). Hence we assume that in our case (self-consistency), we have into the Proper a concrete 2P-Object (our emulator of the probe-clock, or of a Massive body whatsoever), which carries one integer h on Board, and Beats by its own Proper Time-like Parameters of $[\tau_\infty; \nu_\infty]$. The two correlates as usual into its Proper as of $\tau_\infty \cdot \nu_\infty = 1$, so the actual Density we have into the system is $DEP_\infty = \tau_\infty / \nu_\infty = \tau_\infty^2$ $[s^2]$: this is the concrete value we expect to conserve into the eyes-like of the elementary Observer, when we next calculate on his behalf.

We also assume, independently, that the 2P-Object on Target at a relative-distance of r meters (e.g. the clock or another body) stays inside the Nonlocal of our Observer (i.e. the

B-Slab of a Planer or of a body whatsoever). We in general formalize the Nonlocal B-side of our composite A-B Objects in terms of their Round (our σ-thickness Parameter), so we conclude equivalently that the concrete Beating Object on Target (e.g. the probe-clock) and its three concrete Parameters τ_∞, ν_∞, and $DEP_\infty = \tau_\infty^2$, stay geometrically inside the Round σ_o of the Observer (i.e. the Planet in our example of Fig. 11.a, or in general a 2P-Object whatsoever). Into that Round σ_o, the Observer basically contains-registers a fixed Frequency of ν_∞, whilst the τ_∞ of his partner Fractions by the inverse distance as of $\alpha = (\sigma_r / \sigma_o)$: when the geometric distance GD=r is small, the σ_r is large, and the concrete GD-Relationship in-between the two bodies is strong, i.e. it takes a large α-weight (see also Fig. 9, and compare with the 3D-equivalent of Fig. 11.c). This is our Model-picture of the situation through the CROSS, so we calculate the Relativistic DEP (the τ / ν in general), based on:

- a fixed Relativistic Frequency of the Target, which matches its inherent-undisturbed ν_∞, and does not depend on the r-position that the Target takes relative to the Planet-Observer;
- the other relevant Parameter τ_r, which is the Relativistic Time-like Scale of the partner, as it determines into the CROSS-Target view of that partner by the Planet-Observer (Fig. 9.c).

S7. The partner-Object on Target is a Beating Unit of the kind 2P-Proto1, which works in Time as of $[\tau_\infty; \nu_\infty]$ in its own Proper. The Massive Observer is same-kind and works same-way in his own Proper. His Relativistic balance of the partner by the CROSS-Logic, includes a concrete GD-Relationship with the partner in the form of a regular distance r [m], and a Time-like Residual [s], that he sees to Beat regularly and similarly to himself into the partner: this is the Relativistic 2P-Object which filters to him through the CROSS. Hence we work into the CROSS-Target view of the Observer, and formalize the complete NBM balance of the partner by allocating;

i. α-Fraction: To the GD-Relationship, which is geometric-like to the Observer:
   - a GD-Fraction of $\tau_\alpha = \tau_\infty \cdot (\sigma_r / \sigma_o)$ [s] for what concerns its Time-like Scale, and hence
   - a cut-out Density of the GD-Relationship, which quotes $DEV_\alpha = \tau_\alpha / \nu_\infty = \tau_\infty \cdot (\sigma_r / \sigma_o) / \nu_\infty = \tau_\infty \cdot (\sigma_r / \sigma_o) \cdot \tau_\infty = \tau_\infty^2 (\sigma_r / \sigma_o)$.

ii. $(1 - \alpha)$-Fraction: To the Residual 2P-Object on Target, which continues to produce the Model-Time into the eyes-like of the Observer:
   - a Residual Time-like Scale of $\tau_r = \tau_\infty \cdot [1 - (\sigma_r / \sigma_o)] = \tau_\infty \cdot [1 - (r_o / r)]$, into the partner when it stays r meters away, and thus
   - a Residual NOT-cut-off Density into the partner, which quotes $DEP_r = \tau_r / \nu_\infty = \tau_\infty \cdot [1 - (\sigma_r / \sigma_o)] / \nu_\infty = \tau_\infty \cdot [1 - (\sigma_r / \sigma_o)] \cdot \tau_\infty = \tau_\infty^2[1 - (\sigma_r / \sigma_o)] = \tau_\infty^2[1 - (r_o / r)]$.

