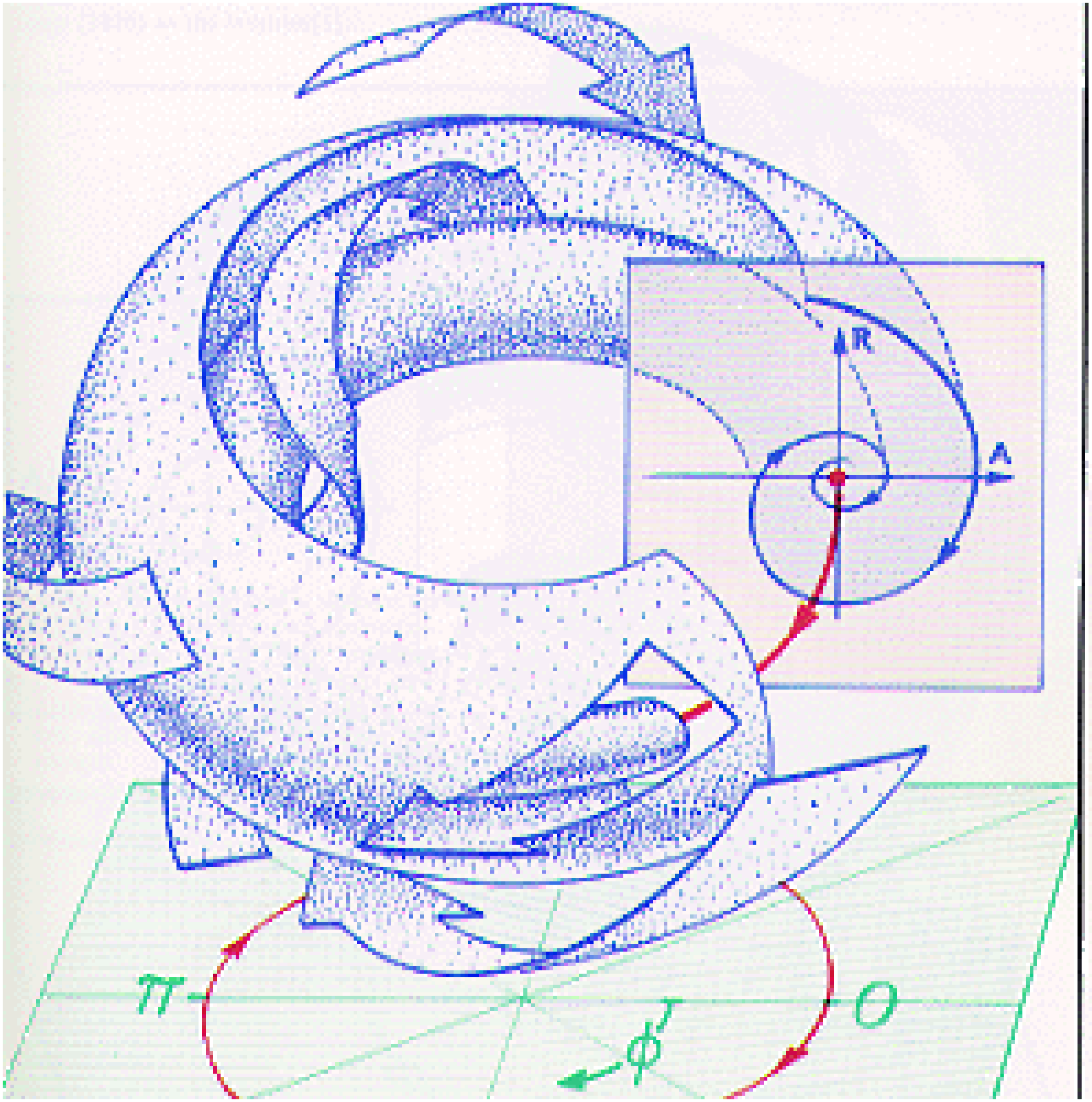
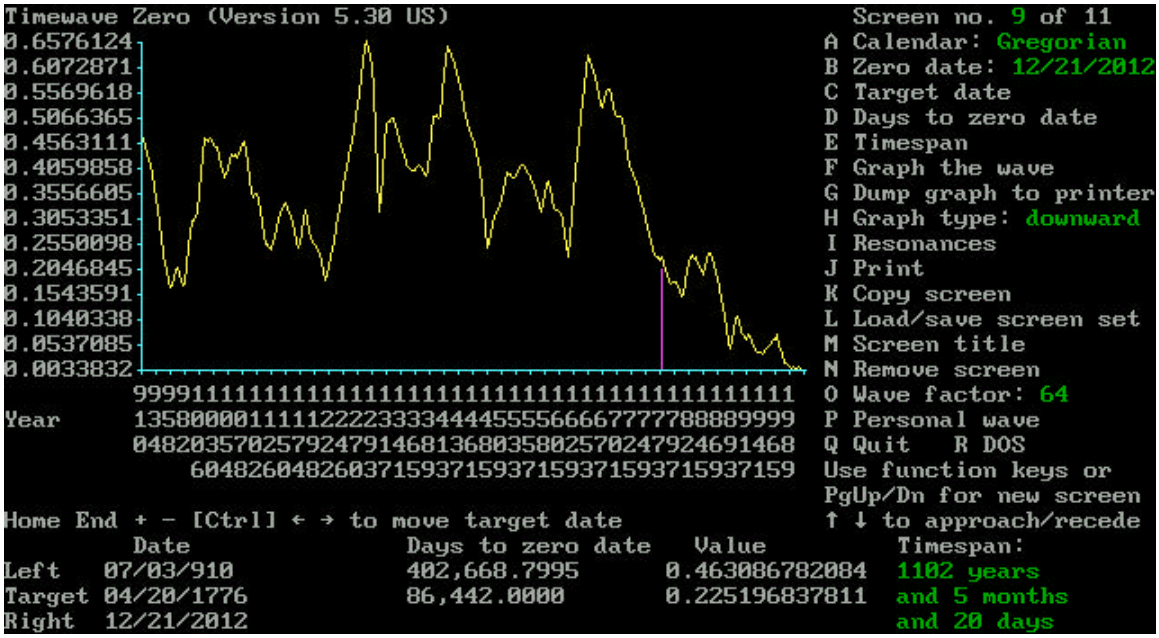
TimeWaveZero

A guide to software by Peter Meyer and Terence Mckenna



A Guide to the TimeWave Software

9/24/2001



"Rome falls nine times an hour."

Contents:

Introduction

This Software was conceived of and planned by Terrence Kevin McKenna and programmed by Peter Meyer, and subsequently modified by John Shekiak [http://www.levity.com/eschaton/sheliak/shelform.pdf] . The software package is currently out of print… and I don't know about the copyright stuff.

In the future someone may make a more versatile and user-friendly version of the Time Wave software, but with a little time and patience you should be able to become comfortable with it.

This is DOS based program, written in C, but you don't need to know your way through a DOS environment or know anything about programming. You only need to learn how to navigate through the Software itself. It is a little clunky, but it works as basic software for a lot of things.

Regardless of your feelings about Novelty Theory or what conclusions you draw about time and history by using the software, this software is a marvelous tool for getting a feel for history. I urge you to zoom around and jump from resonance level to resonance level fitting data from historical references (see the section on sources) to build up your internal map of time.

How to Use

This software does not use a Mouse, only Keys. Largely you use a bunch of single-letter commands, which are listed vertically down the right hand side of the screen.

When you start up the software, it will give you a blank screen and be ready to show you where you presently are -using the clock / calendar in your computer. The first key you need to use is "f" for 'Graph the Wave,' and it puts that first image up on the display.

Most commands with their listed descriptions are self-explanatory, however a few may be vague.

"I" is what you push to see a resonance date, and you will likely use this a lot. But you need to do more than just hit 'I,' you need to answer a few odd questions before you get to see the resonant image. The first is:

"Construct set of 11 trigrammatic resonances? (Y / N)"

The software has 11 different wave pictures stored at a time, and using the 'page up' and 'page down' keys you can compare these images. If you want to fill all 11 with resonance images then hit 'Y' for "yes". However, you will probably want to just get your one image and in that case hit 'N' for "no."

The next question is:
"Higher or Lower resonance? (H / L)"

This is asking if you want to view a previous-'back in time'-higher resonance or a future-lower resonance.

The next questions is:
"Major or trigrammatic resonance? (M / T)"

This is odd. Trigrammatic resonances are a bit obscure. The Major (M) resonance is generally what you want. The trigrammatic resonances relate to how the whole wave is embedded and repeated in itself all along its length.

"Which point: 1st, 2nd, 3rd … 99th?"
This is asking how many levels up the main 64-scale steps of the wave you want to go.

If you don't understand what all this "resonance" stuff is about, poke around with the software using the information in the file (included here) called: `Time wave zero date correlation and resonance lists.` It should become apparent how resonance dates and periods work. In my opinion this is one of the swellest aspects of the Timewave.

If you want to make another single copy of the screen you are presently viewing, then hit 'k' and the prompts will step you through picking which of the 11 slots you want to copy over.

There is also a procedure for saving a set of 11 screens that you like…but it's slightly confugly. Select option "L" (by hitting "L") and it will ask if you want to save or load a file. Now, unfortunately it does not give you options so you must remember what the name of suffix of the file is -so if you make a new file write down the name somewhere. Any file you save or load must have the suffix ".SCR". The normal one it loads each time is called "LASTRUN.SCR".

That should start you off, at least.

How to Read:

The Time-Wave is, as it is here, a fractal map of time (based on a pattern found in the King Wen sequence of the I-Ching). Its general structure is an infinite fractal regress, in which not only does it repeat itself on a smaller and smaller (by 64) scale but each section of the wave contains the whole pattern of the wave, and each section therein contains the whole wave and so on ad infinitum.

The general way the wave reads is Up-'high number value'-Habit, vs. Down-'low number value'-Novelty. In this simplest sense: events that occur at points on the wave are supposed to exhibit the degree of novelty or habit that that point exhibits. A slightly more involved way of reading the wave that involves reading not just points but patterns across the wave is described in the attached paper 'Whole Wave Viewing.'

Sources

Links from: http://deoxy.org/mckenna.htm

In case you don't know, there are two different Time Waves. The first one designed by McKenna was contested and argued over (Watkins and Bell) and a person named John Sheliak *the sound of applause* 'fixed' the problem they had found. The two waves [TimeWaveZero and TimeWaveOne] are generally *very* similar but for your own personal investigations you may want to play with both shapes. Unfortunately I only have the 2nd wave…

If you bought the software from the since deceased company 'Blue Water Publishing,' you received the software and a nifty book about the software and also about world calendars. At some point this should be made available…perhaps online, but so far if you don't have it you can't really get it. If you have a question about the software that may be in the book you can ask me [tananah@earthlink.net] and I'll look it up. The software also came with an instructional audio tape…which probably should be put on the web as an MP3 or something.

For a nice go-over of the whole TimeWave from it's Origins in the Iching to using the software to a discussion of Novelty, I would highly recommend getting an audio copy of the 'walk through' that McKenna gives at the tail end of the 8 tape set: The Search for the Original Tree of Knowledge. (Starts 17 minutes into section 6-A)

For using the software I would recommend getting a few different books that are historical timelines. Two that I have found indispensable are:
The tiny: Pockets World History, DK books, DK publishing Italy [by L.E.G.O ☺], 1996
The massive: Grun, The Timetables of History, TouchTone -Simon and Schuster, (get most recent edition you can)

General books are indispensable for question like: "What kind of stuff was going on about this time…" and specific books are great for the detail work (but books like Grun give you no feel for the age)

I would also recommend poking around and getting general timetables for things like:
History of biology for last 4 billion years.
History of geology for last 5.? billion years.
History of solar system
History of matter and energy since big bank (the times of emerging forms, etc)

And other books like: "A timeline of science and technology or whatever" would also be nice.

Note: Always compare dates between books. When you get into long ago dates like first fire or tools the dates can vary considerably from source to source, and even things like the 'invention of the printing press by Guttenberg' vary easily from 1440 to 1454.

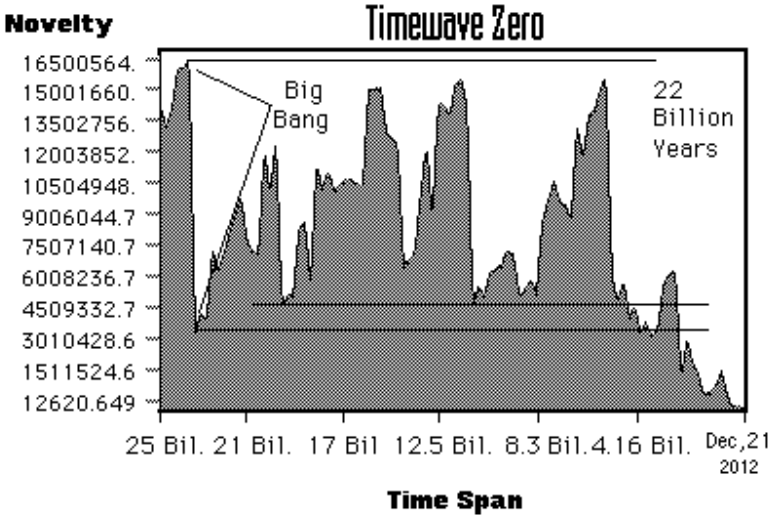
A nice general source for the nature of 'pinning dates on things' would be Kuhn's Structure of Scientific Revolutions. If you are unfamiliar with sequence vs. instance in terms of historical events, you may want to give it a looksee.

