Journal of Research in Philosophy and History
Vol. 7, No. 2, 2024
www.scholink.org/ojs/index.php/jrph
ISSN 2576-2451 (Print) ISSN 2576-2435 (Online)

Original Paper

Culture Level Quotient (CLQ) 2025

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Received: July 16, 2024 Accepted: August 5, 2024 Online Published: September 18, 2024

doi:10.22158/jrph.v7n2p96 URL: http://dx.doi.org/10.22158/jrph.v7n2p96

Abstract

The deficiency of today's science and mathematics becomes obvious from the point of view of the 16 Methods of Reason of Culture Level Quotient (CLQ) of post-science. Post-science has bridged the gap between mathematical and/or logical rigor and reality. The scientific method based on empirical verification is not the only method for discovering knowledge of reality. Methods of reason accept different standards of rigor under different cultures. In particular, social and life sciences involve infinity and permanence, which cannot be empirically verified, and their solutions need to be accepted based on complete mathematical and/or logical rigor. There are 16 distinct methods of reasoning that can be identified and can be used to measure the cultural level of a person or a society. The 16 Methods of Reason are the combination of the 4 basic methods of reasoning: 1) Logic, 2) Mathematics, 3) Empirical Verification, and 4) Faith, each of which has 2 forms: 1) Incomplete and 2) Complete and two types: 1) Exact and 2) Fuzzy. The 16 Methods of Reason are arranged in the order of cultural level from the lowest 1 dealing with problems of lowest complexity to the highest 16 dealing with problems of greatest complexity.

Keywords

science, post-science, culture, reason, mathematics, fuzzy logic, complexity, religion

1. Introduction

In the aftermath of the Great Depression, many leading mathematicians, such as John von Newmann, Kenneth Arrow, Gerard Debreu, and John Nash attempted to put economics on a rigorous basis. Their efforts have just recently produced some practical tangible results by Post-Science Institute under the leadership of Hugh Ching, and his mentors Lotfi A. Zadeh, Paul Feyerabend, Ta-You Wu, Kenneth Arrow, Gerard Debreu, Milton Friedman, Harold Grad, Tosiyasu Lawrence Kunii, Chittoor V. Ramamoorthy, and K. T. Li. Post-Science Institute works on real-world problems and its criticisms of today's reality might offend both the mathematicians, who refuse to get their feet wet to learn the real

world, and the real-world practitioners, who are unwilling or unable to get rigorous training in mathematics or logic. The tangible results are in the form of infallible predictions of the real estate market and a complete view of what it takes to predict the stock market. The solution to the problem of value posed by Gerard Debreu was disclosed in the patent by Hugh Ching "Quantitative Supply and Demand Model Based on Infinite Spreadsheet" (Pat. No. 6,078,901) and commercialized in the Infinite Spreadsheet Valuation Software, such as demonstrated in http://123is.com/verify.htm, which has been shown to be infallible in predicting real estate overvaluation, which is the main cause of the Savings and Loan Crisis and the Subprime Woe. The stock market prediction was finally completed after COVID-19; it took four stages: (1) Infinite Spreadsheet Stock Rate of Return Calculation, which needs a double iterative loop, one for the price and the other for the rate of return, and is demonstrated at http://123is.com/stock.htm, (2) Quantitative Supply and Demand Model of Debreu, (3) Quantity Theory of Money by Milton Friedman, and (4) Game Theory by John von Neumann. The prediction of the crash of the real estate market needs the support of the "Fuzzy Completeness Theory" of Hugh Ching, which was the first to introduce the 16 Methods of Reason designed for the "Culture Level Quotient" of Ching. In conclusion, infallible economic predictions based on the rigorous solution of value open the door for mathematicians to be in complete charge of social science.

Fundamentally, science is in the process of gradually being replaced by post-science, dealing with social and life sciences. The Scientific Method is characterized by (1) exact constants of nature and (2) empirical verification of these constants. Post-science deals with social and life sciences involving (1) inexact fuzzy data with a finite range of tolerance and (2) non-empirical verification due to the involvement of infinity, which never arrives for collecting deterministic sets of data. Rational policies and behavior in social science must take into consideration all the expected consequences to infinity. DNA in life science is designed for permanent existence, and the requirement of permanence can be satisfied by complete automation, which characterizes life. Non-empirical verification is illustrated in the solution of value, and the solution of software disclosed in the patent "Completely Automated and Self-generating Software System" (Pat. No. 5,485,601) with applications at http://www.software-cell.com. Post-science before 2007 and prior to the introduction of fuzzy logic into post-science is discussed in the book Knowledge and the paper "Knowledge-Oriented Society". Fuzzy Logic is explained in "Fuzzy Logic, the Genius of Lotfi A. Zadeh" by Hugh Ching. Basically, the advancement from science to post-science involves: (1) Fuzzy logic with a finite range of tolerance should replace exact logic with a zero range of tolerance as the foundation of knowledge and (2) non-empirical verification replaces empirical verification with complete mathematical and logical rigor as the requirement of acceptance of solutions in social and life science. They are two clearcut breakthrough post-science concepts against the established knowledge dominated by science.

Most importantly, the human cultural level should and is ready to advance from the current culture of science into the next culture of social science when completely mathematically rigorous solutions in social science will regulate the behavior of humans, as empirically verified laws of nature in science

today regulate the behavior of material objects. And mathematicians are needed to understand and develop these completely mathematically rigorous solutions in social science.

2. 16 Methods of Reason defining Culture Level Quotient (CLQ)

The 16 Methods of Reason are the combination of the 4 basic methods of reasoning: 1) Logic, 2) Mathematics, 3) Empirical Verification, and 4) Faith, each of which has 2 forms: 1) Incomplete and 2) Complete and two types: 1) Exact and 2) Fuzzy. 16 comes from 4 x 2 x 2 = 16. The 16 Methods of Reason are arranged in the order of cultural level from the lowest 1 dealing with problems of lowest complexity or least number of variables to the highest 16 dealing with problems of greatest complexity or most variables. In terms of Cultural Level Quotient (CLQ) from 1 to 16, science is CLQ=10, which is the current highest human cultural level and represents the establishment with Complete Exact Empirical Verification dealing with around 5 variables. Science will advance into CLQ=14, which contains the solutions of robot touch based on the new physics concepts of jumpulse and of the plasma fluid based on Generalized Fluid Description into a fuzzy Self-Manufactured General-Purpose Robot and cosmos with an unlimited number of variables. Mathematics relates to four CLQs: 3. Incomplete Exact Mathematics, 7. Incomplete Fuzzy Mathematics, 11. Complete Exact Mathematics, a level above science, and 15. Complete Fuzzy Mathematics. Today's mathematics is CLQ=3 and is incomplete in terms of solutions of reality, but exact. CLQ=7 employs fuzzy logic to allow the terminology in CLQ=3 to be defined within finite ranges of tolerance, overcoming the logical objections on definitions raised by the Two Incompleteness Theorem of Kurt Godel, Russell's Paradox of Bertrand Russell, and The Impossibility Theorem of Kenneth Arrow. CLQ=11 is illustrated with a complete exact rigorous solution of value or an infinite spreadsheet, while a finite spreadsheet represents a non-deterministic solution of reality CLQ=3 with exact data, but incomplete, characterizing, in terms of reality, the spirit of today's entire field of mathematics. CLQ=3 should advance to CLQ=7 where fuzzy logic allows mathematics to define its terminologies without the constraint of completeness. CLQ=7 should advance to CLQ=11 to solve mathematics problems of reality or the real world in their entirety or with complete mathematical rigor. CLQ=11 should advance to CLQ=15, which is illustrated by real estate and stock predictions with the fuzzy completely mathematically rigorous solution of value. CLQ can be used for measuring an individual or a society. The 16 Methods of Reason identify CLQ with examples in brackets:

1). Exact Incomplete Faith (<= 2 Variables) (e.g., Religion of Morality)

2). Exact Incomplete Empirical Verification (3 Variables)(e.g., Manmade Laws)

3). Exact Incomplete Mathematics (3 Variables) (e.g., Mathematics)

4). Exact Incomplete Logic (3 Variables) (e.g., Logic)

5). Fuzzy Incomplete Faith (4 Variables) (e.g., Religion of Science)

6). Fuzzy Incomplete Empirical Verification (4 Variables) (e.g., Engineering)

7). Fuzzy Incomplete Mathematics (4 Variables) (e.g., Mathematical Economics)

8). Fuzzy Incomplete Logic (4 Variables) (e.g., Fuzzy Search)

9). Exact Complete Faith (5 Variables) (e.g., Religion, Faith in Devine Laws)

10). Exact Complete Empirical Verification (5 Variables) (e.g., Scientific Method)

11). Exact Complete Mathematics (50 Variables) (e.g., Social Science)

12). Exact Complete Logic (500 Variables) (e.g., Life Science)

13). Fuzzy Complete Faith (Unlimited Variables) (e.g., Religion of Knowledge)

14). Fuzzy Complete Empirical Verification (Unlimited Variables) (e.g., Self-manufactured General-Purpose Robots with the ability to touch and developed and controlled by completely automated software. Ultimately, the robot will become human, and the software, DNA in Self-Creation CLQ = 16)

15). Fuzzy Complete Mathematics (Unlimited Variables) (e.g., Predictive Social Science)

16). Fuzzy Complete Logic (Unlimited Variables) (e.g., Self-Creation)

The above ranking can be logically calculated and remembered by adding up the numbers representing each of the characteristics: Exact (zero tolerance) = +0, Incomplete (partial reasoning) = +0, Fuzzy (finite tolerance) = +4, Complete (deterministic) = +8, Faith = +1, Empirical Verification = +2, Mathematical Rigor = +3, Logical Rigor = +4.

CLQ is graphically presented in Figure 1. CLQ also provides guidance in the Obviousness Theory of Proof, in which each CLQ subscribes to its standard of obviousness. For example, the demonstration of the Infinite Spreadsheet http://123is.com/verify.htm is more likely to convince people, even mathematicians, than the rigorous derivation http://postscience.com/ispatent.pdf. Mathematics and logic have the strictest requirement for obviousness, but only at CLQ =3 and CLQ = 4. Post-science is trying to raise them to CLQ =11 and CLQ =12 by making them completely rigorous.

From the point of view of CLQ, post-Science is making a complete break from science by advancing from finite to infinite, from temporary to permanent, and from exact logic to fuzzy logic, as itemized below; it sees the future from the future, not the present, which is dominated by science:

Breakthrough vs. The Establishment; Knowledge-Oriented Society vs. Money-Oriented Society; Thinkers vs. Doers; Post-Science vs. Science; Infinite Spreadsheet vs. Finite Spreadsheet; Long-term as well as short-term and socially beneficial non-monetary as well as short-term monetary returns vs. just short-term monetary returns; Visible Hand vs. Invisible Hand; Complete Automation vs. Partial Automation; Universal Permanent Software vs. Artificial Software Standard; Universal Permanent Money vs. Fiat Currency; Jumpulse vs. Impulse; Self-Manufactured General-Purpose Robot with the ability of Touch vs. Intelligent Machine; Self-Generated Neural Network of Unlimited Software Cells vs. Artificial General Intelligence; Mathematical Social Science vs. Non-Mathematical Social Science; Logical Life Science vs. Experimental Life Science; DNA Intelligence vs. Human Intelligence; Self-Creation vs. Theory of Evolution; Post-Science Medicine vs. Western Medicine; Forward-Looking Valuation vs. Backward-Looking Peer Review Process; Fuzzy Logic vs. Exact Logic.