S8. This mathematics is specific to the CROSS: it comes by our assumption that the system works by a fixed Frequency of ν_∞ (compare with the MATCH, where the cut-out Fraction gains an increasing and logically-independent Frequency which gives a β-quadratic effect). The whole can be pictured in human terms as we do for instance in Fig. 11.b: a Pythagoras' sketching of our relative-distance problem, shows that the Model DEPs go linearly with the σ_r, and basically balance by three squares onto a rectangular triangle. This also reflects the NBM idea of a double-level balance, where the reference Time-like Scales show horizontally, and balance at once onto the hypotenuse.

The idea is that into the Model, we carry out a quoting Procedure which is not so different from what we do normally. The only point is that we have no preset solid Scale, and our reference can only be the Parameters of our formal Objects (self-consistency criterion). Hence there is a first-level quoting of the Parameter for what it is Absolutely: it comes out by a bare percent, and we associate it to the Model Root. The Relativistic balance is contextual, in fact, and on that level the measuring units become important: we stay into a formalism, however, and the only realistic way to quote the Parameter is to refer it to its Twin. That is why we quote by the Density also, which in turn induces a square root behavior into the Model. This also relates to our consistency-match of its two Absolutistic and Relativistic compartments.

Furthermore, we note that due to their inherent operating-Twinning, the overall mathematical structure that comes from either the CROSS or the MATCH is basically the same (compare with Fig. 10.e). In the MATCH, however, our logical-drive for the Fractioning is the β, and the cut-out Density=DEV goes by the β^2. In the CROSS, the logical-drive for the Fractioning is the σ_r / σ_o = r_o / r, and the cut-out Density=DEP goes linearly with that (see the derivation and comments above).

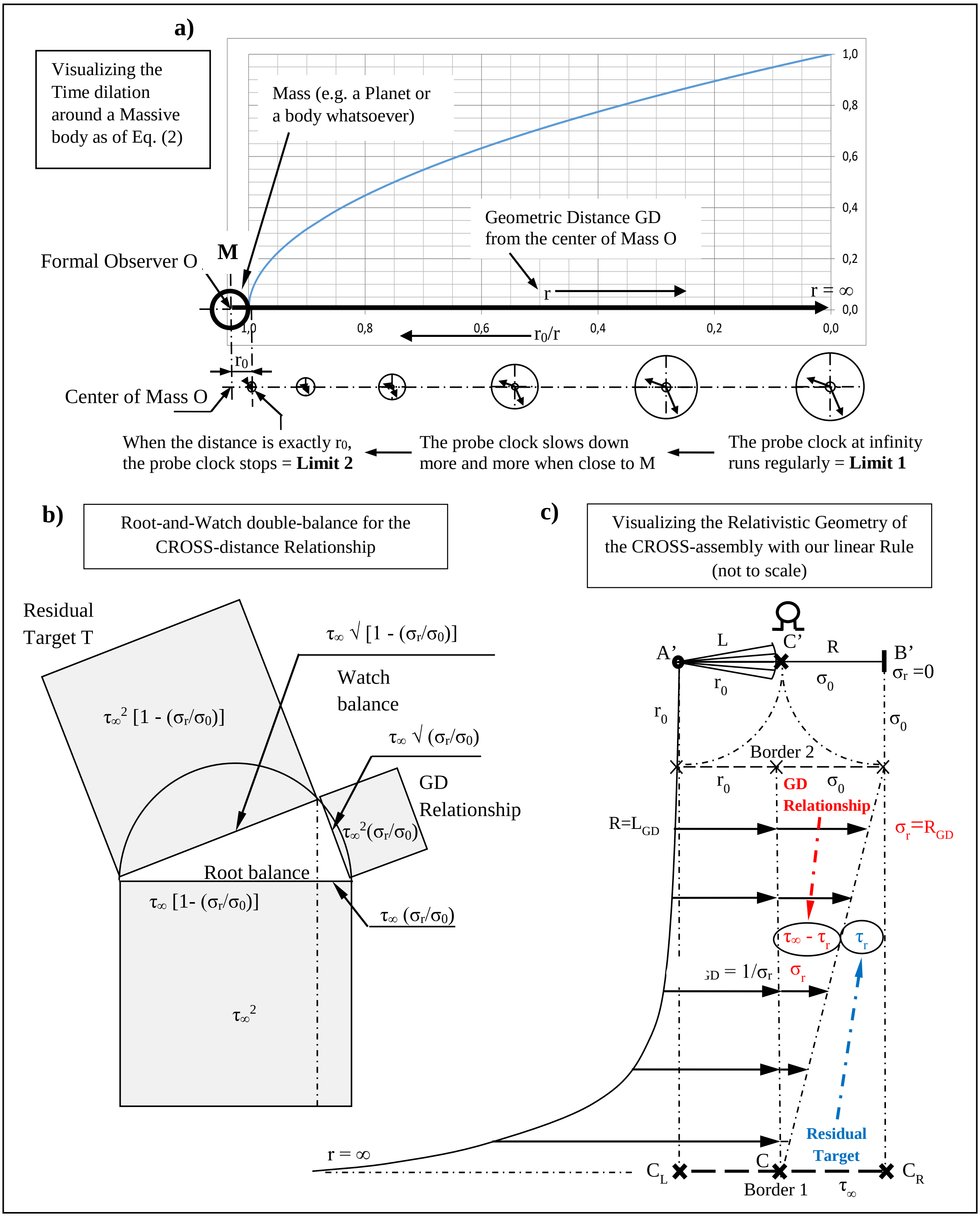
S9. Fig. 11.c resumes our CROSS-picture of the Planet-clock situation, and attempts visualizing it also into the 3D: the sketch is a combined geometric-Nongeometric mix, and it is not to scale. On top we show Border 2, which is when the clock, or a Massive body whatsoever, touches at the Schwarzschild radius r_o of the Planet: our Relativistic L_{GD}-R_{GD} assembly of Figs. 9.b,c, becomes so geometrically-identical to the Planet, that the concrete GD-Relationship that it expresses attains its inherent maximum (the GD-component cannot become more geometrically-identical than matching exactly the elementary Geometry of the Planet).