A site by Peter Meyer about general Calendar stuff:
http://hermetic.magnet.ch/cal_sw.htm

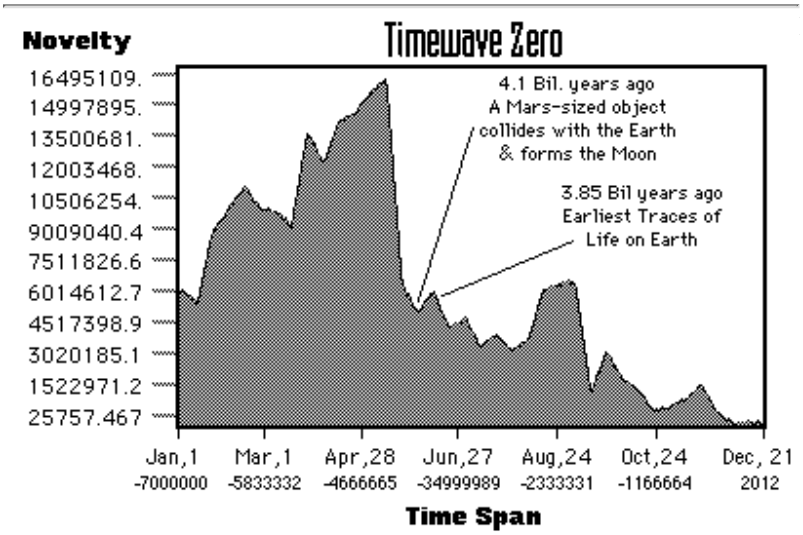
Good luck with the wave.

This Guide has been put together by Geoffrey Ashbrook, please direct all complaints or questions to him [tananah@earthlink.net].

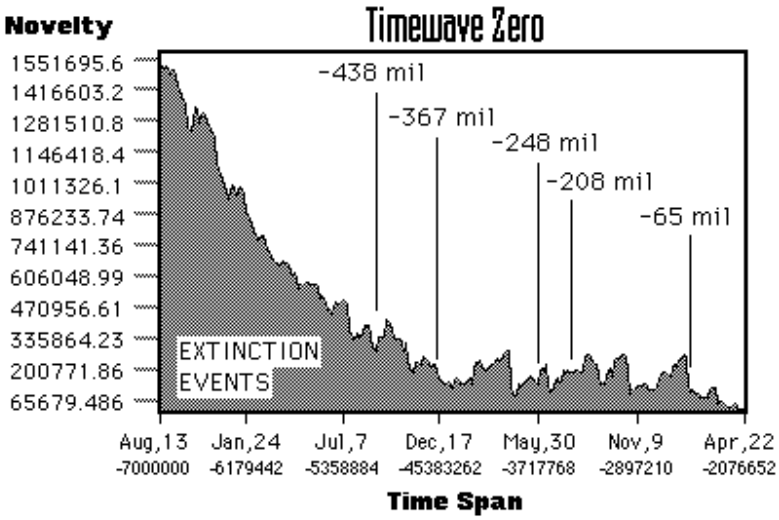
The Time Wave and History



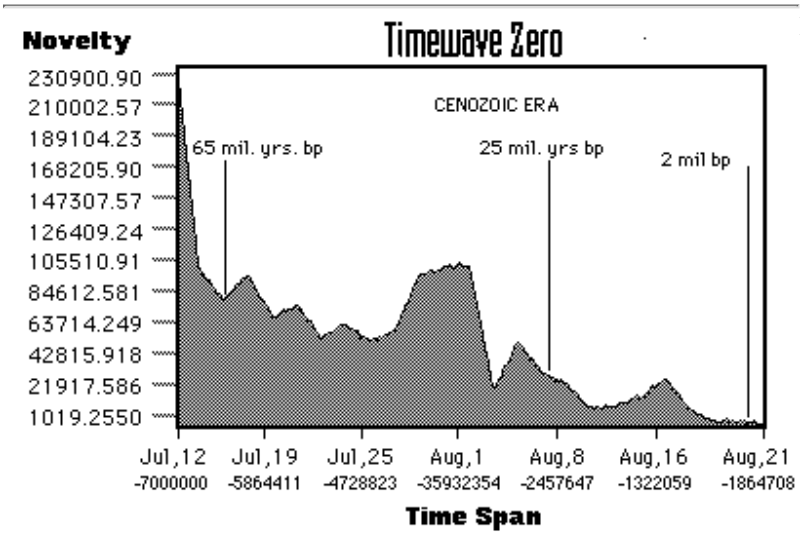
If we demand of the theory a prediction as to the moment of the elusive Big Bang then a likely candidate would be 22 billion years in the past. A value that is at variance with the current debate on the issue. This is currently a lively area of debate and uncertainty concerning this value allows Timewave Zero to offer a prediction based the unique assumptions of the theory



REASON not to open with the big picture as far as the earth is concerned. This family snapshot is of a span of 7 billion years, a period of time greater than the age of the earth. The now well documented collision of a Mars sized object with the primordial earth which caused the accretion of the moon shows as a very dramatic plunge into novelty. Life's emergence almost immediately afterwards in geological time is also in good agreement with the wave.

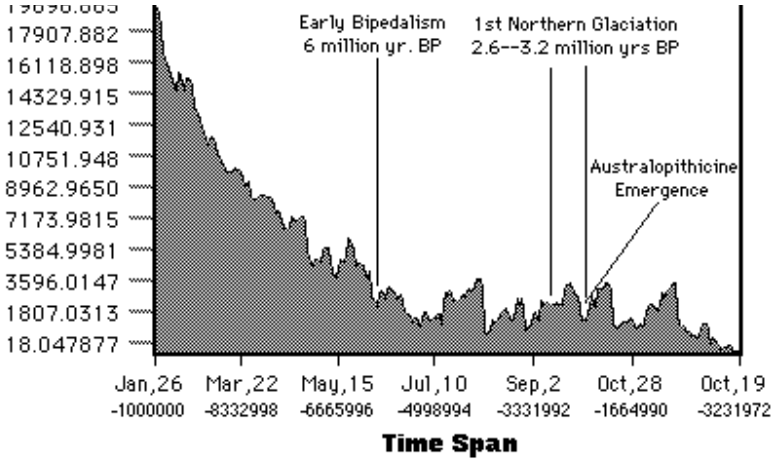


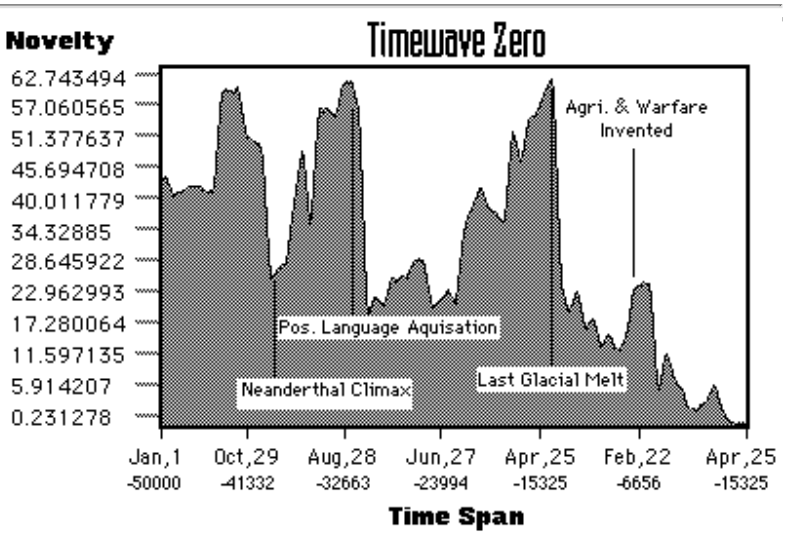
The ebb and flow of earth's biota has been driven and occasionally interrupted by large scale extinction events. The most recent of these occurred at the KT boundary with the extinction of the dinosaurs 65 million years ago.



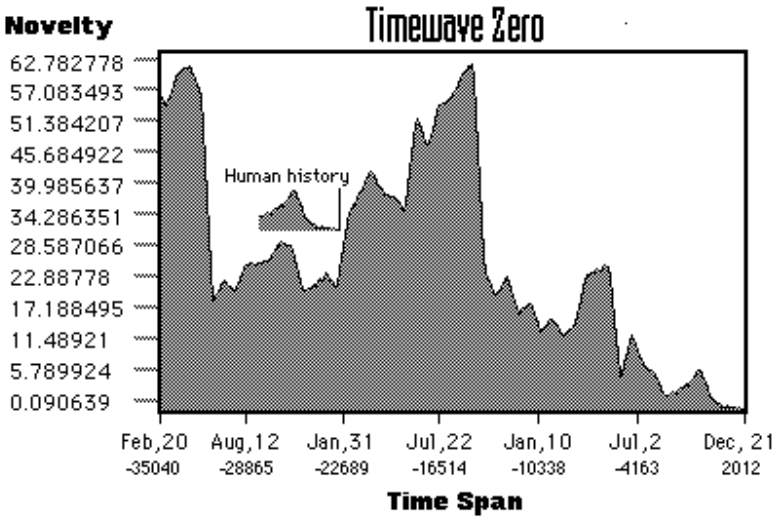
is a view of the last 65 million years, a period of time that saw the evolution of the mammals and the eventual emergence of the higher primates. At this scale the rise of Homo sapiens occupies only a small but highly novel part of the picture.

The last ten million years is the time span in which the emergence of humanity and our recent ancestors occurred.

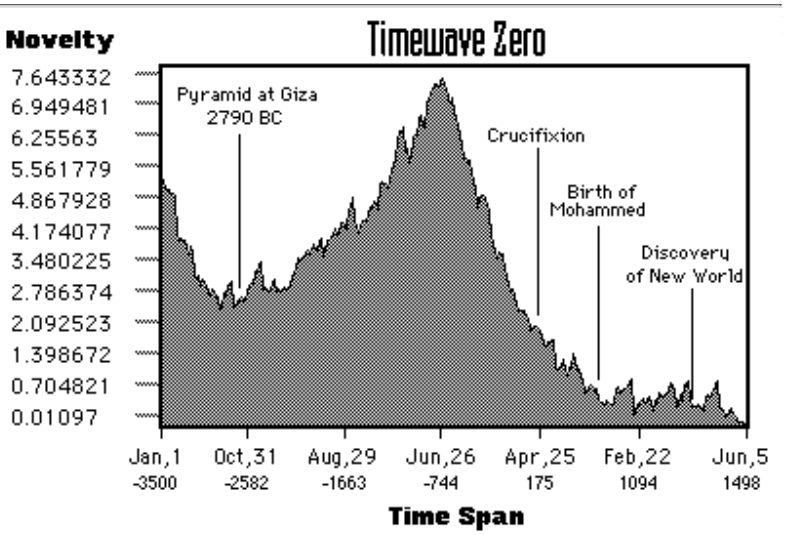




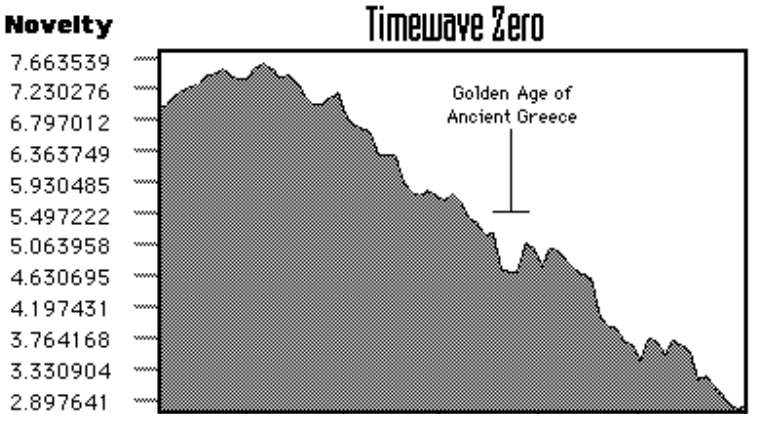
last 50,000 years show a dramatic ebb and flow of circumstances as novelty, in the form of new behaviors and new technologies, makes itself felt. Following the last melting of the glaciers some 17,000 years ago the descent into novelty appears almost uninterrupted at this scale.



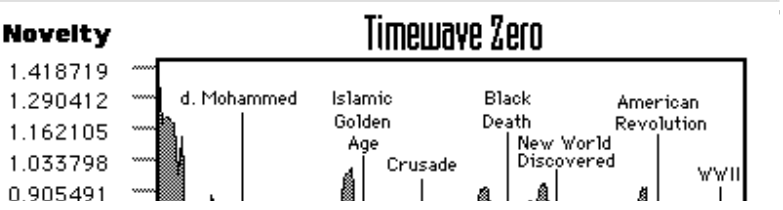
Here human history, from the building of the Great Pyramid in 2790 BC until 2012 AD is contrasted with the length of time during which human beings have been using fire and perhaps language.