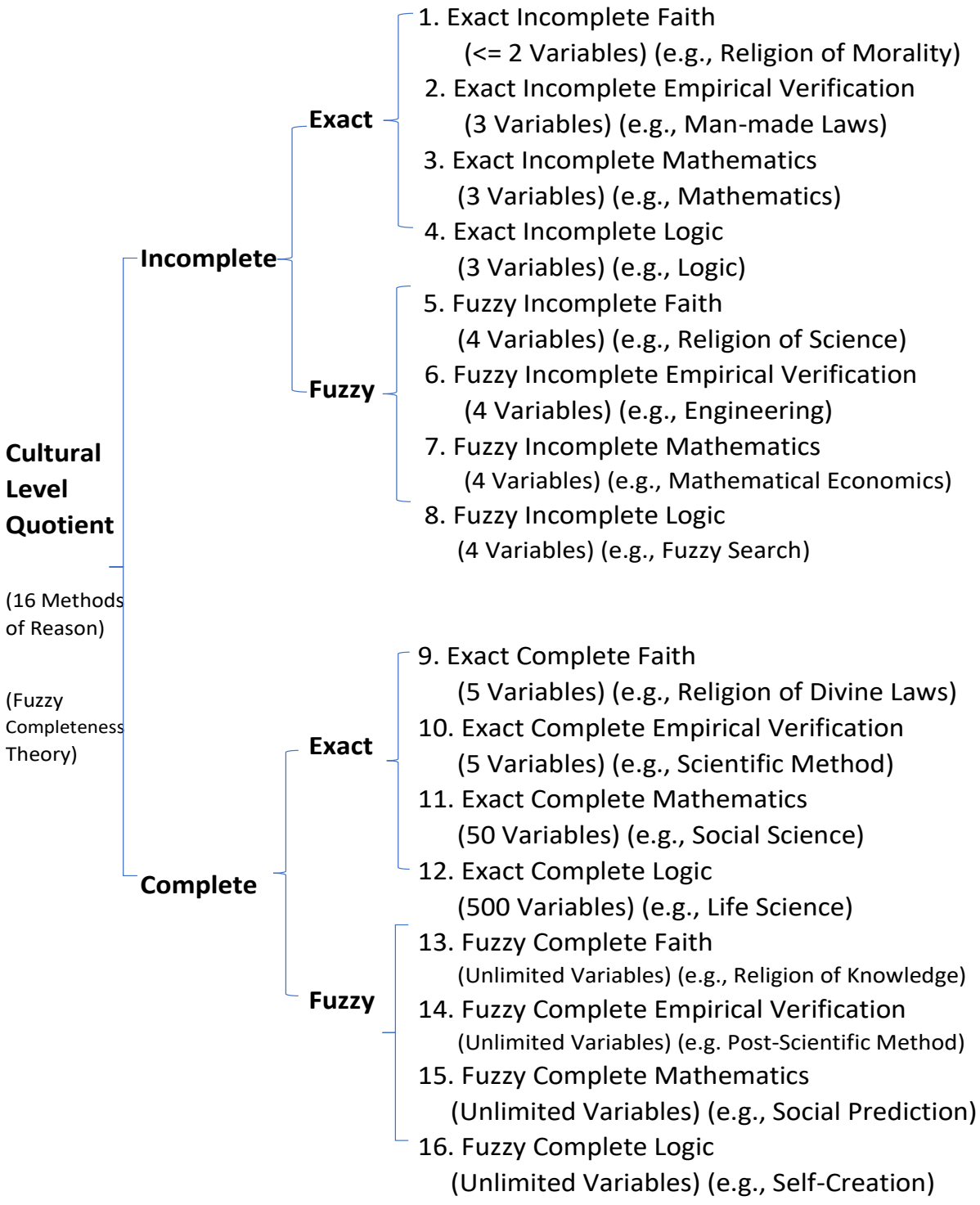


Figure 1. Culture Level Quotient Based on 16 Methods of Reason

The post-science breakthroughs to be overcome by the current knowledge establishment are presented below with their CLQ.

1). Solution of Robot Touch or the Contact Problem: 25 variables CLQ=14

2). Mathematical Social Science: 50 variables CLQ=11

3). Logical Life Science: 500 variables CLQ=12

4). Fuzzy Logic: Unlimited number of variables, Forever-changing problems of reality due to the uncertain future CLQ from 5 to 8 and 13 to 16.

In the 21st century, most people can handle their daily problems dealing with about 3 variables. Businessmen capable of handling 4 variables can surpass most people and get rich. Scientists can connect 5 variables in a deterministic relationship. The above 5 variables are thinkers. The solution of value connects around 50 variables in a mathematically rigorous relationship, as can be seen by counting the inputs and the output in the Infinite Spreadsheet. However, in the current Money-Oriented Society, a vision of Milton Friedman, the best thinkers become billionaires rather than people of knowledge. Animals, insects, and birds usually need to deal with just 2 variables, such as fight or flight. Their cultural level is outside of the chart of the 16 Methods of Reason; the cultural level might be CLQ=0. On the other end of the spectrum, Alien, and our creators, who can program DNA to create a human, can handle an unlimited number of variables; the cultural level might be CLQ=17 and beyond, representing infinite wisdom.

From CLQ=16 dealing with mankind's self-creation, which originates from CLQ=4 dealing with logic, CLQ=8 dealing with fuzzy logic with incomplete logic, CLQ=12 dealing with complete automation and exact logic, and the cosmos developed through chance and DNA developed through design will never be deciphered in their full details because the cosmos has an infinite history, and DNA contains wisdom accumulated from the infinite past. Humans are created with the ability to build tools, which should be able to do better jobs than themselves, such as a hammer for hammering and a computer for computing, eventually AI for applying intelligence, but humans are still superior to all of them, until humans can self-create.

3. Mathematical Social Science

Hugh Ching solved the problem of value posed by Gerard Debreu in Debreu's book Theory of Value: An Axiomatic Analysis of Economic Equilibrium and demonstrated the solution of value for real estate http://123is.com/verify.htm and stock rate of return calculations http://123is.com/stock.htm. The solution of value is disclosed in the patent: Hugh Ching "Quantitative Supply and Demand Model Based on Infinite Spreadsheet" (Pat. No. 6,078,901). However, Kenneth Arrow raised the missing piece of Debreu's solution to Hugh Ching on page 34 of Debreu's book: "What's wrong with the discounted method?" Hugh Ching's valuation software has publicly predicted for the Fed both the Savings and Loan Crisis and the Subprime Woe by detecting the overvaluation of the real estate market. Recently, the world is again on the cusp of financial turmoil with an increasing chance of a global financial crisis due to high price fluctuations. Two solutions are currently being debated at the Federal Reserve Board:

(1) Invisible hand: Allowing market crashes or recessions which are caused by supply and demand to adjust the price to an equilibrium level and which are bound to happen if unchecked because overvaluation is economic instability, and (2) Solution of value: Calculation of an economic equilibrium by the solution of value to keep the price always at the equilibrium level away from market crashes, making the invisible hand visible.

Post-science bridges the gap in the understanding and misunderstanding between mathematicians and the public with his breakthrough contributions in Mathematical Social Science. Solutions in science are accepted based on empirical verification. Involving infinity for deterministic solutions, the solutions in social science are no longer empirically verifiable because infinity never arrives. Therefore, solutions in social science are accepted based on complete mathematical rigor. Fuzzy logic, which, with a finite range of tolerance, should replace exact logic, with a zero range of tolerance, as the new foundation of knowledge of reality, and which resolves Kurt Godel's Two Incompleteness Theorem, Bertrand Russell's Russell Paradox and Kenneth Arrow's Impossibility Theorem and makes all solutions complete, as long as their ranges of tolerance are specified, Hugh Ching's formulation of the Fuzzy Completeness Theory, which classifies Culture Level Quotient based on 16 methods of reason, and Hugh Ching's ongoing research in the Obviousness Theory of Proof, which distinguishes the level of obviousness based on, at least, the 16 levels in the Culture Level Quotient and can finally explain the misunderstanding of mathematics by the general public and greatly expand the spectrum of knowledge to be studied under mathematics, opening it to the world and the world to it.

Current mathematics is rigorous but incomplete. Mathematicians generally block the perception and are not able to see the complete picture of reality. Post-science denounces that empirical verification is the only justification of a solution, as can be verified by a completely mathematically rigorous solution of value and a completely logically rigorous solution of completely automated software. Solutions in social science are accepted based on complete mathematical rigor, and solutions in life science or computer science are accepted based on complete rigor in logic. It is imperative that complete mathematical rigor be brought to bear on social science, and that mathematicians realize their ultimate destiny is in solving problems in social science.

The mathematician must gain experience as a real-world practitioner to work on problems of reality. For example, according to theory and the application of the Infinite Spreadsheet, the logical method of setting the interest rate is:

$$\text{Rate of Return } (Ri\%) > \text{Interest Rate } (Ii\%) > \text{Inflation Rate } (Fi\%)$$

where the rates i are different for the different sectors i of the economy. The Rate of Return on Investment (Ri%) can only be determined by the solution of value, as in the Infinite Spreadsheet Stock Rate of Return Calculation demonstrated at http://123is.com/stock.htm.

The price is generally determined by supply and demand. The quantitative solution of value, expressed in the form of the price or the rate of return, is the solution to the problem of value posed by Kenneth Arrow and Gerard Debreu in Debreu's book Theory of Value, An Axiomatic Analysis of the General

Economic Equilibrium. The price should be kept permanently in equilibrium within the range of tolerance of the market to prevent any possibility of a market crash. And with access to the solution of value, investors, public agencies, and all market participants can always calculate the equilibrium price continually with the continually changing market expectation. On the other hand, overvaluation, undervaluation, inflation, etc. are economic instabilities, which grow, such as due to the Finite Spreadsheet Instability, until the market crashes. The solution of value will bring the current Money-Oriented Society, which forces people to seek only short-term and monetary returns, to a Knowledge-Oriented Society, which allows people to work for long-term, as well as short-term, and socially beneficial non-monetary, as well as just monetary, returns.