Border 1 shows on bottom, and qualifies self-evident: the Object-clock stays at geometric infinity onto Pole P_∞, and could not be farther than that (the r_∞-Scale of the Relativistic L_{GD}-R_{GD} assembly gives a $\sigma_r = 0$, hence the α-weight of the GD-Relationship is null, and we count that it does not qualify concrete, neither does it exist-like into the Model).

By the Model, the two Borders also formulates in terms of the Model Field: basically we refer to the Field P_o-P_∞ of the Planet-Observer, and our NBM-situation must remain in it in any case. Hence Border 1 is when the partner-Object positions onto the extreme end of the Planet Field (its P_∞). In that same Field, we assume that the Planet has an elementary solid core of $\lambda_o=r_o$, so it occupies by itself an Inner-type Slab of $\lambda_o=r_o$ around his own P_o, where another solid Object cannot enter (Inner-Inner incompatibility). Hence the Nongeometric run from $\lambda_o=r_o$ to P_∞, is the actual available Field where the P_o of another solid Object of the kind 2P-Proto1 can be allocated relative to Planet, who in any case remains the sole owner of his own complete Field P_o-P_∞ (the system cannot allocate another solid core into the run P_o- $\lambda_o=r_o$ which is already allocated to the Planet, and this formalizes Border 2).

S10. The Model-Time dilation basically comes from our idea that the Planet-Observer is elementary, so he cannot discriminate whether the actual CROSS-component he sees into the partner-Object, is a Relativistic non-integer Residual (his $1 - \alpha$ quoting from his own POV), or a full Absolutistic Beating as it is always the case into the Proper side of the Model. Hence he applies R34<DEV-DEP balancing>Point iii, and calculates the partner via the equal-formula of $\tau^{eq} = \sqrt{\ } DEP$.
By S7.ii above, this gives immediately the equivalent Time-like Scale of the partner-Object when it stays r meters away from himself: $\tau_r^{eq} = \sqrt{\ } DEP_r = \tau_\infty \sqrt{\ } (1 - \sigma_r/\sigma_o) = \tau_\infty \sqrt{\ } (r_o / r)$, which is equivalent to our demonstration-target Eq. (2).

S11. As in the case of the velocity-MATCH, our equivalent Time-like Parameters obey the Present-Change balance in terms of $\tau_r^{eq} \cdot \nu_r^{eq} = 1$: in any case, the partner-Object Beats the regular REV of 1 second per second into the Relativistic eyes-like of the Planet-Observer, so the two remain synchronous as we mean in human terms. Conversely, when we measure human Time, we use a concrete Closed and Local clock-Object, which is assigned a strictly fixed Time-pace, and a strictly fixed clocking-Frequency. The NBM Parameter τ_r^{eq} reads regularly in human seconds, but it also quotes the amount that that specific Object-clock has maintained a complete and correct Closed-and-Local Presence (or its Model-equivalent). This is the self-consistency condition for that same concrete Object-clock to Beat in Time (as opposite to just doing something else). Into the Model Relativism, the Object-clock is less-Present than it is by itself at infinite distance (we note that the Time-distortion is inverse with regards to the MATCH-speed, where the Moving Object is less-Evolutive-Changing and more-Present: see S16 in Procedure P1). The discrepancy of the τ_r^{eq} with regards to the inherent $\tau_\infty$of the Object-clock, in NBM reads as a lesser concrete Presence due to a lesser availability of its specific 2P-configuration, whilst for the rest the Object-clock simply works in another form that does not read Time-like to the Observer. Next to that, a human clock keeps the fixed Parameters it is designed for, so we see a stretching-like of human Time. Conversely, we base our Beating Units on a self-consistency balance of the Model Presence [s] and of the Model Change [1/s], so the formalism cancel automatically the Relativistic unbalance, and makes our equivalent Time-like Parameters to keep in line with the REV 1. In short, all the Model-Reality stays synchronous in human terms, and this holds into either one of its two Absolutistic and Relativistic sides.