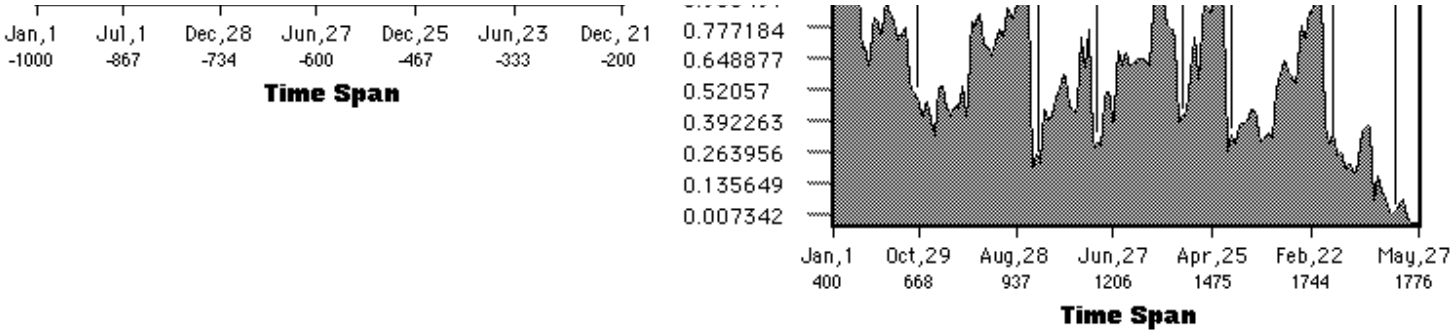


Fractal Mountain shows clearly here, a span of time that includes most of what is conventionally called human history. The accomplishments of ancient Egypt show clearly as do the cultural oscillations that followed the fall of the Roman Empire and the Han Dynasty.

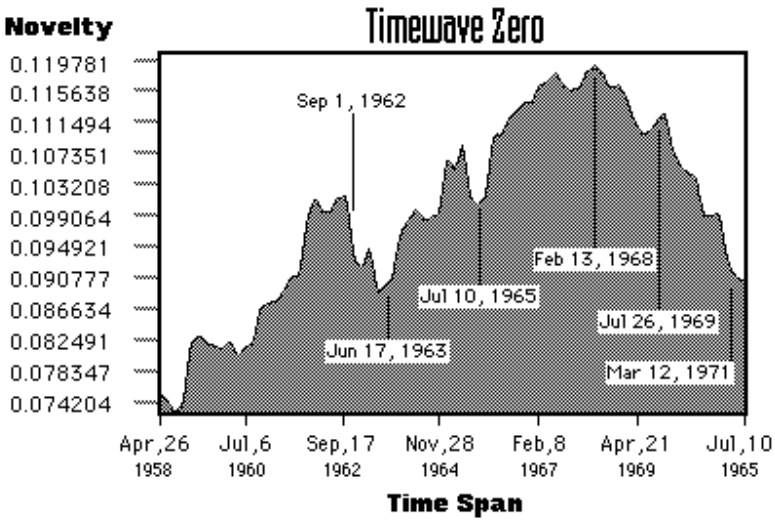


This graph makes clear that the Golden Age of Greece, occurring in a general ambience of great novelty nevertheless appears as an even deeper acceleration of the novelty of cultural tendencies already in play. Buddha, Mencius, Confucius, Lao-Tzu & Ezekial were also novel personalities that flourished during this same well defined period.

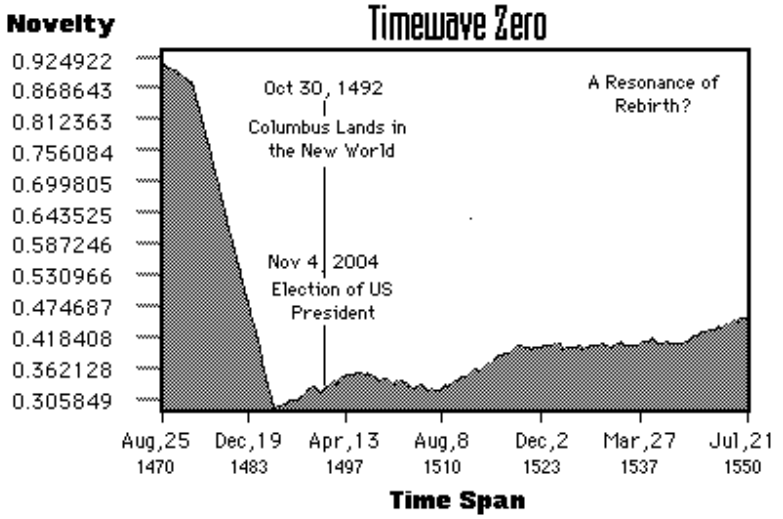




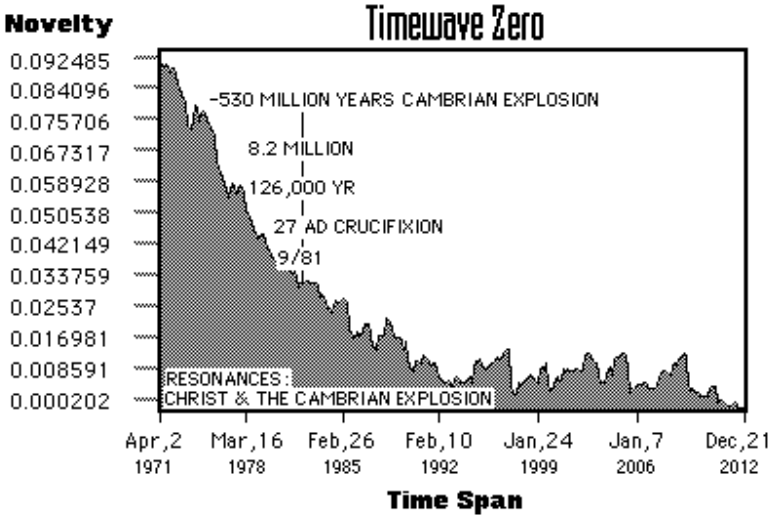
is a dramatic demonstration of the power of the theory to anticipate historical events. Every major episode of great novelty since the birth of the Prophet Mohammed appears in its proportional importance here. It is clear that with striking accuracy the Timewave correctly predicts the ebb and flow of historical vicissitude over the most recent 1500 years.



The 1960's represented the decade of the great turning point in Twentieth Century history. The technologies and social movements of the '60s are clearly shown to be responsible for the cascade into deeper novelty that characterized the decades that follow those tumultuous times.



Resonances are basic to the theory of the timewave. Here is a tantalizing one, perhaps a suggestion that a future US presidential election will be fortuitously in direct resonance with a major historical event of major consequences in the past.



Here are a series of interesting direct resonances. The explosion of new life forms in the Cambrian, the crucifixion of Christ and the murder of Anwar Sadat are in perfect resonance. Can you fill in the blanks? Want more Timewave material?

Timewave Zero for the Mac, now called Time Surfer for the Mac, is available from Blue Water Publishing, Inc., Post Office Box 726, Newberg, Oregon, USA 97132. It sells for $54.00 (U.S.). This software is by Roger Clay of California. The same publisher also sells the (more advanced) DOS versions which were developed by Peter Meyer, formerly of California and now an expatriate. Both Mac and DOS versions come with a manual and an audio tape.

Blue Water Publishing can be reached at 503/366-0264 or by e-mail at bluewaterp@aol.com.

Time wave zero date correlation and resonance lists:

8/5-8/97

-3.4 mil	-3,036,797	-2.7 mil	-2.1 mil	-1.7 mil
-51,858	-45,309	-40,000	-31,000	-25,000
1171	1273	1350	1492	1592
10/27/1999	5/19/2001	9/1/2002	11/21/2004	5/30/2006

64MYA

-1.0mil	-706,021	-460,000	-380,000	-120,000	-100TY(-97,206)
-13,204	-9,000	-5,000	-4,000	24	472
1776	1837	1902	1914-18	11/24/1981	11/1988
4/04/2009	4/23/2010	3/31/2011	3/31/2012	6/27/2012	8/05/2012

-64,000,000: Everything on the earth bigger then a chicken dies. Asteroid impact that killed dinosaurs ended reign of reptiles, began flowering plants and reign of mammals.

-3.4 mil: ?

-3mil: *Australopithecus* First hominid to walk upright appears in southern and eastern Africa. Possible use of simple pebbles as tools.

-2.7 mil: ?

-2.0 mil: *Homo habilis*, a tool making hominid, appears in Africa. Simple stones used to make other tools.

-1.7 mil: *Homo erectus* appears in eastern Africa. Hand ax made and used as general purpose tool.

-1 mil: *Home erectus* spread to eastern Asia and Java.

-706,000: ?

-460,000: earliest known use of fire.

-380,000: earliest known artificial shelters.

-120,000: Neanderthal people (*homo sapiens neanderthalis*) appear in Europe and western Asia.

-100,000: Modern humans (*homo sapiens sapiens*) appear in Africa. Earliest known burials, specialized stone tools.

-50,000: Neanderthal rock painting

-45,000:?

-40,000: Colonization of Australia by early *homo sapiens sapiens*. Cro-Magnon(same)reached Europe from Asia.

-30,000: beginning of last ice age, Neanderthals die out.

-25,000: Various methods of cooking develop start of coldest period of the last ice age.(-24,000):earliest known rock paintings. (earliest known cremation. (-23,000) earliest known clay figures.

-13,000: Colonization of North America begins with crossing the last bridge between Asia and Alaska.

-9,000: farming begins, mammoth becomes extinct, people reach tip of south America, first sun dried mud bricks.

-5,000: first corn cultivated in Mexico, first cities are founded in Mesopotamia, first Ziggurats built in Sumer. First copper used in Mesopotamia, first irrigation systems Mesopotamia.

-4,000: farming communities begin to domesticate animals. Pyramid temples in Peru.

24: Christ

472: Rome falls (yes, had been falling a while, but dies for good and is replaced by other fascists)

1171: The idea of romantic love and chivalry is introduced into the cruel and socially retarded middle ages.

1273: nothing big. European Mechanical Clock, Marco Polo goes to china,

1350: One third of Europe dies in eighteen month period, Plague.

1492: Columbus rediscovers the missing half of the planet. (not to mention the Italian Renaissance.)

1592:(at &/or aprox) Galileo Galilei Invents thermometer (& begins revolutionize world view). William Shakespeare begins writing, first opera is put on.

1776: American revolution

1837: Industrial revolution (it began in 1780, but hardly changed everything from social structure to man’s view toward nature immediately. 1837 seems a reasonable date for when the word was irreparably within the dogma of that period until it was lived out (which we may just be doing now).

1903: first powered air plain flight, Oville and Wilbur Write. Henry ford founds the ford-motor company. First coast to coast crossing of the American continent with a car (64 days).

1914-18: WWI

11/24/1981: beginning of 1980’s (as a cultural (abomination!) period)

11/1988: end of 1980’s(“”””) (Regan left office.)

- -50,000: Neanderthal rock painting
- 1171: The idea of romantic love and chivalry is introduced into the cruel and socially retarded middle ages.
- 10/27/1999

- -2.7 mil: ?
- -40,000: Colonization of Australia by early *homo sapiens sapiens*. Cro-Magnon(same)reached Europe from Asia.
- 1350: One third of Europe dies in eighteen month period, Plague.
- 9/1/2002

- -2.0 mil: *Homo habilis*, a tool making hominid, appears in Africa. Simple stones used to make other tools.
- -30,000: beginning of last ice age, Neanderthals die out.

1492: Columbus rediscovers the missing half of the planet. (not to mention the Italian Renaissance.)

- 11/21/2004

- -1.7 mil: *Homo erectus* appears in eastern Africa. Hand ax made and used as general purpose tool.
- -25,000: Various methods of cooking develop start of coldest period of the last ice age.(-24,000):earliest known rock paintings. (earliest known cremation. (-23,000) earliest known clay figures.
- 1592:(at &/or aprox) Galileo Galilei Invents thermometer (& begins revolutionize world view). William Shakespeare begins writing, first opera is put on.
- 5/30/2006

- -64,000,000: Everything on the earth bigger then a chicken dies. Asteroid impact that killed dinosaurs ended reign of reptiles, began flowering plants and reign of mammals.
- -1 mil: *Home erectus* spread to eastern Asia and Java.
- -13,000: Colonization of North America begins with crossing the last bridge between Asia and Alaska.
- 1776: American revolution
- 4/04/2009

- -706,000: ?
- -9,000: farming begins, mammoth becomes extinct, people reach tip of south America, first sun dried mud bricks.
- 1837: Industrial revolution (it began in 1780, but hardly changed everything from social structure to man's view toward nature immediately. 1837 seems a reasonable date for when the word was irreparably within the dogma of that period until it was lived out (which we may just be doing now).
- 4/23/2010

- -460,000: earliest known use of fire.
- -5,000: first corn cultivated in Mexico, first cities are founded in Mesopotamia, first Ziggurats built in Sumer. First copper used in Mesopotamia, first irrigation systems Mesopotamia.
- 1903: first powered air plain flight, Oville and Wilbur Write. Henry ford founds the ford-motor company. First coast to coast crossing of the american continent with a car (64 days).
- 3/31/2011

- -380,000: earliest known artificial shelters.
- -4,000: farming communities begin to domesticate animals. Pyramid temples in Peru.
- 1914-18: WWI
- 7/9/2011

- Neanderthal people (*homo sapiens neanderthalis*) appear in Europe and western Asia.
- -24: Christ
- 11/24/1981: beginning of 1980's (as a cultural (abomination!) period)
- 6/27/2012

- -100,000: Modern humans (*homo sapiens sapiens*) appear in Africa.
- 472: Rome falls (yes, had been falling a while, but dies for good and is replaced by other fascists)
- 11/1988: end of 1980's(“”“”) (Regan left office.)
- 8/05/2012

Historical resource information came from:

Grun, Bernard, *The Time Tables of History,* Simon & Schuster, 1991 edition.