The goal of an economy is to maximize the rate of return, which can only be calculated by the solution of value. The highest rate of turn is obtained from innovations but has also the highest risks and, thus, should be funded by the public. The public funding agency needs to encourage innovations, and the expected rate of return should be calculated by the solution of value to justify public funding.

Completely mathematically or logically rigorous solutions in social science will advance the current Age of Science into the coming Age of Social Science. Hugh Ching has solved the problem of value posed by Kenneth Arrow and Gerard Debreu in Debreu's book Theory of Value. Debreu's solution is based on Brouwer's fixed-point theorem starting with that if the agent's preference function f satisfies the following conditions:

Completeness: f(A,B)+f(B,A)=1

Quadruple Condition: f(A,B) <= f(C,D) f(A,C) <= f(B,D)

Continuity: if f(A,B) <= q <= f(A,D) then there exists C such that: f(A,C)=q.

Then there exists a cardinal utility function u that represents f, i.e.:

f(A,B) <= f(C,D) u(A)-u(B) <= u(C)-u(D).

Debreu has basically shown the qualitative supply and demand model:

$$Q(Ps)=\int_{Ps}^{\infty} q(p_s)dp_s \qquad Q(Pd)=\int_{-\infty}^{Pd} q(p_d)dp_d$$

where Q or q=Quantities and P or p=price with the subscript s or d represents supply(ask) or demand(bid) and where monetary policies can influence future quantity $q'(p)\approx((V'M'P)/(VMP'))q(p)$ based on the Quantity Theory of Money: (Price)(Quantity)≈(Velocity of Circulation(V))(Money Supply(M)). Debreu's discounted cash flow model on page 34 is insufficient, according to Arrow and Hugh Ching. The price and all the resale prices of a single commodity must satisfy the forward accounting equation to infinity:

Cash Return on Investment = (Sum of Cash Flows)+(Cash from Resale)

where the value or u is quantified in terms of the price or the rate of return by the Infinite Spreadsheet. The condition at infinity provides the necessary equation to make the number of equations equal to the

number of unknowns or the solution deterministic. Inputs from infinity cannot be exact; they must be approximate or fuzzy. Thus, precision is sacrificed in order to achieve the deterministic solution. Fundamentally, in dealing with infinity, the solution of value cannot be empirically verified simply because infinity never arrives. The solution of value has predicted S&L Crisis and the Subprime Woe, for mathematics cannot be wrong. Mathematics is for social science, but solutions, not empirically verifiable, must be accepted based on complete mathematical rigor. However, complete rigor is often impossible in the real world. The following discussion quotes from "Ching Paradox" and presents a real-world situation of consideration to infinity in real estate valuation. The Ching Paradox supports the forward-looking view in decision-making with its belief that the peer review process filters out truly original ideas which should have no peers.

"Almost all the stock investors know about the P/E Ratio, and most stockanalysts, including, particularly, Fed Chairman Alan Greenspan, use theequation return = dividend/price + growth ($r_0 = d_0E_0/P_0 + g_1$). In real estate, the P/E ratio is equivalent to the inverse of the capitalization rate, Net Income/Price. Therefore, a rigorous mathematical derivationof these two equations is long overdue. Most importantly, the derivation starts from the same equation based on which the Infinite Spreadsheet is derived. The equation used to derive all three equations, namely, the zero-th order equation of P/E Ratio, the first order equation of $r_0 = d_0E_0/P_0 + g_1$, and the Infinite Spreadsheet is simply the exact realistic forward accounting of cash flow including the cash from resale.
P/E Ratio, instead of P/D Ratio, is used simply because D (Dividend) for many stocks is zero. The inadequacy of the zero-th order equationis obvious. P/E Ratio is unaffected by the growth rate of earnings, inaddition to the use of E, which is the net income to the stock company,not of D which is the real cash return to the stock investor.
Now with all three equations available and mathematically interpreted, it might be interesting to compare their results. It should be noted that all three equations calculate the rate of return on investment to the stock investor. In this regard, Net Income is the term used in realestate and is, respectively, the earnings and dividend for a company anda stock investor. Similarly, the P/E or P/D ratio corresponds to the inverse of the Capitalization Rate in real estate, which is the Net Income divided by the price. The rate of return, especially for the stock market where the price in the form of the quote is given on the second, is really the only remaining unknown to be determined. Using the stock POT as an example, the zeroth equation P/E = 33, which translates into return = E/P = 3%, the first order return $r_0 = d_0E_0/P_0 + g_1 = 73\%$ and, the Infinite Spreadsheet calculates a return based on a 5-years growth rate of 70% to be around 115%. The Infinite Spreadsheet has, thus, calculated P/E Ratio and r_0 exactly. In 2004, POT doubled its price, a 100% increase. However, the rate of return has a short-term one-year investment period and needs to be recalculated any time there is a material change in the future expectation.

The main reason that the three rates of return are all useful is that they are all approximately time-invariant, which can be used as market comparable inputs. However, only the Infinite Spreadsheet can calculatethe absolute rate of return, with the other two being only relative indicators. Another practical advantage of the Infinite Spreadsheet isthat it is completely mathematically rigorous and, thus, can take over the responsibility of analyst. On the other end, SEC can take the responsibility of the inputs to the Infinite Spreadsheet, leaving the analyst totally free of responsibility. In addition to being mathematical rigor, the Infinite Spreadsheet discloses all its methodology (in a patent) and equations, and all its inputs to infinityin time, resulting in full future accountability of the analysis.

Formal Classical Expansion:

$\mathbf{f(x)= x^1 + x^2}$

$\mathbf{x = \varepsilon^0 x_0 + \varepsilon^1 x_1 + \varepsilon^2 x_2}$

Substituting x into f(x),

$\mathbf{f(x) = (x_0 + \varepsilon x_1 + \varepsilon^2 x_2) + (x_0 + \varepsilon x_1 + \varepsilon^2 x_2)^2}$

Usually, ε is a very small number, but, generally, ε can be any number.For example, $\varepsilon = 0.01$, $\varepsilon^2 = 0.0001$, $\varepsilon^3 = 0.000001$... In general, order, which is represented by the exponential of e, is related physically tothe significance rather than the magnitude. For example, often the zeroth order terms are zero rather than finite, while the first orderterms are finite.

$$\mathbf{x_0 + \varepsilon x_1 + \varepsilon^2 x_2}$$
$$\mathbf{x_0 + \varepsilon x_1 + \varepsilon^2 x_2}$$

$$\mathbf{\varepsilon^2 x_0x_2 + \varepsilon^3 x_1 x_2 + \varepsilon^4 x_2^2}$$
$$\mathbf{\varepsilon x_0x_1 + \varepsilon^2 x_1^2 + \varepsilon^3 x_1 x_2}$$
$$\mathbf{x_0^2 + \varepsilon x_0x_1 + \varepsilon^2 x_0x_2}$$

$$\mathbf{\varepsilon^0 x_0^2 + 2\varepsilon^1 x_0x_1 + \varepsilon^2 (2 x_0x_2 + x_1^2)+ 2\varepsilon^3 x_1 x_2 + \varepsilon^4 x_2^2}$$

