Negative (or Anti-) Time
A Theoretical Approach of Potential Use in Time-space Trajectory Analysis and Modeling

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My last slide is a picture of a tornado

=38 bytes
=how many anti-chronons?
A half-worked idea, of no particular value, but…

• Thanks to John Nystuen
• Thanks to Mike Worboys

Question: Why do dimensions 1, 2, and 3 have omni-direction, but not 4?

“Time’s Arrow”
Feynman Diagrams

Feynman diagrams are used to represent particle interactions. They are made up of a series of vertices (interaction points) all of which involve three components.

The example shows a boson (shown blue) and two particle tracks. One of the particle tracks always points into the vertex and the other out of it. If a particle track points in the direction of time it is a particle (shown orange), however if it is in the opposite direction it is an antiparticle (shown green).

*Straight* lines represent leptons, quarks & their composite particles, hadrons. *Dashed* lines are sometimes used to represent neutrinos. *Wiggly* lines represent the force bosons, $W$ & $Z$. *Corkscrew* lines represent gluons.
Quantum Physics

Anti-time

Matter, Time

Anti-matter

matter
time
In databases

- Warboys and Duckham, 2004
- Instants (point) and intervals (line)
- Continuous, dense, discrete (real, complex, integer)
- Temporal unit = chronon (tick)=atomic
- Time can be linear, branching or cyclic
- Time is relative (and interacts with space)!
Dealing with negative time values

• Because Excel stores dates and times as numeric values, it's possible to add or subtract one from the other.

• However, if you have a workbook containing only times (no dates), you may have discovered that subtracting one time from another doesn't always work. Negative time values appear as a series of hash marks (########), even though you've assigned the [h]:mm format to the cells.

• By default, Excel uses a date system that begins with January 1, 1900. A negative time value generates a date/time combination that falls before this date, which is invalid.

• The solution is to use the optional 1904 date system. Select Tools, Options, click the Calculation tab, and check the 1904 date system box to change the starting date to January 2, 1904. Your negative times will now be displayed correctly, as shown below.
For DB handling

- Based on Transaction Time theory
- Data have timestamps
- Timestamps can be valid time or transaction time
- Objects have creation, disappearance, reappearance, destruction
Anti-time

- Freedom of movement in space after time \((t)\) leads to divergent TS prism
- Constraints of future contract lead to forward convergence of space-time prism
- So the future passes information to the present
- Information flow or “force” increases as event approaches, then diminishes as it passes
- Space-time Gravity law?
Examples of Contracts

- Meetings and Appointments (Elections, travel to work)
- Mortgages (Specific contract)
- Wills (Influence future actions)
- Mission statements
- Scenario planning, insurance (Uncertainty)
- Equifinality
- Inevitabilities (Global warming)
Clarke’s conjectures

- Events create information flows in both time and anti-time
- Chronons are like photons or resels
- Anti-time can be seen as matching transaction time from a DB perspective
- Contracts impose anti-time constraints on dimensions 1,2,3, maybe as an inverse-exponential
- Both time and anti-time form the Hagerstrand prism, are they symmetrical?