Wilkinson Philip, *Pockets World History,* DK publishing, 1996

This is about the Time Wave, and more specifically about reading it.

july 15 1998

Something that has puzzled me about the wave is why the period of the sixties and of the Greeks (which the wave does illustrate that they are resonance's of eachother which definitely receives for it brownie points), is not a place of extremely low (or great) novelty?

Looking at this brought me to think about looking at the relationship to the points [just specific dates] on the wave with regards to the wave itself slightly differently. I apologize if this was already discussed in the past, but if it was I'd be interested in hearing the outcome of the discussion. The Ockham's razor way of reading the graph is to look at the point on the graph and to see how low that is; but there may be more which can been read just as objectively. I'm going to call this other kind of reading Whole Wave Viewing, just so it has a name. It is called “Whole Wave,” because it uses a context of whole-cycles and their relations to eachother, as opposed to just isolating a point and reading it's depth without regards to the context of patterns it occurs in.

The idea behind it is that a point at a certain level doesn't give the point the value alone, but the value comes from a more complex situation in which the point on the graph (meaning just it's numerical value approaching zero) is the potential, or not exactly potential but a general over-all context which would only enter into it after an expression or manifestation occurs (something to trigger that potential). It is my thinking for now that the expression comes from a full cycle, or a full wave pattern, much in the way that a sound wave is produced when that full 's' pattern is created, not that it would have to be an 's' persay (aren't there square waves(?), whatever, a whole cycle). Following the ups and downs of the wave, think of it as a person who speaks

only through whole cycles (as no sound is created by a musical instrument unless it creates a whole sound wave), and so in this case history is the thing which this person is uttering.

So from there you have a context of whole cycles, and looking at Time Wave One you can see that there are different levels at which you can go into this. One way to approach it is that you have general and then more and more narrow bodies of cycles, all the way down to the singled out cycles themselves. This goes from the most obvious where the wave drops 1/64th as it drops to a newer more novel level of cycles, to the cycles which are results of the fractle infinite regress which stand out along stretches, but it is between these extremes where it gets more interesting. Generally you can imagine drawling two horizontal lines across the graph, and stretches of cycles which hit the top and the bottom comprise a kind of family of cycles. But you can also draw a central line (like the flat-line of an EKG[electrocardiograph]) as opposed to drawling top and bottom lines, and find new phenomena.

I'm not exactly sure how you would define a cycle, since there are different patterns only some of which are simply up down up, or visa versa. There seem to be both hierarchies and just simply different types of cycles. Not to mention that it can also be self referential, that a group of cycles can be called a cycle.

The next line of boring reasoning to proceed by implication from this idea (of whole waves being the mode of manifestation of the levels of novelty) is that there would be different effects if there were just one cycle, as opposed to a series of cycles which occur with the same parameters (or within a margin of error); or with the same signature of position (or one after another with the same middle line). Depending on how you interpret it the events which occur with the same cycle signature would have a continuing momentum off of, a building from the last, through time. If this were thought of as a resonance, it wouldn't be either main or trigramatic. With ordinary resonance the sections of the wave have identities which gather as they recur over time, and could be thought of as personalities independent from time making a presence whenever time touches them, like a skewer sticking through a ruffled time lasagna noodle. While inside the noodle as we are, and traveling through it, we can only hit the skewer (in ordinary consciousness anyway) when we pass a point where the skewer and the noodle touch, which is at resonance points along the wave. In addition, each time we hit a resonance point it would be a re-contacting of all the previous contacts, as with a single growing object outside of time. You could think of it either way too, as time (which we are moving through) being either the noodle or the skewer, touching the other object periodically. This is interesting because it gives time the identity as a kind of object like others, one which other like-objects (if microcosmic) grow off of. This other kind of building, though, would be different (perhaps noun-like as opposed to verb-like). As opposed to a resonance which in a sense is outside of time and visited again and again (which is kind of a state/location), it would be a kind of grinding imprinting. From one end of a section of uniform height to the other, much happens, as if it has to warm up and establish a base and then build from there.

Another interesting thing is that (at least in the time cycles we are now in) from month to month and year to year we experience in oscillation stretches of consecutive or "building," full-cycles (whole waves) one after another with a kind of fluid president regarding how it will affect us. This is the same kind of (or may be, or probably be) situation as with McLuhan's observations of the interplay between hot and cold media over time. The effects of the introduction of a specific media [following its invention in history] is not independent of effects of the previous medium which was introduced. Another way of looking at it would be the implications of a wave of difference entering the status quo level of novelty or sense ratio (depending on your context). For example the consecutive full cycles along the plateau of 5/21/1997 to 6/6/1998 (6:00) (which we just recently exited) are decidedly unnovel when compared to the previous level of environment experienced from 7/1/1996 to 11/4/1996, even though over all it is extremely novel compared to the whole stretch of 1984 to 1989 which is fairly level after the continuous descent from (6:00) 12/10/1967 to the rock bottom at (6:00) 2/23/1993. Part of all this is the establishing of presidents, or norms, and then interrupting them; AND using the energy of that interruption as part of the identity of the new president. Which is quite economical from an existential point of view.

(Isn't it weird that 6:00 is such a common time for outstanding (for whatever reason of context) wave points? But then six is central to the whole hexagram and I Ching thing isn't it. It seems very strange to me unless you think that just maybe perhaps there's something to the time wave which, while being an understatement, almost seems unkosher to suggest in these paranoid times on the list.)

This is in a sense the pragmatic side of the norms. As the wave moves up and down it builds on old contexts and forms new ones to build off of; and all on different levels. While the wave moves up a slope it can take a turn down before continuing up again which in some cases will cause a full cycle which if bysected laterally could give you a middle-line to use as a reference point to see what the level of novelty is which would be expressed there. Then once that expression is made it may be build off of directly shortly after, or not at all. As the wave goes up and down, it creates levels of waves nested in eachother. That largest form the largest context, in which events occur.

The flow does not simply move from point to point, but has a bit of a memory. Superficially each cycle large or small has an equal value with regards to the importance to the direction of the wave. But it is the cycles of cycles which hold the real meat of it. As if playing a two hand piano piece with one hand and no chords. The notes signifying the rhythm (usually left hand) are mixed in the notes for the melody (the right [hand]).

This means there is a point at which there is a difference and perhaps an evolution between what cycle is an event and what cycle is a context or a norm. As in music when the first time you hear the theme, it isn't a theme, only so when repeated. Once a theme, i.e. once repeated, variations on that theme become valid parts of the whole over all.

If only as a starting place, I have found that if you draw lines laterally through cycles of waves, though what would be the potential flat-line middle of the cycle, you don't just get a random array of lines, but either evenly spaced lines (like ley lines, or scale bars in

musical notation) or tight clusters which from a distance would appear to be a line, but when closer would reveal patterns within it.

There are interesting things which arise early on with this. For example, if you take the homogeneously level segment of the wave from approx. 447 AD (or 6/1988 AD) to 1776 AD (or 3/1/2009), the middle line for that signature is also the middle line for the period of the renaissance. This is a different connection or pattern then with the Greeks and the 1960's. In that case the line, if straight, is not flat but sloping somewhat down (or into novelty). Which could either mean that it isn't a valid observation, or that there is a margin or error for a flat middle-line context, or that lines can slope and that would be along the lines of an octave jump (though I don't know if that is feasible).

For looking more closely at the Greek (60's) part, if you take it in a time frame of about 150 years (for 1963 or so) you will see that right before it you have a text book perfect full cycle [from (let's say) 4/26/1884 to (oh) 1/2/1910,] and then there is a cluster of smaller cycles which are at --or are near to-- the middle point of that initial cycle. And then if you drawl a line through the middle area of that single big cycle and the small nest, you hit the period of the sixties. What it looks like to me over all is (granted this is at best only a possibility) that there is an initial cycle, then a compressed cycle which would be like an intensifying segment, and then that points to the 60's/Greece. As if it is a lens for focusing time. And yet the problem is that it isn't a straight line across, though it is a straight line.

The relations of various middle lines and what sets of cycles are on them is an interesting way to look at the Time Wave.

Then there is also the phenomena, which I'm sure permeates through the whole wave, of changes mid cycle which may be equivalent to octave jumps (but in terms of novelty). This may be difficult to explain. It would be a body of cycles which occur as a flow of manifested potential, and yet not along a single line. While more often cycles which are more novel simply come after the ones before it along a descent, sometimes a body of cycles can travel over changes in the level of novelty. This is strange because it is a function (if that's the right word) which is changing it's central foundation as it moves. A level of cycles which changes levels of novelty. In a sense the whole Time Wave is doing that as it steps down and down establishing altered but connected bodies of expression.

If you E'mail me I'll attach you over pic's of exactly what I'm talking about. Don't hesitate, I'd shudder at reading this thing without having something to look at.)

Assigne Values to different kinds of cycles.

Name different relations between cycles.

There needs to be a way to distinguish families. E.g. tubes, tones, rythems, notes, I could use musical terminology if I knew any.

Timewave Zero

written by Terence McKenna

Posted Wed, 6-Jul-1994 22:06:33 GMT

Time, like light, may best be described as a union of opposites. Time may be both wave and, ultimately, particle, each in some sense a reflection of the other. The same holographic properties that have long been an accepted part of the phenomenon of the perception of three-dimensional space also suggest that interference patterns are characteristic of process. Living beings especially illustrate this: They are an instance of the superimposition of many different chemical waves, waves of gene expression and of gene inhibition, waves of energy release and energy consumption forming the standing wave interference patterns characteristic of life. My brother Dennis and I hypothesize that this wave description is the simple form of a more complex wave that utilizes the simple wave as the primary unit in a system of such units, combined in the same way as lines are combined into trigrams and then hexagrams in the I Ching. I will argue that this more complex wave is a kind of temporal map of the changing boundary conditions that exist in space and time, including future time. We have called the quantized wave-particle, whatever its level of occurrence within the hierarchy or its duration, eschaton. We don't think about time because we take it for granted like breathing, but consider our hypothesis that the space-time continuum is a modular wave-hierarchy. The eschaton is a universal and fractal morphogenetic field, hypothesized to model the unfolding predispositions of space and time This structure was decoded from the King Wen sequence of the 1 Ching, and was the central idea that evolved in the wake of the events of La Chorrera as described in "True Hallucinations."

I've been talking about it since 1971, and what's interesting to me is, at the beginning, it was material for hospitalization; now it is a minority viewpoint and everything is on schedule. My career is on schedule, the evolution of cybernetic technology is on schedule, the evolution of a global information network is on schedule. Given this asymptotic curve, I think we'll arrive under budget and on time, December 21, 2012.

The King Wen sequence of the sixty-four hexagrams of the I Ching is among the oldest structured abstractions extant. It has been found scratched on the shoulder bones of sheep that have been dated to 4000 BC, so we do know that this sequence existed very early in ancient China, yet the nature of the ordering principles preserved in that sequence remains unelucidated. The I Ching is a mathematical divinatory tool whose probable origin is the mountainous heart of Asia, the home of classical shamanism and Taoist magic. The I Ching is a centrally important part of humanity's shamanic heritage that is

rich in implications.The I Ching is particularly concerned with the dynamic relationships and transformations that archetypes undergo; it is deeply involved with the nature of time as the necessary condition for the manifestation of archetypes as categories of experience. The I Ching, through its concern with detailing the dynamics of change and process, may hold the key to modeling the temporal dimension that metabolism creates for organisms, the temporal dimension without which mind, as we know it, could not manifest.

The intellectual problem that led me into studying the I Ching so thoroughly was simply a wish to understand the ordering principles that lay behind the King Wen sequence. I set myself to examine it as an object mathematically definable, possessing certain kinds of symmetry, in order to try to discover the ordering principles that lay behind it. It is not simply 64 hexagrams in some random association, but rather the hexagrams occur in pairs, and the problem of determining the ordering principles is thereby reduced to a more manageable set of 32 elements-the second term of each pair is the inversion of the previous hexagram, and there are eight cases when the natural structure of the hexagram makes its inversion ineffective in changing any of the lines.

Explaining the order of the thirty-two pairs is rather more tricky and involves a certain amount of intuitive insight. The quality that I chose to examine in trying to reason what the ordering principle among the thirty two pairs might be is called the first order of difference, taking this essentially mystical diagram and turning it into a rationally apprehensible diagram, as described in the standard terminology that has been evolved for the handling of graphically portrayed information. I succeeded in doing this in 1975 and 1976 by quantifying all the qualities of the wave that I was interested in preserving—qualities like skew, overlap, degree of parallelism, and similar values. I figured out a quantification scheme that preserved these qualities as numerical entities. Through a process of collapse of the wave I went further and actually graphed the first order of difference of the hexagrams, seeking again time ordering principle. A figure of this work is displayed in “The Invisible Landscape.”

The paradox of hypermodernity is that one can only understand it if one goes back 100,000 years in time. History is an anomaly. History is a complete fluke. It’s a brief, episodic, transitional phenomenon. It’s not going to leave more than a centimeter of deposition in the strata of this planet. It is the platform from which we will launch the collective soul of our species out into the higher life of the galaxy. We use the metaphor “Mother Earth,” but if the earth is our Mother then we must be parted from her. The earth may be the cradle of humankind but you don’t stay in the cradle forever unless there is something wrong with you. So earth is the platform, and psychedelic substances, human machine interphasing, nanotechnology, quantum-distribution of information are the means.