Order	Epsilon(ε)	Collected Terms
0	ε^0	x_0^2
1	ε^1	$2 x_0x_1$
2	ε^2	$2 x_0x_2 + x_1^2$
3	ε^3	$2 x_1 x_2$
4	ε^4	x_2^2

$\mathbf{f (x) = (x_0 + \varepsilon x_1 + \varepsilon^2 x_2) + (x_0 + \varepsilon x_1 + \varepsilon^2 x_2)^2}$

$\mathbf{= (x_0 + \varepsilon x_1 + \varepsilon^2 x_2) + \varepsilon^0 x_0^2 + 2\varepsilon^1 x_0x_1 + \varepsilon^2 (2 x_0x_2 + x_1^2)+2\varepsilon^3 x_1 x_2 + \varepsilon^4 x_2^2}$

$$\mathbf{f(X)= \varepsilon^0 \ (x_0+x_0^2)+ \varepsilon^1 \ (x_1+ 2\ x_0x_1)+ \varepsilon^2(\ x_2+ 2\ x_0x_2 + x_1^2 \ )+ \varepsilon^3 \ (2\ x_1x_2)+ \varepsilon^4 \ x_2^2}$$

Collected terms for f (x)

Order	Epsilon(ε)	Collected Terms
0	ε^0	$x_0 + x_0^2$
1	ε^1	$x_1+ 2\ x_0x_1$
2	ε^2	$x_2+ 2\ x_0x_2 + x_1^2$
3	ε^3	$2\ x_1\ x_2$
4	ε^4	x_2^2

Exact Equation (Cash flow equation): CashInvestmentReturn = SumOfCashFlow + CashFromResale or write out in detail

(Price - Loan - BuyerExpense) * (1 + Return)$^{\text{InvestmentPeriod}}$ = ∑ (NetIncome -Loan * %Payment - TaxBracket * NetIncome) + (ResalePrice - Loan - SellerExpense)

Write out in symbolic form:

$(P - P * l - P * x) * (1 + r)^T = \sum (N - l * m - b * N) +$

P(Resale) - P * l - P(Resale) * e

where

P = Price or Resale Price

l = loan as % of Price

x = Expense of buyer as % of price

r = Return on investment averaged over investment period T

T = Investment period

N = Net income

m = Loan payment as % of Loanb = Tax bracket

g = growth rate of price

e = Expense of seller as % of price

Our goal is to rigorously interpret the familiar concept of P/E Ratio and the commonly used equation for stock valuation.

%Return = Dividend/Price + Growth Rate

in terms of their order of approximation. Practically, the resulting approximate equations can be used to calculate analytically the suitable initial conditions for the exact numerical calculation. Usingclassical expansion with the following substitutions for the zeroth and the first orders,

$P = P_0 + P_1 = P_0 * (1 + g)^T = P_0 + P_0 * (g_1T + g_2T^2 + \ldots + g_nT^n + \ldots)$

$l = l_0 + l_1$

$x = x_0 + x_1$

$r = r_0 + r_1$ $N = N_0 + N_1$

$m = m_0 + m_1$

$b = b_0 + b_1$

g = Defined implicitly in P above in a polynomial expansion $e = e_0 + e_1$

where the zeroth order terms are constant and the first order terms can be time-varying, into the cash flow equation with 1 year investmentperiod (T = 1)

$[P_0 + P_1-(P_0 + P_1)*(l_0 + l_1) - (P_0 + P_1)*(x_0 + x_1)] * (1+ r_0 + r_1) =$

$N_0 + N_1- (l_0 + l_1)*(m_0 + m_1) - (b_0 + b_1)*(N_0 + N_1) + P_0 + P_1(Resale) - (P_0$

$+ P_1)*(l_0 + l_1) - (P_0 + P_1)*(e_0 + e_1)$

Expanded out, we get

$P_0 + P_1 - P_0l_0 - P_0l_1 - P_1l_0 - P_1l_1 - P_0x_0 - P_0x_1 - P_1x_0 - P_1x_1 +$

$P_0r_0 + P_1r_0 - P_0l_0r_0 - P_0l_1r_0 - P_1l_0r_0 - P_1l_1r_0 - P_0x_0r_0 - P_0x_1r_0 - P_1x_0r_0 -P_1x_1r_0 + P_0r_1 + P_1r_1 - P_0l_0r_1 - P_0l_1r_1 -$

$P_1l_0r_1 - P_1l_1r_1 - P_0x_0r_1 - P_0x_1r_1 -P_1x_0r_1 - P_1x_1r_1=$

$N_0 + N_1 - l_0m_0 - l_0m_1 - l_1m_0 - l_1m_1 - b_0N_0 - b_0N_1 - b_1N_0 - b_1N_1 + P_0 +P_1(Resale) - P_0l_0 - P_0l_1 - P_1l_0 - P_1l_1$

$- P_0e_0 - P_0e_1 - P_1e_0 - P_1e_1$

To construct stock P/E Ratio from the above expanded equation, we realize that for stock investment N = Dividend = DividendPayoutRatio *Earning = $d * E = N_0 + N_1 = d_0E_0 + d_0E_1 + d_1E_0 + d_1E_1$.

Substituting Dividend for Net Income (N), we get

$P_0 + P_1 - P_0l_0 - P_0l_1 - P_1l_0 - P_1l_1 - P_0x_0 - P_0x_1 - P_1x_0 - P_1x_1 +$

$P_0r_0 + P_1r_0 - P_0l_0r_0 - P_0l_1r_0 - P_1l_0r_0 - P_1l_1r_0 - P_0x_0r_0 - P_0x_1r_0 - P_1x_0r_0 - P_1x_1r_0 + P_0r_1 + P_1r_1 - P_0l_0r_1 - P_0l_1r_1$

$- P_1l_0r_1 - P_1l_1r_1 - P_0x_0r_1 - P_0x_1r_1 - P_1x_0r_1 - P_1x_1r_1= d_0E_0 + d_0E_1 + d_1E_0 + d_1E_1- l_0m_0 - l_0m_1 - l_1m_0 - l_1m_1 -$

$b_0d_0E_0$

$- b_0d_0E_1 - b_0d_1E_0 - b_0d_1E_1 - b_1d_0E_0 - b_1d_0E_1 - b_1d_1E_0 - b_0d_1E_1 + P_0 + P_1(Resale)$

$- P_0l_0 - P_0l_1 - P_1l_0 - P_1l_1 - P_0e_0 - P_0e_1 - P_1e_0 - P_1e_1$

To extract P/E or, more exactly, its zero-th order expression P_0/E_0 fromthe above equation, we need to set to zero all the non-zero order terms:

$P_0 - P_0l_0 - P_0x_0 + P_0r_0 - P_0l_0r_0- P_0x_0r_0= d_0E_0 - l_0m_0 - b_0d_0E_0+ P_0 - P_0l_0 - P_0e_0$

or dividing through by E_0, the above equation becomes

$P_0/E_0- P_0l_0/E_0- P_0x_0/E_0+ P_0r_0/E_0- P_0l_0r_0/E_0- P_0x_0r_0/E_0= d_0- l_0m_0/E_0- b_0d_0 +$