a)
Visualizing the Time dilation around a Massive body as of Eq. (2)
Mass (e.g. a Planet or a body whatsoever)
Geometric Distance GD from the center of Mass O
Formal Observer O
M
r
r = ∞
r0/r
1,0
0,8
0,6
0,4
0,2
0,0
r0
Center of Mass O
When the distance is exactly r0, the probe clock stops = **Limit 2**
The probe clock slows down more and more when close to M
The probe clock at infinity runs regularly = **Limit 1**
b)
Root-and-Watch double-balance for the CROSS-distance Relationship
Residual Target T
$\tau_\infty \sqrt{[1 - (\sigma_r/\sigma_0)]}$
Watch balance
$\tau_\infty^2 [1 - (\sigma_r/\sigma_0)]$
$\tau_\infty \sqrt{(\sigma_r/\sigma_0)}$
GD Relationship
$\tau_\infty^2(\sigma_r/\sigma_0)$
Root balance
$\tau_\infty [1- (\sigma_r/\sigma_0)]$
$\tau_\infty (\sigma_r/\sigma_0)$
τ_∞^2
c)
Visualizing the Relativistic Geometry of the CROSS-assembly with our linear Rule (not to scale)
Ω
A'
L
C'
R
B'
$\sigma_r = 0$
r_0
σ_0
Border 2
GD Relationship
R=L$_{GD}$
$\sigma_r = R_{GD}$
$\tau_\infty - \tau_r$
τ_r
$= 1/\sigma_r$
σ_r
Residual Target
r = ∞
C$_L$
C
C$_R$
Border 1
τ_∞

Fig. 11: Details for a quick formal handling of the distance-CROSS-Relationships.

III. CONCLUSIONS

Below we summarize some key-point, which are in any case very preliminary and limited to the way we human-Modelers make the formalism to organize and to work:

- The Model remains unchecked and unproven. It must be checked against more physical situations.
- If we include a concrete Nonlocal and a pragmatic Time-function in our Objects, we can work explicitly on that, and tentatively match two first-level equations for Time dilation.
- If we describe our Objects by an elementary Logic on board, we begin to grab a common conceptual frame for the solid bodies, the light-like, and the Moving.
- Our operating scheme is low-level by itself. The overall construction shows an additional side, which is the Nonlocal as the natural logical-Twin of the Local.
- We also have two distinct environments Absolutism-Relativism, for allocating the concreteness-like of Objects, and the concreteness-like of Relationships.
- In this first elementary block, we do not need additional concepts, and work uniquely on our flexible Modeling Units and their Relationship.

In human terms, we may say that the Model-Reality is a self-consistency structure. There, we Modelers produce a human-level description, and basically are forced to include not only the Objects and the facts, but at least some abstract and much elementary Point-Of-Views. Within the very particular Modeling frame of NBM, we would not be able to define the Model-Reality unless we bring both the Objects and the POVs into play.

We also glimpse a simple construction-principle that may formulate: the NOT-Reversal of the Model-Reality remains the Model-Reality. The whole formalism seems to come in application to that. An example is the inherent symmetry-equivalence of the A-B Slabs and of their formal viewings-like: as human, we are Point-like for sure, but we could not know by NBM whether we are an A- or a B-Observer, neither could we say whether there is truly a difference between an A- and a B-Observer.

Our Absolutism-Relativism pair, also actualizes this same auto-consistency principle of the Model-Reality with regards to the problem of the POVs: if we regard an Object either from the inside or the outside, we make an elementary NOT-Reversal onto the POV and continue to see the same Model-Reality, although in two objectively-different ways.

More in general, we may retain that the Model-Reality is simply NOT-invariant. The idea is the one of a flexible system, where for any real-like item there is always a NOT which somehow accommodate-logically, so it keeps consistent with its YES and maintains real-like also.

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