We are on the brink of possibilities that will make us literally unrecognizable to ourselves. And those possibilities will be realized not in the next thousand years but in time next 20 years, because the acceleration of invention and novelty and information transfer is at this point so rapid. Timewave Zero is an exploratory idea system and a software package that runs on personal computers. It is the broadcast output of the naturally superconducting experimental deoxyribonucleic matrix transceiver operating in hyperspace. We believe that by using such ideas as a compass for the collectivity, we may find our way back to a new model in time to reverse the progressive worldwide

alienation that is fast hurling us into an ecocidal planetary crisis. A model of time must give hope and overcome entropy in its formal composition. In other words, it must mathematically secure the reasonableness of hope. This theory, and indeed the mathematical theory of dynamic systems in general, does this by securing in a formal manner the process by which transformation can naturally arise and persist out of a background of flux. It becomes increasingly clear that we are now experiencing a period marked with extreme density of novel ingressions, a time when the rational and acausal tendencies inherent in time may again reverse their positions of dominance.

If the wave model is a valid general theory of time, it should be possible to show why certain periods or places have been particularly rich in events that accelerate the creative advance into novelty. It should also show where and when in the future such events might be expected to recur. To carry out this operation, a personal computer has proven indispensable. A group of programs implementing these ideas has been written by Peter Meyer. The program is called Timewave Zero. The software takes these theories and discoveries concerning the I Ching and creates time maps based upon them. The time maps, or novelty maps, show the ebb and flow of connectedness, or novelty, in any span of time from a few days to tens of millennia. The theory is not deterministic; it does not say what will happen in the future, it only predicts the level of novelty that whatever happens will have to fulfill. As such, it operates as a map, or simplified picture, of the future (and past) behavior of whatever system is being studied. The end date is the point of maximized novelty in the system, and is the only point in the entire wave that has a quantified value of zero. December 21, 2012 A.D. We arrived at this particular end date without knowledge of the Mayan Calendar, and it was only after we noticed that the historical data seemed to fit best with the wave if this end date was chosen that we were informed that the end date that we had deduced was in fact the end of the Mayan calendar. In all the novelty maps, when the graph tine moves downward, novelty is assumed to be increasing. When there is movement away from the base line, novelty is assumed to be decreasing in favor of habitual forms of activity. Time is seen as the ebb and flow of two opposed qualities: novelty versus habit, or density of connectedness versus disorder. In this we see clearly that one trend toward greater novelty reached its culmination around 2700 B.C., precisely at the height of the Old Kingdom pyramid-building phase, Then a countermovement toward predictable forms of behavior asserted itself and increased in importance until around 900 B.C. At that time, around the time of the consolidation of Mycenaean sea power, the tendency toward habituation was overcome and replaced by a long cascade into greater and greater novelty, which reaches its culmination early in the twenty-first century.The career of novelty is revealed to be a process that is punctuated by subprocesses. These mitigate, modify, and influence an overall general tendency toward greater and greater novelty. The theory shows the last 1,500 years to have been highly novel times that have oscillated at levels of novelty very close to the horizontal axis, the maximized “zero state”

Agreement between the historical record and the ebb and flow of the wave argues strongly that the Timewave is, in fact, able to accurately portray the evolution of historical patterns of change. The theory of time that is implied by the Timewave is a theory of time as a fractal, or self-similar, wave. A fractal wave comes quite naturally equipped with an extensive set of internal resonances that show a formal, but acausal, linkage between events and periods of time, which may be widely sepa rated from each

other in space and time. So, for example, when we look at events of the 100 years leading up to the Mayan calendrical termination, we see that the graph is topologically similar to the graph that we have said applied to the past several thousand years. My interpretation of this is that it means that shorter duration subsets of the fractal curve of time are microversions of the larger pattern in which they are embedded. Such an idea lays the basis for understanding such phenomena as fads, fashion, and the occasional wave of historical obsession that characterize society.

Imagine zeroing in on the point in which the wave passes out of the past and into the future. The stupendous idea of an end of time is an attempt to negate the eternal stasis, to break the circle. All peoples who have awakened to the suffering and hope of the condition humaine have arrived at this idea, each in its own way. The other peoples who have created a world for them selves have also appointed an end to it: Indians, Persians, Greeks, Arabs, and Jews. This final time revolutionizes the course of the world. We are familiar with the Gnostic intunitions of the first and second century suggesting that energy is the "divine light" that is trapped in matter, and that energy, in order to free itself, must evolve itself through progressively subtler stages until it generates self-reflecting consciousness, which can then evolve techniques for freeing all energy from matter. Like this myth, all ideas of salvation, enlightenment, or utopia may be taken to be expressions in consciousness of the drive of energy to free itself from the limitations of three dimensional space and return to the uncontaminated essence of itself in an epoch of realized concrescent satisfactions. Concrescent satisfaction includes the notion of energy unbounded by space or time. This means, for our theory, that at especially low-value regions of the modular wave-hierarchy a quantum jump should occur in the concrescent process.

What this advance of novelty is, and what the process of becoming may be seen to be in essence, is the revelation of the interspecies' mind. In human beings, it is approached through the nonmetabolizing neural DNA scattered through the body, and for humans it becomes apparent as a higher cortical phenomenon, as an experience, and as a confrontation with the Jungian "collective unconscious." This revelation and its integration into the field of shared experience is a process of transformation of the previously limited ego. The many magnitudes of duration in which the levels of the modular hierarchy of waves can be supposed to be operable exceed, at both ends of the scale, any physical processes known to occur.Language and its appearance is a recent instance of concrescence. It is a recent form of novelty, having been in existence not more than a million years. As a concrescence occurring in our species, it may provide a clue to the path that evolving human, novelty will take in the future. Following the acquisition of language, the advance into novelty, now in part self reflecting, continued on a higher level. The most recent of these major new levels of coordinated organization may be embodied In the epoch of electronic communications and the furiously evolving postrelativistic consciousness of the twentieth century.

Language is the embodiment of meaning. Meaning signifies organization, and there is no organization without purpose. What is the purpose of organization? Is it perhaps to retard entropy? In such a case, the meaning of meaning for that which apprehends meaning is the necessity to purposefully create and maintain order. (Prigogine, Ilya, Gregoire

Nicclis, and Agnes Bablyoyantz “Thermodynamics of Evolution.” Physics Today November-December 1972).

The great puzzle in the biological record is the suddenness of human emergence out of the primate line. It happened with enormous suddenness. Lumlholtz calls it the most explosive reorganization of a major organ of a higher animal in the entire fossil record.All of biology is, in a sense, a conquest of dimensionality. That means that animals are a strategy for conquering space/time. Complex animals do it better than simpler animals, we do it better than any complex animal, and we twentieth century people do it better than any people in any previous century because we combine data in so many ways that they couldn’t—electronically, on film, on tape, and so forth. So, the progress of organic life is deeper and deeper into dimensional conquest. From that point of view , the shaman begins to look like the advance guard of a new kind of human being, a human being that is as advanced over where we are as we are advanced over people a million years ago. Biology constantly changes the context in which evolution occurs. I have downloaded this into a phrase: “The universe—the biological universe at least—is a novelty-conserving engine.” Upon simple molecules are built complex molecules. Upon complex molecules are built complex polymers. Upon complex polymers comes DNA. Out of DNA comes the whole machinery of the cell. Out of cells come simple aggregate colony animals like hydra and that sort of thing. Out of that, true animals. Out of that, ever more complex animals with organs of locomotion, organs of sight, organs of smell, and complex mental machinery for the coordinating of data in time and space. This is the whole story of the advancement of life.

In our species it reaches its culmination and crosses over into a new domain where change no longer occurs in the atomic and biological machinery of existence; it begins to take place in the world that we call mental. It’s called epigenetic change-Change that cannot be traced back to mutation of the arrangement of molecules inside long chain polymers, but change takIng place in syntactical structures that are linguistically based.

This idea requires a fairly radical reorganization of consciousness, because what I’m saying is the universe was not born in a fiery explosion from which it has been blasted outward ever since. The universe is not being pushed from behind. The universe is being pulled from the future toward a goal that is as inevitable as a marble reaching the bottom of a bowl when you release it up near the rim. If you do that, you know the marble will roll down the side of the bowl down, down, down—until eventually it comes to rest at the lowest energy state, which is the bottom of the bowl. That’s precisely my model of human history. I’m suggesting that the universe is pulled toward a complex attractor that exists ahead of us in time, and that our ever-accelerating speed through the phenomenal world of connectivity and novelty is based on the fact that we are now very, very close to the attractor.

Timewave Zero

This software illustrates Terence McKenna’s Theory of time, history and the end of history as told in the book The Invisible Landscape by him and his brother Dennis, and in his The Archiac Revival. The theory of Timewave Zero was revealed to Terence by an

extraterrestial intelligence following an unsual psychedelic experiment conducted in the Columbian Amazon jungle in 1971. He was instructed in certain transformations of numbers derived from the King Wen Sequence of I Ching Hexagrams, leading eventually to a rigorous mathematical description of the timewave. This correlates time and history with the ebb and flow of novelty, which is intrinsic to the structure of time and hence of the temporal universe. At a certain point a singularily is reached which is the end of history - or at least is a transition to a supra-historical order. This point is usually taken to be December 21, 2012. the winter solstice of 2012 and the end of the current era in the Maya calendar.

The primary function of the software is to display any portion or the timewave (up to seven billion years) as a graph of the timewave related to the Western calendar (either Gregorian or Julian). You can display the wave for the entire 4.5-billion-year history of the Earth, note the peculiarities of the wave at such points as the time of the extinction of the dinosaurs (65 million years ago) and inspect parts of the wave as small as 92 minutes. A remarkable quality of the timewave is that it is a fractal. Once a part of the wave is displayed the the software allows you to expand any smaller part (down to 92 minutes). This usually reveals a complexity of structure which persists however much the wave is magnified, a property typical of fractals.

The documentation describes the origin, construction and philosophical significance of the timewave, the use of the software, the mathematical definition or the timewave (with proofs of some related mathematical theorems) and certain curious numerical properties. An interesting part of the theory is that historical periods exist “in resonance” with each other. Resonantly we are (in 1994) at the end of the period known historically as the Dark Ages and will soon be reliving the Middle Ages. The software permits graphical display of different regions of the timewave that are in resonance with each other. This allows the period 1945 - 2012 to be interpreted as a resonance of the period 2293 BC - 2021 CE.

```
                Documentation for PROJZD.EXE

PROJZD.EXE accepts two dates, assumes that the later date is
the first lower major resonance of the earlier date and
calculates the zero date required for this assumption to be true.
Dates should should be entered as month/day/year, e.g. 12/31/1950.
The Gregorian calendar is assumed unless a calendar is given,
e.g. 12/31/1950 J.

The program allows multiple entry of pairs of dates, in which
case, upon exit, it displays the average of the zero dates calculated.

For example, consider the dates of two famous assassinations, that
of Julius Caesar, on (or close to) March 14, 44 B.C. (3/14/-43 in
the astronomical system), and that of John F. Kennedy on November 22,
1963.  It is plausible to view these events as related resonantly,
since both were assassinations of political leaders who had a major
influence on the society of their time.

When we run the software and enter these dates we obtain:
```

```
Enter earlier date (e.g. 3/14/-43 J): 3/14/-43 J (JDN = 1705425)
Enter later date (e.g. 11/22/1963 G): 11/22/1963 (JDN = 2438356)
                  Implied zero date: 9/28/1995 G (JDN = 2449989)
```

In other words, each of these two assassinations were the (first) major resonance of the other if and only if the zero date is September 28, 1995.

Thus, in addition to assuming a zero date of December 21, 2012, and checking to see whether dates which are major resonances with respect to this zero date seem also to be related historically, it is possible to search for pairs of events which appear to be historical resonances and calculate which zero dates they imply.

The ICHING Program (Version 1.2)

On the Timewave Zero disk is a program called ICHING.EXE which allows you to relate any point on the timewave to a set of I Ching hexagrams. It is most easily used when running the Timewave Zero program. Select the target date that you are interested in (using the 'C' option). Select the 'R' option to exit temporarily from the program to the DOS command line. You will see displayed the date of interest and the number of days to the zero date which corresponds to this date. Enter

```
ICHING days_to_zero_date days_to_display
```

where "days_to_display" is the number of days to display (adding 24 hours each time to days_to_zero_date). The ICHING program will then display from one to seven hexagram numbers for each day, together with their names, and for each one a moving line. (The hexagram names are those used in Tom Riseman's Understanding the I Ching, The Aquarian Press, 1980.) Dates which are further away from the zero date (that is, further back in time) tend to have more hexagrams associated with them. For example:

```
Days to zero date = 400 (2011-11-17 if 2012-12-21 G)
Level              Cycle        Hexagram                          Moving
line
  2             384 days        2  The Receptive
1
  1               6 days        3  Difficulty in the Beginning
5

Days to zero date = 10,000 (1985-08-05 if 2012-12-21 G)
Level              Cycle        Hexagram                          Moving
line
  3          67.29 years        1  The Creative
3
  2             384 days       27  Nourishment
1
```

```
  1               6 days        3  Difficulty in the Beginning
5

Days to zero date = 10,000,000 (-25367-11-26 if 2012-12-21 G)
Level              Cycle        Hexagram                          Moving
line
  4        4306.36 years        7  The Army
3
  3          67.29 years       23  Disintegration
6
  2             384 days       58  Joyousness
5
  1               6 days       43  Determination
5
```

The theory underlying this mapping of a point on the wave into a set of hexagrams is as follows: There are several levels of cycles of time which are recognized in the theory of Timewave Zero. Since a day is taken to correspond to one line of a hexagram, the shortest cycle is that of six days. The next cycle is 6*64 days (= 384 days) corresponding to the set of 64 hexagrams. Each longer cycle is obtained by multiplying the duration of the current cycle by 64, so we have:

Level	Cycle
1	6 days
2	384 days
3	67.29 years
4	4306.36 years
5	275,607 years
6	17,638,846 years
7	1,128,886,144 years

Consider any number d of days prior to the zero point. (If the zero point has been specified, e.g. the usual 6 a.m. on 12/21/2012, then d corresponds to a particular point in time.) Consider now the 6-day cycles at Level 1. The point d will fall in one of these 6-day cycles. If it occurs at the boundary of two cycles (e.g. any of the points 6 days, 12 days, etc. prior to the zero point) then it is taken to fall into the one furthest from the zero point (i.e. the temporally prior cycle).