$P_0/E_0- P_0l_0/E_0- P_0e_0/E_0$

or

$P_0/E_0* (1 - l_0- x_0+ r_0- l_0r_0 - x_0r_0- 1 + l_0 +e_0)=d_0- l_0m_0/E_0- b_0d_0$or

$P_0/E_0 = (d_0 - l_0m_0/E_0- b_0d_0)/(-x_0 + r_0 - l_0r_0 - x_0r_0 + e_0)$ or solving for r_0

$r_0* (1 - l_0- x_0) = d_0E_0/P_0- l_0m_0/P_0- b_0d_0E_0/P_0-e_0$

$r_0= (d_0E_0/P_0- l_0m_0/P_0- b_0d_0E_0/P_0 -e_0)/(1 - l_0- x_0),$

$r_0= d_0E_0/P_0$, when l_0, m_0, b_0, e_0, x_0 are zero

The zeroth order equation does not contain the growth rate g, whichappears in the first order price, P_1. Therefore, to construct an equation with g, we need to consider the first order equation. For

simplicity, l, x, m, b, and e, which do not appear in the desired equation, are set to zero in the equation for calculating P/E Ratio

$P_0 + P_1 + P_0r_0 + P_1r_0 + P_0r_1 = d_0E_0 + d_0E_1 + d_1E_0 + d_1E_1 + P_0 + P_1$(Resale)

where P_1(Resale)=$P_0*(g_1T + g_2)$. With T=1, the first order equation for the first order rate of return is, neglecting all the smaller terms (P_1,P_1r_0, P_0r_1, d_0E_1, d_1E_0, and d_1E_1),

$r_0 = d_0E_0/P_0 + g_1$

where r_0 is equivalent to equity premium plus riskless interest rate insome derivations. The Infinite Spreadsheet solves the problem exactly.

The solution of value is the first time in history that a completely mathematically rigorous system, which corresponds to the price system, is discovered. It belongs to the recently classified Culture Level QuotientCLQ = 11 and is in the process of being updated by fuzzy logic with its range of tolerance for predicting market crashes to advance to CLQ = 15. The range of tolerance applies to all problems, which is fuzzy. The real estate market has a range of tolerance around 35% +/- 5% from the experience from the Savings and Loan Crisis and the Subprime Woe. What the range of tolerance means is that the market has a range of tolerance around 35%, which if exceeded, will cause a market crash. Theconcept of range of tolerance of fuzzy logic will make the study and prediction of market crash complete, but the study has just begun recently in the 2020s."

The prediction of the stock market involves 4 stages. In addition to the first stage of the stock rate of return calculation based on a double-iterative Infinite Spreadsheet, one for the price and the other for the rate of return, plus the second stage of quantitative supply and demand calculation, the third stage of Quantity Theory of Money of Milton Friedman and the fourth stage of Game Theory of John von Neumann and John Nash. The rate of return, not the price, is actually the final variable remaining in the problem of value. For example, in the stock market, the price is given every second in the form of a quote, and with the stock quotes, the Infinite Spreadsheet is forced to calculate the rate of return on investment. In practice, it turns out that the game theory, such as the gambler law, the probability of A with a = amount of money winning over B with b = amount of money is P(a) = a/(a+b), dominates over all other factors in the four stages, and the money supply dominates over the supply and demand analysis and the stock rate of return calculation. Thus, the big money managers, such as Fidelity and Vanguard, used to dictate the stock market, and today the biggest money is from the government, such as US Fed and the Chinese Central Banks. Yet, the highest authority ruling the stock market will always by nature with its non-violable laws of nature, such as the solution of value, which has predicted both the Savings and Loan Crisis and the Subprime Woe caused by real estate overvaluation.

The consideration of infinity can become a field in itself, which needs people with mathematical and logical training. Debreu believes that set theory is needed to consider the supply and demand model in its entirety including infinity. Friedman's simple Quantity Theory of Money PQ = VM (Price x Quantity = Velocity of Circulation x Money Supply) should be further studied by mathematicians.

Game theory plays a central role in many situations of social and life sciences. The stock market offers an excellent case study of game theory. Now that post-science has shown that both real estate and stock markets are predictable, mathematicians should join post-science in replacing today's social science and should help raise the human cultural level to CLQ = 15 of Predictive Social Science.

Science is obsessed with precision, but social and life sciences are clearly fuzzy. To advance from science to social and life sciences, the foundation of knowledge of exact logic with zero range of tolerance needs to advance to the new foundation of fuzzy logic with a finite range of tolerance, including exact logic as an important limit case, such as for representing DNA. The Fuzzy Infinite Spreadsheet provides a view of market crashes by determining the range of tolerance, say, 40%+/-10%, and the range of certainty, say, 20%+/-5%, to determine the range of solution, 20%+/-5%. Generally, the conjunction of the range of tolerance T and the range of certainty C is the range of solution S or S is the conjunction of T and C or S=T∧C=20%+/-5%.

4. Logical Life Science

The breakthrough from science to life science is achieved by trading off precision for the solution of complete automation in fuzzy logic leading to the non-empirically verifiable permanent existence. Many thinkers, such as John von Neumann, have initiated the computer simulation of life based on the notion that life is designed for permanent existence and is characterized by complete automation. Hugh Ching has identified DNA as a complete automated software with source code 0, 1, 2, and 3 or A, C, G, and T and provided the theoretical foundation for life science, which is the programming and the documentation of DNA and which, involving infinity, is not subject to empirical verification. Completely automated software satisfies the requirements of self-generation, auto-updating, and auto-documentation. Self-generation means that the initial program generating program can generate itself, so that the entire software system consists of only generated programs, which correspond to proteins. Auto-updating and auto-documentation are needed to update current software to those of DNA-protein systems needing an unlimited number of updates of the source codes and their documentation. Life science should be like computer science based on logic, not like science based on experimentation.

Technically, complete automated software is solved based on 2 basic principles: 1. The integer is the native language of the machine, and 2. Human Associative Memory, whose significance is not fully appreciated, is needed for users to access an unlimited amount of information. The solution must simultaneously use the combination of 3 innovations: 1. Universal User Interface, 2. Universal Computer Source Code, and 3. Universal Data File. Universal User Interface must be able to replace any other user interface and can include all operations. Universal Computer Source Code has the requirement of being integer-like. Thus, the combined requirements from Universal User Interface and Universal Computer Source Code lead to the familiar tree-structured numerical multiple-choice question format, such as 1. Print, 2. Mathematical and logical operations, 3. Branch, 4. Files, 5.

Generation, 6. Chain, 7. Applications, and 8. Others? The output of the Universal User Interface is integer-like, not English-like, as in most current source codes. The answers to the successive levels of tree-structured numerical multiple-choice questions lead to instructions to perform the operation required, such as GOTO label or GOSUB address.