Number the 6-day cycles 0, 1, 2, ..., backward in time from the first (the 6-day cycle leading up to the zero point). After the 64th cycle, numbered 63, we continue with 64, 65, ... Suppose d falls into cycle n1. Then the corresponding hexagram is (n1 mod 64) + 1, where the hexagrams are numbered 1, 2, ..., 64 according to the King Wen sequence. {Footnote: n mod m is the remainder after dividing n by m. E.g. 12 mod 5 = 2, 135 mod 64 = 7.}

Similarly with each larger cycle. At Level 1 we consider the 384-day cycles, and number them 0, 1, 2, ... as we did for the 6-day cycles. Suppose d falls into cycle n2, then the corresponding hexagram is (n2 mod 64) + 1. We can continue for each of the larger cycles.

For any point d there will be some number k such that at Level k and at all higher levels d always falls into the first such cycle (and so

corresponds to Hexagram 1 at that level).

Thus the point d maps into a sequence of hexagram numbers n1, n2, n3, ..., n(k-1), 1, 1, 1, 1, ... Since there is no point in considering all the trailing 1s, we consider only the finite set n1, ..., n(k-1), 1. This set will contain only one hexagram number for d < 64, but may contain up to seven numbers if d is something like 80,000,000,000.

Thus, given that the zero point has been specified, a finite set of I Ching hexagrams is associated by the ICHING program with any given date (prior to the zero date). There are several uses for this program, assuming that the hexagrams can provide an interpretation of that date:

(i) You can run the Timewave Zero program when you get up in the morning and obtain the Ching's advice regarding the coming day.

(ii) If you are considering holding an event (e.g. a marriage) on some date you can obtain the Ching's advice regarding the auspiciousness of that day.

(iii) If a certain event is scheduled for some date you can get the Ching's advice regarding the appropriate attitude toward that event.

(iv) Finally you can get the Ching's opinion of the day you were born (although this perhaps should not be taken as a commentary on your personality).

It is important to note the following: Suppose the zero point is 6 a.m. on 12/21/2012. Then the point on the timewave which is ten days prior to the zero point will be 6 a.m. on 12/11/2012, and the 24-hour period which ends with this point is that which begins on 6 a.m. at 12/10/2012. Thus when you run the ICHING program with the value 10, it prints the hexagrams corresponding to the period 6 a.m. on 12/10/2012 through 6 a.m. on 12/11/2012, i.e. more closely to what we think of as the day 12/10/2012 than the day 12/11/2012. Thus if you wish to obtain the hexagrams corresponding to a given date, e.g. 1/1/1996, you should specify the target date at the main screen as the date of the following day (in this example, 1/2/1996), since thereby you obtain the hexagrams for the 24-hour period which ends on that date, and thus which occurs mainly (75%) on the previous date. Thus to obtain the Ching's comment on the date 6/30/1949 you would specify the target date as 7/1/1949, select 'R' to exit to DOS, and run the ICHING program with whatever value is displayed for the number of days to the zero date.

If the target date and time is not 6 a.m. on some date then the number of days to the zero point will be a non-integer, e.g. 18:23 on 4/19/1993 is 7185.483 days prior to 6 a.m. on 12/21/2012. If the ICHING program is run with command line parameters "7185.483" then the effect is the same as using 7185 (the integer part of the number entered), so the resulting hexagrams will be for the period 6 a.m. on 4/19/1993 through 6 a.m. on 4/20/1993:

```
Days to zero date = 7185.483
Level              Cycle        Hexagram                Moving line
  3          67.29 years        1  The Creative               2
```

```
  2             384 days       19  Conduct                    5
  1               6 days       46  Pushing Upward             4
```

With each hexagram number is given the number of a moving line (the I Ching commentary on which is contained in the commentary on the hexagram). This number is derived from the position of the point on the timewave within the particular cycle in which that point is situated. For example, the days 0, 1, ..., 5 prior to the zero point all map into the same hexagram (namely, 1, The Creative), but the moving lines are respectively 1, 2, ..., 6.

As example of the Ching's interpretation of some historically important date consider the date of the assassination of John F. Kennedy, 11/22/1963. If we enter 11/23/1963 (one day after the date of interest, as explained above) as the target date at the main screen, then exit to DOS and run the ICHING program with command line parameters "17926 3" we obtain:

```
Days to zero date = 17,928 (1963-11-21 if 2012-12-21 G)
Level              Cycle        Hexagram                         Moving
line
  3          67.29 years        1  The Creative
5
  2             384 days       47  Oppression
5
  1               6 days       45  In Accord
1

Days to zero date = 17,927 (1963-11-22 if 2012-12-21 G)
Level              Cycle        Hexagram                         Moving
line
  3          67.29 years        1  The Creative
5
  2             384 days       47  Oppression
5
  1               6 days       44  Tempting Encounter
6

Days to zero date = 17,926 (1963-11-23 if 2012-12-21 G)
Level              Cycle        Hexagram                         Moving
line
  3          67.29 years        1  The Creative
5
  2             384 days       47  Oppression
5
  1               6 days       44  Tempting Encounter
5
```

If we turn now to the I Ching (Riseman, op. cit.) we find in the interpretation for Hexagram 47: "This is one of the major 'danger signs' of the I Ching, signifying extreme difficulty, poverty and oppression. ... The lines ... suggest restriction, obstacles and oppression. All six lines are unfavourable, but the most extreme misfortune bears the seeds of great regeneration, if one can under-stand and absorb the hard spirit of the time." In the interpretation for Hexagram 44 we find: "The weak principle intrudes, indicating the appearance of a dangerous, though apparently harmless element. Above,

[the trigram] Ch'ien, a strong force, meets [the trigram] Sun, a feminine and penetrating force. This suggests a male principle -- a leader, an authoritative person ... -- influenced by a weak but effective element." Thus the Ching seems to be suggesting that on 11/22/1963 there was the likelihood of danger to a leader from a penetrating force.

Appendix II

Running the Software with Windows 3.1,Windows 95 and Printing the Graph to Modern Printers

Last revision: 1996-05-14

1. Setup Procedure

Since the first release of the Timewave Zero software by Blue Water Publishing in late 1994 Microsoft has introduced a new operating system, Windows 95. The Timewave Zero software works properly under both Windows 3.1 and Windows 95, the only complication being that certain steps must be taken to allow correct printing of the graph. This appendix gives advice regarding the use of the software under Windows 3.1 and Windows 95, and also gives advice, in addition to that given in the 1994 version of this manual, regarding printing the graph to non-dot-matrix printers (laserjet printers, bubble jet printers, etc.).

Earlier versions of the software (5.20 and previous) were started by running a batch file (TWZ.BAT or another). This batch file did three things: (i) It installed the GRAPHICS.COM utility (allowing printing of the graphics screen), (ii) in the case of TWZ87.BAT it set an environment variable called "TWZ" and (iii) it ran the software itself (TWZERO.EXE or TWZERO87.EXE).

Under Windows 3.1 and Windows 95 it is necessary to separate the first two operations from the third. GRAPHICS.COM must be installed from your AUTOEXEC.BAT file (so you have to add a line to this file, as described below) in order that the GRAPHICS.COM utility is installed in memory at boot time. The environment variable should also be set at boot time (see below).

There are still two versions of the Timewave Zero software supplied, namely, TWZERO.EXE and TWZERO87.EXE. The latter is meant for computers with a math co-processor chip installed. The 486 CPU has a math co-processor built in, so for PCs with a 486 chip, a Pentium or later, TWZERO87.EXE should be used (on these machines TWZERO87.EXE is at least a third faster than TWZERO.EXE).

As regards video monitors, the software requires at least an EGA video graphics interface card and appropriate video monitor (thus EGA, VGA or SVGA adaptors). Systems with only a monochrome monitor or a CGA monitor are not adequate to run the software.

There is now just one batch file supplied on the Timewave Zero disk, namely, TWZ95.BAT (so called because it is designed for use with Windows 95 - and for Windows 3.1 - and for systems running DOS as well). The contents of this batch file are:

```
@ECHO OFF
REM TWZ95.BAT
REM Created:  1996-04-28, PM
REM Modified: 1996-05-14, PM

REM The line "CALL \TWZ95.BAT" should be placed in the AUTOEXEC.BAT
file
REM and TWZ95.BAT, COPROC.COM, GRAPHICS.COM and GRAPHICS.PRO should all
REM be copied from the Timewave Zero disk (or subdirectory) to the root
REM directory of the hard disk drive used for booting (normally C:\).

IF NOT EXIST \COPROC.COM GOTO L2
REM COPROC.COM returns 1 if a math co-processor is detected.
\COPROC.COM
IF NOT ERRORLEVEL 1 GOTO L2
ECHO Math co-processor detected.
SET TWZ=87
REM PAUSE
REM Activate the PAUSE to monitor this at boot-up.

:L2
IF NOT EXIST \GRAPHICS.COM GOTO L3
\GRAPHICS.COM
ECHO GRAPHICS.COM installed.
REM PAUSE
GOTO L4

:L3
ECHO GRAPHICS.COM not found.
ECHO GRAPHICS.COM not installed.

:L4
REM If the graph cannot be printed after GRAPHICS.COM is installed
REM then change the line "\GRAPHICS.COM" to "\GRAPHICS.COM
{magic_word}"
REM where {magic_word} is "graphics", "laserjet", etc.
REM For further information about the magic word for your printer
REM see the DOS manual or the TWZ manual.
```

This batch file should be run from your AUTOEXEC.BAT file by adding the line:

```
CALL TWZ95.BAT
```

(With PCs running Windows 95 you can edit your AUTOEXEC.BAT file by going to DOS and using EDIT.COM in the \WINDOWS\COMMAND subdirectory.) It is important to use CALL TWZ95.BAT and not just TWZ95.BAT, since the CALL ensures that after TWZ95.BAT is executed control will return to the AUTOEXEC.BAT file.

Furthermore the four files TWZ95.BAT, COPROC.COM, GRAPHICS.COM and GRAPHICS.PRO, all supplied on the Timewave Zero disk, must be copied to the root directory, C:\.

If TWZ95.BAT detects a math co-processor at boot time then it defines the environment variable "TWZ" as "87". This variable must be set to

this value in order for TWZERO87.EXE to function. (You can check whether this variable has been set to "87" by going to DOS and giving the "SET" command.) Thus if your PC has no math co-processor then you must use TWZERO.EXE, but if it has a math co-processor then you can use either this or TWZERO87.EXE (which is faster).

2. Running the Timewave Zero software

After you have set up your system as described above, reboot your PC. The Timewave Zero software may then be run as follows:

(a) With a DOS system, change to the subdirectory with the Timewave Zero files and run the program as usual.

(b) With Windows 3.1 you can either go to DOS and proceed as in (a), or you can create an icon on the desktop (in the usual way) for running the software. Double-clicking on this will then open a DOS window and run the software.

(c) With Windows 95 you can simply locate the icon for the program (TWZERO87.EXE) in the (so-called) Explorer and double-click on it to run the program.

3. Setup for graph printing

If you are using Windows 3.1 or Windows 95 make sure that you have configured Windows to work with your particular brand of printer. If Windows is not properly configured for your printer then it is unlikely that you will be able to print the graph.

Run the Timewave Zero software as described in Section 2. Graph a part of the wave and select 'G' to print the graph. If the graph is printed then you have no printer problem. This may be the case even if you are using a modern printer such as a bubble jet printer. The author has used both (a) Windows 3.1 with a Canon BJ-200ex bubble jet printer and (b) Windows 95 with a Canon BJ-30 bubble jet, and has had no problem in printing the graph.

If the graph does not print properly (in which case you will probably just get text characters printed, no graphics) you must add a word to one line in the TWZ95.BAT file. This file contains the line:

```
\GRAPHICS.COM
```

The DOS manual states that the GRAPHICS command accepts a type parameter which depends on the brand of printer you are using. Consult the following list (taken from the Version 5 DOS manual) for the magic word for your printer, and append it to the line above. For example, if you have a Hewlett-Packard LaserJet printer then you need to change this line to:

```
\GRAPHICS.COM laserjet
```

The magic words for other printers (taken from the DOS manual) are:

IBM Personal Computer Color Printer with black ribbon	color1
IBM Personal Computer Color Printer with RGB ribbon	color4
IBM Personal Computer Color Printer with CMY ribbon	color8
A Hewlett-Packard DeskJet printer	deskjet
An IBM Personal Graphics Printer, IBM Proprinter or IBM Quietwriter printer	graphics
An IBM Personal Graphics Printer with 11-inch-wide carriage	graphicswide
A Hewlett-Packard LaserJet printer	laserjet
A Hewlett-Packard LaserJet II printer	laserjetii
A Hewlett-Packard PaintJet printer	paintjet
A Hewlewtt-Packard QuietJet printer	quietjet
A Hewlett-Packard QuietJet Plus printer	quietjetplus
A Hewlett-Packard RuggedWriter printer	ruggedwriter
A Hewlett-Packard RuggedWriter wide printer	ruggedwriterwide
A Hewlett-Packard Thinkjet printer	thinkjet
Any other Hewlett-Packard PCL printer	hpdefault

The latest version of the DOS manual, or your printer manufacturer, should be consulted for brands of printer not listed here.

INTERZINE

Issue #2 : Peter Meyer

Peter Meyer is best known as the developer of the MS-DOS software Timewave Zero, which demonstrates Terence McKenna's fractal model of time and history. In the 'About the Authors' section of the software documentation, we learn:

> Peter Meyer received the first double honors Bachelor of Arts degree awarded by Monash University, Melbourne, majoring both in Philosophy and in Pure Mathematics. His mathematical research has been published in *Discrete Mathematics.* He has travelled extensively, and spent several years studying Tibetan Buddhism in India and Nepal. Peter is an experienced software developer and has worked internationally as a computer consultant. His interests include history, travel, cryptology, geopolitics, anthropology, religion and psychedelic research. In addition to *Timewave Zero* he has written and published three C function libraries, a Maya calendar program and a data encryption software package. His DMT research has been published in *Psychedelic Monographs and Essays* and in the *Yearbook of Ethnomedicine and Consciousness research*. His exploration of little-known areas of consciousness has confirmed for him both the reality of other dimensions of existence and of the Eckhartian/Buddhist undifferentiated unity underlying all phenomena. He hopes to be present at the end of history in 2012, 5125 years after its beginning.

Some questions and answers:

Q1. When you got your double honors degree in Philosophy and Pure Mathematics at Monash University, what did you foresee yourself doing in life?

A1. When I finished my five-year course of studies at Monash University I was still somewhat naive and idealistic. During those years I seemed to have access to some intuitive source of metaphysical knowledge which apparently I have now lost - or perhaps it is more accurate to say that I am now less inclined to accept what I imagine to be the case as actually being the case (without confirming evidence). As a university student I felt (probably like many university students, at least in the 60s) that there were realms of knowledge waiting to be explored, and deep truths waiting to be discovered. This was why I studied Philosophy and Mathematics (having switched over from earlier undergraduate studies in natural science), searching for deep truths.

When I graduated I had no clear idea of what I was going to do in life, beyond the general aim of continuing this search for deep truths. I gave little thought to a career, or to the question of earning a living. I had seriously considered doing graduate work in AI with John

McCarthy at Stanford University, but my interest in psychology (especially that of Jung and of Piaget) won out. I had inherited some property following my mother's death in 1970, and upon graduating I sold this and left Australia to travel to Europe via Asia, which I did.

Q2. What was the nature of the research you have had published in 'Discrete Mathematics'?

This was a paper entitled 'On the Structure of Orthomodular Posets', in the 1974 volume. It was my final-year undergraduate thesis in mathematics, which I wrote in 1970. It is exceedingly abstract. In it I prove a number of theorems about the construction of orthomodular posets of various kinds from sets of sets satisfying certain mathematical conditions. As far as I know no mathematician ever extended this line of research any further. It was a path I went down that none cared to follow.

Q3. What motivated you to study Tibetan Buddhism? Where in India and Nepal did you go to, and who did you study with?

A3. As a first-year university student at the age of 18 I inclined to atheism and agnosticism, but I then read Christmas Humphreys' book 'Buddhism', and immediately felt that this was a philosophy/religion that made sense to me. However, I still cannot quite accept what to some is the first principle of Buddhism, that this life is an unmitigated realm of suffering. I prefer to see all sentient life as an expression of a divine creativity, a viewpoint somewhat more akin to the Hindu view of the world as divine play (illusion though it ultimately may be).

I was, like many people, first attracted to Tibetan Buddhism when I discovered Tibetan art, especially the thanka paintings of the tantric deities. This was around the time, in 1967, when I began doing acid, which really opened me up to metaphysical and religious dimensions. In the late 1960s I (with many others) read the works of Lama Anagarika Govinda and of John Blofeld, and I came to believe that the deepest truths were surely to be found in Tibetan Buddhism.

I had some first-hand contact with the Tibetan tradition during my first visit to India in 1971. I continued on to Europe to study Jungian psychology, then returned to Australia in 1972 to do some graduate work in Kantian philosophy. I returned to Europe in 1974, where I met H. H. Sakya Trizin, the head of the Sakyapa Order of Tibetan Buddhism. I expressed to him my wish to study Tibetan Buddhism more deeply, and he suggested I return to North India (Dehra Dun) to study with him, which I did. I spent most of 1975-1979 studying with, and in the service of, this lama (who spoke good English). I also received teachings from another lama, H. H. Chogye Trichen Rimpoche, head of the Tsharpa branch of the Sakyapa tradition, and abbot of the Tibetan monastery at Lumbini in Nepal.

Q4. As a software developer and computer consultant, have you always been freelance, or did you ever work for large corporations? I am also curious about the nature of the 'three C function libraries' and the data encryption software package.

A4. I learned to program in FORTRAN IV in 1965, while working for a year with the Post Office in Melbourne. I did no programming during the 70s. In the early 80s I was a freelance software developer in California, and developed software for the Apple // which was published. Since then I have sometimes been employed at small or medium-sized

corporations and sometimes have been a freelance consultant or developer. In the mid-80s I got into MS-DOS software development and during the last five years I have programmed mainly in C.

In late 1989 I found myself in California, having just returned from 18 months in Europe, and was broke. The idea of getting a job and being a wage-slave for the rest of my life did not appeal to me. Instead I resolved to develop and publish software for a living. I managed to eke out a a bare existence while developing software on others' PCs, and during 1989-92 I created four C function libraries (these are tools useful to C programmers) and three application programs: a Maya calendrical conversion program, Timewave Zero (illustrating Terence McKenna's theory of time and history) and some data encryption software. The last incorporates an encryption method which I developed during 1990-92.

Q5. What are 'Psychedelic Monographs and Essays' and the 'Yearbook of Ethnomedicine and Consciousness Research'? Who puts them out? What is their audience? Their content?

A5. 'Psychedelic Monographs and Essays' (published by Thomas Lyttle, first issued in 1985) evolved from the 'Psychozoic Press' (published by Elvin D. Smith, first issued in 1982). Both were/are collections of essays and informative material dealing with all aspects of psychedelics and psychoactive plants and fungi, with occasional articles about psychedelic researchers and their work. The latest volume of Psychedelic Monographs and Essays is #6, and has articles classified under the headings of Spirituality, Psychotherapy, Literature, Parapsychology and Pharmacology. It is available from PM&E Publishing, P.O. Box 4465, Boynton Beach, FL 33424, for $20.00 postpaid within the U.S., $27.00 outside the U.S.

The 'Yearbook of Ethnomedicine and Consciousness Research' is similar. It is edited by the German anthropologist Dr. Christian Raetsch and contains some articles in English and some in German. The first volume was published in late 1992. It is available from the publisher, Amand Aglaster, VWB, Postfach 11 03 68, 1000 Berlin 61, Germany.

Q6. How did you get into psychedelic research? DMT research?

A6. My initial awareness of the existence of psychedelics came from reading Aldous Huxley's 'Doors of Perception' in 1966. I knew immediately that this was a field of research I wished to explore. My opportunity came a few months later when an artist friend in Melbourne informed me that some LSD had shown up. It was probably synthesized locally, and was quite impure, but blew me away. Life has never been the same since.

I know of nothing more interesting and worthy of study than the multitude of conscious states available through the use of psychedelics. Had psychedelic research not been made illegal (this is itself a crime against humanity) I would presumably have pursued my biochemical/- psychological/philosophical studies under the auspices of academia. Instead I abandoned the academic world for the study of Tibetan Buddhism in India and later got into software development in the U.S. and in Europe. But I have never ceased to do psychedelics occasionally, and sometimes frequently, garnering such information and understanding as I can under the circumstances.

A couple of years after I began doing acid I discovered the delights of marijuana and hashish, which subject I researched enthusiastically in Asia beginning in 1971 (when the

hash shops in Kathmandu were still open and legal, before they were closed down at the insistence of the U.S. Government). Morning glory seeds in 1974. In 1978 I discovered psilocybin mushrooms at Palenque in Mexico. In 1983 MDMA in Berkeley. In 1987 DMT in Hawaii. In 1988 Ketamine in Switzerland. In 1990 5-MeO-DMT in Berkeley.

My interest in DMT arose from hearing Terence McKenna speak of it in some of his taped talks (especially his *Tryptamine Hallucinogens and Consciousness*). My first experience with it was pretty strange; on my second I thought I was dying. My initial encounter on DMT with the alien entities did not come until two years later. As Terence has said, and which I can confirm, the DMT experience is the weirdest thing you can experience this side of the grave. The rational mind retreats in utter disbelief when confronted with it. Thus I resolved to research the topic, which I did during 1990-91 in Berkeley, where I had access to the Biosciences Library at U.C. Berkeley. I gathered reports from those few people I knew who had smoked it, and the article which resulted appeared simultaneously in each of the journals mentioned above.

The blurb for Timewave Zero:

This software illustrates Terence McKenna's theory of time, history and the end of history as first described in the book 'The Invisible Landscape' by him and his brother Dennis, and more recently in his 'The Archaic Revival' (HarperSanFrancisco, 1992) The theory of Timewave Zero was revealed to Terence by an alien intelligence following a bizarre, quasi-psychedelic experiment conducted in the Amazon jungle in Colombia in 1971. Inspired by this influence Terence was instructed in certain transformations of numbers derived from the King Wen sequence of I Ching hexagrams. This led eventually to a rigorous mathematical description of what Terence calls the timewave, which correlates time and history with the ebb and flow of novelty, which is intrinsic to the structure of time and hence of the temporal universe. A peculiarity of this correlation is that at a certain point a singularity is reached which is the end of history - or at least is a transition to a supra-historical order in which our ordinary conceptions of our world will be radically transformed. The best current estimate for the date of this point is December 21, 2012 CE, the winter solstice of that year and also the end of the current era in the Maya calendar.

The primary function of the software is to display any portion of the timewave (up to seven billion years) as a graph of the timewave related to the Western calendar (either Gregorian or Julian). You can display the wave for the entire 4.5-billion-year history of the Earth, note the peculiarities of the wave at such points as the time of the extinction of the dinosaurs (65 million years ago) and inspect parts of the wave as small as 92 minutes. The software provides several ways of manipulating the wave display, including the ability to zoom in on a target date or to step back to get the larger picture.

A remarkable quality of the timewave is that it is a fractal. Once a part of the wave is displayed the software allows you to expand any smaller part (down to 92 minutes). This usually reveals a complexity of structure which persists however much the wave is magnified, a property typical of fractals. The idea that time has a fractal structure (in contrast to the Newtonian conception of time as pure, unstructured duration) is a major departure from the common view of the nature of time and physical reality. That time is a

fractal may be the reason why fractals occur in Nature.

The documentation describes the origin, construction and philosophical significance of the timewave, the use of the software, the mathematical definition of the timewave (with proofs of some related mathematical theorems) and certain curious numerical properties.

An interesting part of the theory is the assertion of historical periods 'in resonance' with each other. Resonantly we have (in 1993) emerged from the fall of the Roman empire and are well into the transitional period known historically as the Dark Ages. The software permits graphical display of different regions of the timewave that are in resonance with each other. This allows the period 1945 - 2012 to be interpreted as a resonance of the period 2293 BC - 2012 CE. New in this version is the ability to graph trigrammatic resonances in addition to the major resonances, and to construct a sequential set of eleven trigrammatic resonances. There is a new appendix concerning some recent mathematical results.

The Timewave Zero software at last permits a scientific examination of Terence's long-standing claim to have discovered the root cause of the ups and downs of historical vicissitude. If his theory is confirmed then we can look forward to a rough, but very interesting, ride in the twenty years leading up to the climactic end-point of history in 2012. During this time the events of the period from 745 CE are expected to recur (albeit in modern form).

Timewave Zero software is available as Time Explorer for DOS or Time Surfer for Mac

Visit Peter Meyer's Serendipity

Terence McKenna Land
The Deoxyribonucleic Hyperdimension

C Code for Calculation of Timewave Values

by Peter Meyer

TW.C contains C code for the calculation of values of the timewave (a concept originated by Terence McKenna and described in the book *The Invisible Landscape* (1975) by him and his brother Dennis). The program has no special header file and may be compiled using only the standard C function libraries. This program calculates timewave values at any given point prior to the zero point using four different sets of 384 numbers.

The program is intended to be run from the DOS command prompt. When it is run with no command line parameters it prints the following help:

```
Use: TW days_to_zero_date days days ... [wf=nn]
wf = wave factor (default 64, range 2-10000)
```

This program lets you determine the value of the timewave at one or more points.

For example, TW 1 1000 1000000 will print the values of the wave at 1 day, 1000 days and 1,000,000 days prior to the zero point (whatever the zero point is chosen to be — e.g. 6 a.m. on 2012-12-21). In this case the output of the program is:

```
Wave factor = 64

The value of the timewave 1.0 day prior to the zero point is
0.0000036160151164 (Kelley)
0.0000036273683820 (Watkins)
0.0000023018746149 (Sheliak)
0.0000009423210507 (Huang Ti)

The value of the timewave 1000.0 days prior to the zero point is
0.0035158793131510 (Kelley)
0.0035394941057478 (Watkins)
0.0033364068894159 (Sheliak)
0.0006744748070126 (Huang Ti)

The value of the timewave 1000000.0 days prior to the zero point is
6.7844111124674482 (Kelley)
6.8762087140764505 (Watkins)
3.8658699762253534 (Sheliak)
0.3096306210472470 (Huang Ti)
```

You can also get the value of the wave at non-integral numbers of days prior to the zero point.