Solving the problem of completely automated software is equivalent to solving the problem of eliminating all technical barriers to computer usage. In other words, all the technical barriers can be replaced by integers, and the meaning of the integers should be remembered by the software, not the user. Universal User Interface allows the user to store associated items under the same categories. Universal Data File contains in its records, not just the instruction to perform a certain operation, but also the label or the address of the record. When the successive levels of tree-structured numerical multiple-choice questions lead the program execution to a label or an address, the instruction can either perform the operation or return the label or the address when a flag is set. Thus, the label or the address is remembered by the software. Precision in science based on exact logic must be sacrificed, due to the use of fuzzy Human Associative Memory. As the foundation of knowledge, exact logic should be replaced by fuzzy logic, which includes exact logic in the most important case of DNA.

5. Robot: Self-Manufactured General-Purpose Robot with the Capability of Touch

Post-science makes fundamental contributions to robotics based on the new physics concept of jumpulse, a word coined by Ta-You Wu, for stopping bounces and the solutions of value and complete automation. Post-science believes that a robot should be defined as an intelligent machine that can make physical contact with the environment, but today no robot can touch, as a robot finger bounces off a surface as a ball bounces off a racket. Yet, human hands touch hundreds of times per day without bouncing off. Robots with the ability to touch and an electronic brain will take over all human routine physical and mental work.

Post-science theoretically proves and experimentally demonstrates that it is possible to keep a ball in prolonged contact with a racket after the impact. In fact, prolonged contact is the secret of consistency in sports. If prolonged contact is possible, Hugh Ching predicts in his book Table Tennis Scientific Analyses published in 1978 that double hitting in sports should occur frequently. Double hitting has been legalized for tennis since 1982, table tennis since 2004, and golf since 2019.

Hugh Ching's doctoral thesis "Large-Amplitude Stabilization of the Drift Instability" led him to the formulation of the Generalized Fluid Description with the Generalized Phase Space and the solution of touch based on jumpulse with the similar basic idea that two objects will move together if they have the same position, the same velocity, and the same acceleration. Harod Grad, at the Courant Institute of Mathematical Sciences, guided him to the solution of the plasma fluid. Hugh Ching introduced the solution of prolonged contact to Ta-You Wu, who in 1997 coined the word jumpulse to denote a sudden change of force, as the Newtonian impulse is a sudden change of momentum. The equations for computation in a realistic non-linear situation are presented below:

Calculation of Acceleration

Force = Mass x Acceleration = kDXb(t)

DXb(t) = Xb(t) – Xr(t) when DX(t) > 0

DXb(t) = 0 when DXb(t) <= 0

Jumpulse = Racket Mass x DXb(t) at Vr =Vb

Calculation of Velocity

Vb = ∫ Force/Mb dt = ∫ Mb x DXb(t) dt

Calculation of Position

Xb = ∫ Vb dt

= ∫∫ Force/M dt dt

Xr = ∫ Vr dt for t < tj

Xr = ∫∫ Jumpulse/m dt dt for t => tj

Calculation of Displacement DXb(t)

DXb(t) = Xb(t) – Xr(t) for DXb(t) > 0

DXb(t) = 0 for DXb(t) < 0

Humans use jumpulse and their senses of sight, sound, and feel, plus seeing with the mind, to enable smooth soft contact with objects or touch. Robots need the same capability to safely come into contact with an uncontrolled environment. The range of contact of the magnitude of jumpulse for the Double-Hitting Test or the Ching Test is limited by the strength of the jumpulse mechanism in the order of 4.5 g, four and a half times the gravitation pull of the earth for humans, or over 100 newtons. Robot sight, sound, and feel, plus seeing with the mind, and other sensors for timing need to have resolutions from 0.1 to 50 milliseconds. Robot sight and feel, plus seeing with the mind, and other sensors for distance need to have resolutions from 0.1 to 5 millimeters.

When there is a new physics problem, there should be a new physics method for solving it. Plasma inside an operating fusion reactor is a new material, and fusion plasma confinement by magnetic field presents a new problem, but plasma physicists use the old theories of kinetic theory and fluid dynamics to solve the plasma confinement problem. A Generalized Fluid Description is introduced to describe magnetically confined plasma. Initial application was demonstrated without formal derivation of the theory in a paper.

Another seemingly unrelated problem is the 300-year-old Contact Problem, which, however, can be solved by the same principle in the Generalized Fluid Description, and has eluded Isaac Newton, Robert Hooke, Heinrich Hertz and all the physicists since Newton. The Contact Problem should be naturally the mainstream problem in physics after Newtonian physics, which defined a force as a push or pull, but could not explain how to make contact so that push is possible. Normally a ball bounces after a racket after the impact. Even today, no robot can touch, robot finger bounces off a surface like a

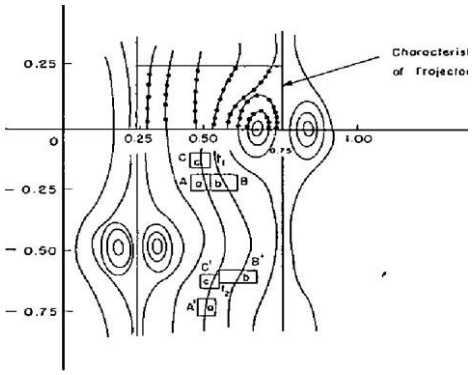
ball bounces off a racket. What happens during a collision is that the ball and the racket have the same position and will have for an instant the same velocity, but the ball will acquire an acceleration larger than the acceleration of the racket. Therefore, to solve the Contact Problem is like to form a fluid with the ball and the racket that they have the same position, the same velocity, and the same acceleration during the impact. The Contact Problem is again a new physics problem, which involves thinking about 25 variables, 5 variables from each end of a spring, and 5x5=25.

The Generalized Fluid Description (GFD) is based on the Generalized Phase Space (GFS). The implication of the Generalized Phase Space could provide a framework for the description in physics. The Generalized Fluid Description is the correct theoretical foundation of plasma physics. Accordingly, it incorporates both the phase space of plasma kinetic theory and the spatial description of the theory of magneto-fluid dynamics and expands them into a general form incorporate all the spatial derivatives in a generalized phase space. The equation is

$$\frac{Df}{Dt} = \frac{\partial f}{\partial t} + \dot{x}\frac{\partial f}{\partial x} + \ddot{x}\frac{\partial f}{\partial \dot{x}} + \dddot{x}\frac{\partial f}{\partial \ddot{x}} + \ldots + x^{(n\,\mathrm{dots})}\frac{\partial f}{\partial x(n-1\,\mathrm{dots})} + \ldots + \infty$$

The applications of the Generalized Fluid Description are (1) Fusion Plasma Physics as in fusion reactors or stars and (2) Solution to the 300-year-old unsolved Contact Problem in physics.

In Plasma Physics, we need to include particles with the same acceleration in a fluid element in a collisionless plasma. In particular, plasma needs coordinates X, Y, and Z, Velocities X, Y, and Z, and Accelerations X, Y, and Z to describe explosive fusion chain reactions. In the Contact Problem, two colliding objects will move together only when they have the same position, the same velocity, and the same acceleration and other same higher derivatives. For example, prolonged contact, which is the secret of consistency in racket sports, such as tennis and table tennis, can be achieved by applying a jumplse, a sudden change of force, at the precise moment when the ball and the racket have the same position and the same velocity, but different acceleration. The jumpulse will cause the racket acceleration to increase to become the same as the ball acceleration. The following Figures 1 and 2 show the theoretical derivation and the experimental observation of a plasma peanut instability of the drift wave. The question now is how to identify a fluid element in a plasma for magnetized or explosive fusion chain reaction.