For example, TW 1.111 1000.0001 1000000.5 produces:

```
Wave factor = 64

The value of the timewave 1.1110 days prior to the zero point is
0.0000024919231154 (Kelley)
0.0000024927097918 (Watkins)
0.0000006936103202 (Sheliak)
0.0000038401365762 (Huang Ti)

The value of the timewave 1000.00010 days prior to the zero point is
0.0035158784089964 (Kelley)
0.0035394933484255 (Watkins)
0.0033364114727852 (Sheliak)
0.0006744742853641 (Huang Ti)

The value of the timewave 1000000.50 days prior to the zero point is
6.7844164371490479 (Kelley)
6.8762257099151611 (Watkins)
3.8658915162086487 (Sheliak)
0.3096294403076172 (Huang Ti)
```

The [wf=nn] means that this is an optional parameter but if you include e.g. wf=80 on the command line then a wave factor of 80 will be used. This directive can be included anywhere among the command line parameters.

For example, TW 1.111 1000.0001 1000000.5 wf=24 produces:

```
Wave factor = 24

The value of the timewave 1.1110 days prior to the zero point is
0.0001721403086659 (Kelley)
0.0001736328128302 (Watkins)
0.0000952644401080 (Sheliak)
0.0000365698543596 (Huang Ti)

The value of the timewave 1000.00010 days prior to the zero point is
0.0516854600694444 (Kelley)
0.0498047019675926 (Watkins)
0.0464832272376543 (Sheliak)
0.0428965639467593 (Huang Ti)

The value of the timewave 1000000.50 days prior to the zero point is
94.6666450657471610 (Kelley)
94.6666470751350180 (Watkins)
41.5564136897585360 (Sheliak)
```

44.2094374919624470 (Huang Ti)

The theory of the timewave as developed by Terence McKenna is either future science, pseudoscience, a parody of science or complete rubbish (take your pick). The four timewaves are: Kelly = the original timewave, Timewave Zero (1975). Watkins = the original timewave without the half-twist (c. 1994). Sheliak = Timewave One (c. 1997). Huang Ti = the timewave according to the Yellow Emperor, Huang Ti (rediscovered c. 1998). No further explanation will be given except to refer interested readers with time on their hands and nothing better to do to The Mathematical Definition of the Timewave.

The source code (TW.C), the 32-bit executable (TW.EXE) and four files with the four sets of 384 numbers are included in TW.ZIP (which may be downloaded by clicking on the link). This code was placed by the author in the public domain in 1998 or thereabouts.

Last modified: Norasday, 10 Davithe 99, 4 Abrasax 96 (a.k.a. 2000-12-26 CE)

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```
//  TW.C
//  Author: Peter Meyer
//  Calculates the value of the timewave at a point.
//  Last mod.: 2000-12-27

//  This code replaces the previous version of 1998-01-05
//  which was written for 16-bit Intel machines.
//  The only changes are to the mult_power() and div_power()
//  functions, which are now machine-independent.
//  This code produces the same values as the 16-bit software.

#include <math.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>

#define FALSE 0
#define TRUE  1
#define NUM_POWERS 48
#define PREC 16
#define NUM_SETS 4
#define NUM_DATA_POINTS 384
#define CALC_PREC       10   /*  precision in calculation  */
                             /*  of wave values            */

double powers[NUM_POWERS];
//  Powers of (normally) 64.
```

```
//  Due to the limitations of double precision
//  floating point arithmetic these values are
//  exact only up to powers[8] for powers of 64.

int wave_factor = 64;   //  default wave factor
int number_set;

char *usage = "\nUse: TW days_to_zero_date days days ... [wf=nn]."
  "\nwf = wave factor (default 64, range 2-10000)\n";

char temp[32];

char *set_name[NUM_SETS] = { "Kelley", "Watkins", "Sheliak", "Huang Ti" };

//  The number sets.
int w[NUM_SETS][NUM_DATA_POINTS] =
{
  {
#include "DATA.TW1" //  half-twist
  },
  {
#include "DATA.TW2" //  no half-twist
  },
  {
#include "DATA.TW3" //  Sheliak
  },
  {
```

```
#include "DATA.TW4" //  Huang Ti
  }
};

void set_powers(void);
double f(double x, int number_set);
double v(double y, int number_set);
double mult_power(double x, int i);
double div_power(double x, int i);

/*-----------------------------*/
void main(int argc, char *argv[])
{
double dtzp;
int i, j, ch;

if ( argc == 1 )
    {
    printf("%s",usage);
    exit(1);
    }

for ( i=1; i<argc; i++ )
    {
    strlwr(argv[i]);
    if ( !memcmp(argv[i],"wf=",3) )
        {
```

```
            wave_factor = atoi(&argv[i][3]);
            if ( wave_factor < 2 || wave_factor > 10000 )
            {
            printf("%s",usage);
            exit(2);
            }
        }
    else
        {
        ch = argv[i][0];
        if ( ! ( ( ch == '.' )
         || ( (unsigned int)(ch-'0') <= 9 ) ) )
            {
            printf("%s",usage);
            exit(3);
            }
        }
    }

    set_powers();
    printf("\nWave factor = %d\n",wave_factor);

    for ( i=1; i<argc; i++ )
        {
        if ( memcmp(argv[i],"wf=",3) )
            {
            dtzp = atof(argv[i]);
```

```
            sprintf(temp,"%.*f",PREC,dtzp);
            j = strlen(temp) - 1;
            while ( ( temp[j] == '0' ) && j > 0 )
                temp[j--] = 0;
            strcat(temp,"0 day");
            if ( dtzp != 1.0 )
                strcat(temp,"s");
            printf("\nThe value of the timewave %s prior to the zero point
is\n",temp);
            for ( number_set=0; number_set<NUM_SETS; number_set++ )
                printf("%.*f (%s)\n",PREC,f(dtzp,number_set),set_name[number_set]);
            }
        }
    }


    //  wave_factor is a global variable
    /*-----------------*/
    void set_powers(void)
    {
    unsigned int j;


    /*  put powers[j] = wave_factor^j  */


    powers[0] = (double)1;
    for ( j=1; j<NUM_POWERS; j++ )
        powers[j] = wave_factor*powers[j-1];
    }
```

```
/*  x is number of days to zero date  */
/*--------------*/
double f(double x,
         int number_set)
{
register i;
double sum = 0.0, last_sum = 0.0;

if ( x )
    {
    for ( i=0; x>=powers[i]; i++ )
    sum += mult_power(v(div_power(x,i),number_set),i);

    i = 0;
    do
        {
        if ( ++i > CALC_PREC+2 )
            break;
        last_sum = sum;
        sum += div_power(v(mult_power(x,i),number_set),i);
        } while ( ( sum == 0.0 ) || ( sum > last_sum ) );
    }

/*  dividing by 64^3 gives values consistent with the Apple // version
 *  and provides more convenient y-axis labels
 */
```

```
   sum = div_power(sum,3);


   return ( sum );
   }


   /*--------------*/
   double v(double y,
            int number_set)
   {
   int i = (int)(fmod(y,(double)NUM_DATA_POINTS));
   int j = (i+1)%NUM_DATA_POINTS;
   double z = y - floor(y);


   return ( z==0.0 ? (double)w[number_set][i] :
       ( w[number_set][j] - w[number_set][i] )*z + w[number_set][i] );
   }


   /*------------------------*/
   double mult_power(double x,
                     int i)
   {
   x *= powers[i];


   return ( x );
   }


   /*----------------------*/
```

```
double div_power(double x,
                 int i)
{
x /= powers[i];


return ( x );
}
```

```
//  TW.C
//  Author: Peter Meyer
//  Calculate the value of the timewave at a point.

//  N.B.  This is older code (written 1998-01-05) which was developed
//  for 16-bit Intel machines, where an int was two bytes.
//  It will not give correct results when compiled on a 32-bit machine.
//  This code is preserved here because it records
//  an interesting way of speeding up the calculation;
//  see the mult_power() and div_power() functions.
//  This code has been superseded by TW.C.

#include <MATH.H>
#include <STDIO.H>
#include <STDLIB.H>
#include <STRING.H>

#define FALSE 0
#define TRUE  1
#define NUM_POWERS 48
#define PREC 16
#define NUM_SETS 4
#define NUM_DATA_POINTS 384
#define CALC_PREC       10   /*  precision in calculation  */
                             /*  of wave values            */

double powers[NUM_POWERS];
```

```
//  Powers of (normally) 64.
//  Due to the limitations of double precision
//  floating point arithmetic these values are
//  exact only up to powers[8] for powers of 64.

int wave_factor = 64;   //  default wave factor
int number_set;

char *usage = "\nUse: TW days_to_zero_date days days ... [wf=nn]."
  "\nwf = wave factor (default 64, range 2-10000)\n";

char temp[32];

char *set_name[NUM_SETS] = { "Kelley", "Watkins", "Sheliak", "Huang Ti" };

//  The number sets.
int w[NUM_SETS][NUM_DATA_POINTS] =
{
  {
#include "DATA.TW1" //  half-twist
  },
  {
#include "DATA.TW2" //  no half-twist
  },
  {
#include "DATA.TW3" //  Sheliak
  },
```

```
  {
#include "DATA.TW4" //  Huang Ti
  }
};

void set_powers(void);
double f(double x, int number_set);
double v(double y, int number_set);
double mult_power(double x, int i);
double div_power(double x, int i);

/*-----------------------------*/
void main(int argc, char *argv[])
{
double dtzp;
int i, j, ch;

if ( argc == 1 )
    {
    printf("%s",usage);
    exit(1);
    }

for ( i=1; i<argc; i++ )
    {
    strlwr(argv[i]);
    if ( !memcmp(argv[i],"wf=",3) )
```

```
            {
            wave_factor = atoi(&argv[i][3]);
            if ( wave_factor < 2 || wave_factor > 10000 )
            {
            printf("%s",usage);
            exit(2);
            }
        }
    else
        {
        ch = argv[i][0];
        if ( ! ( ( ch == '.' )
         || ( (unsigned int)(ch-'0') <= 9 ) ) )
            {
            printf("%s",usage);
            exit(3);
            }
        }
    }

    set_powers();
    printf("\nWave factor = %d\n",wave_factor);

    for ( i=1; i<argc; i++ )
        {
        if ( memcmp(argv[i],"wf=",3) )
            {
```

```
            dtzp = atof(argv[i]);
            sprintf(temp,"%.*f",PREC,dtzp);
            j = strlen(temp) - 1;
            while ( ( temp[j] == '0' ) && j > 0 )
                temp[j--] = 0;
            strcat(temp,"0 day");
            if ( dtzp != 1.0 )
                strcat(temp,"s");
            printf("\nThe value of the timewave %s prior to the zero point
is\n",temp);
            for ( number_set=0; number_set<NUM_SETS; number_set++ )
                printf("%.*f (%s)\n",PREC,f(dtzp,number_set),set_name[number_set]);
            }
        }
    }


    //  wave_factor is a global variable
    /*-----------------*/
    void set_powers(void)
    {
    unsigned int j;


    /*  put powers[j] = wave_factor^j  */


    powers[0] = (double)1;
    for ( j=1; j<NUM_POWERS; j++ )
        powers[j] = wave_factor*powers[j-1];
```

```
}

/*  x is number of days to zero date  */
/*--------------*/
double f(double x,
         int number_set)
{
register i;
double sum = 0.0, last_sum = 0.0;

if ( x )
    {
    for ( i=0; x>=powers[i]; i++ )
    sum += mult_power(v(div_power(x,i),number_set),i);

    i = 0;
    do
        {
        if ( ++i > CALC_PREC+2 )
            break;
        last_sum = sum;
        sum += div_power(v(mult_power(x,i),number_set),i);
        } while ( ( sum == 0.0 ) || ( sum > last_sum ) );
    }

/*  dividing by 64^3 gives values consistent with the Apple // version
 *  and provides more convenient y-axis labels
```

```
    */
   sum = div_power(sum,3);


   return ( sum );
   }


   /*--------------*/
   double v(double y,
            int number_set)
   {
   int i = (int)(fmod(y,(double)NUM_DATA_POINTS));
   int j = (i+1)%NUM_DATA_POINTS;
   double z = y - floor(y);


   return ( z==0.0 ? (double)w[number_set][i] :
       ( w[number_set][j] - w[number_set][i] )*z + w[number_set][i] );
   }


   /*  in order to speed up the calculation, if wave factor = 64
    *  then instead of using multiplication or division operation
    *  we act directly on the floating point representation;
    *  multiplying by 64^i is accomplished by adding i*0x60
    *  to the exponent (the last 2 bytes of the 8-byte representation);
    *  dividing by 64^i is accomplished by subtracting i*0x60
    *  from the exponent
    */
```

```
/*-----------------------*/
double mult_power(double x,
                  int i)
{
int *exponent = (int *)&x + 3;

if ( wave_factor == 64 )
    *exponent += i*0x60;    /*  measurably faster  */
else
    x *= powers[i];

return ( x );
}

/*-----------------------*/
double div_power(double x,
                 int i)
{
int *exponent = (int *)&x + 3;

if ( ( wave_factor == 64 ) && ( *exponent > i*0x60 ) )
    *exponent -= i*0x60;
else
    x /= powers[i];

return ( x );
}
```