Figures 2. Theoretical Calculation

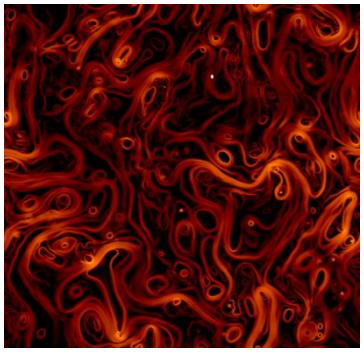


Figure 3. Experiment of Instability

There are insufficient dimensions in the current phase space of kinetic theory to describe fusion plasma. Similarly, there are insufficient concepts of motion to describe touch or collision without bouncing off. For a plasma fluid, the extra dimension relating to acceleration should be added to form an example of Generalized Phase Space. To eliminate bounce in mechanics, an extra dimension of acceleration including the instantaneous change of force, jumpulse, should be added to counteract the acceleration in the rebound after a collision. A graphic representation can make it clear of the intent of the Generalized Fluid Description.

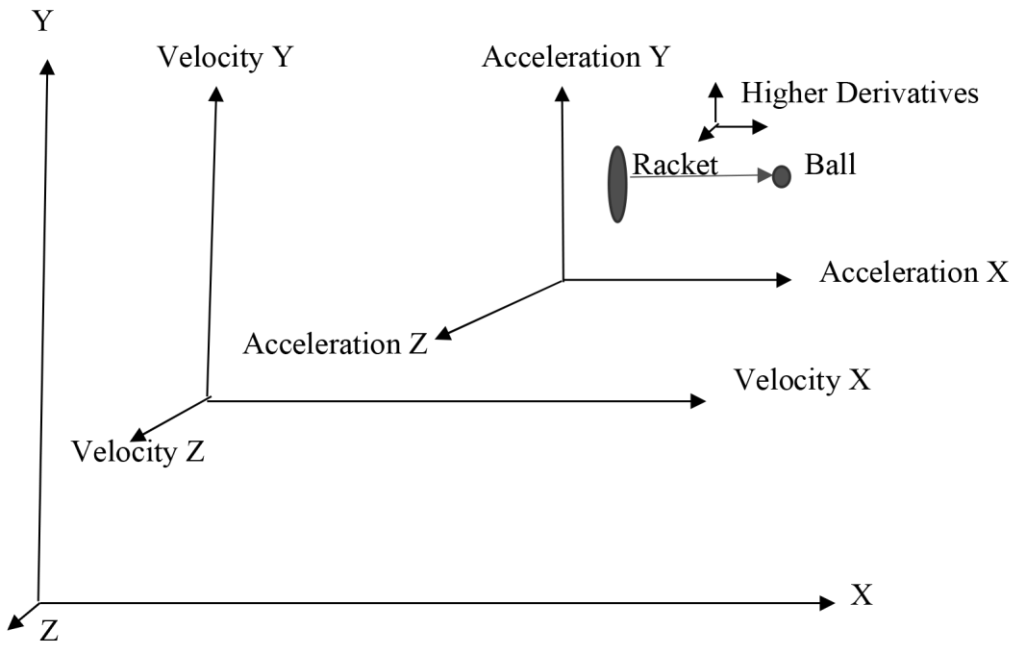


Figure 4. Graphic Representation of a Generalized Phase Space including Acceleration (A Jumpulse has been drawn from a racket to a ball to make their accelerations equal.)

A robot should be defined as an intelligent machine that can make physical contact with the environment, but today no robot can touch, as a robot finger bounces off a surface as a ball bounces off a racket. Yet, human hands touch hundreds of times per day without bouncing off. Robots with the ability to touch and an electronic brain will take over all human routine physical and mental work.

It has been proven theoretically and demonstrates experimentally that it is possible to keep a ball in prolonged contact with a racket after the impact. In fact, prolonged contact is the secret of consistency in sports. If prolonged contact is possible, the book Table Tennis Scientific Analyses published in 1978 predicted that double hitting in sports should occur frequently. Double hitting has been legalized for tennis since 1982, table tennis since 2004, and golf since 2019.

After the solution of prolonged contact was introduced to Ta-You Wu, Wu in 1997 coined the word jumpulse to denote a sudden change of force, as the Newtonian impulse is a sudden change of momentum. An electronic brain is needed for the robot to see with the mind, like fully self-driving cars, which deal with collision avoidance, not collision or touch. Between 1968 and 2023, the problem of value posed by Arrow and Debreu in Debreu's book Theory of Value was solved, and the problem of the electronic brain was attempted based on the solution to complete automation, which Turing and von Neumann had tried unsuccessfully and created a partially, not completely, automated computer.

To achieve complete automation, physicists can build a self-manufactured general-purpose robot developed and controlled by self-generating and completely automated software capable of safely contacting the environment. The solution of value is needed to determine the value and the priorities of robot functions. It should also be realized that the jumpulse must be applied within 2 milliseconds in order for the robot to touch without bouncing off, and the robot must be guided by the electronic brain made of a self-generated neural network of unlimited software cells, each of which has complete capability of a software program, like the human cell, from which a whole human can evolve.

The Generalized Fluid Description is generally ignored by plasma physicists, and plasma physics and controlled fusion have been relatively dormant for a few decades, until recently when energy and global warming become major world problems. The big lesson to be learned here is not just the technical innovations, but the larger problem of solving new problems with new methods, as is proposed in the paper "Culture Level Quotient" which presents 16 Methods of Reason for increasingly complex problems, not just in science, but also in social and life sciences.

Between 1968 and 2023, Hugh Ching solved the problem of value posed by Arrow and Debreu in Debreu's book Theory of Value and attempted to solve the problem of the electronic brain based on the solution to complete automation, which Alan Turing and John von Neumann had tried unsuccessfully and created a partially, not completely, automated computer. The electronic brain is mainly for the robot to see with the mind, like fully self-driving cars, which deal with collision avoidance, not collision or touch.

To achieve complete automation, physicists can build a self-manufactured general-purpose robot developed and controlled by self-generating and completely automated software capable of safely

contacting the environment. The solution of value is needed to determine the value and the priorities of robot functions. Hugh Ching also realizes that the jumpulse must be applied within 2 milliseconds in order for the robot to touch without bouncing off, and the robot must be guided by the electronic brain made of a self-generated neural network of unlimited software cells, each of which has the complete capability of a software program, like the human cell, from which a whole human can evolve.

The problem of touch deals with the interaction of two objects at the two ends of a spring and involves thinking roughly 25 variables, 5 variables at each end, and 5 x 5 = 25, while normally a physics problem involves 5 variables. The solution of value involves around 50 variables, and the solution of software, 500 variables, according to his patent disclosures. Both solutions of value and complete automation involve infinity, which never arrives and is not subjected to empirical verification. As the heir to Lotfi A. Zadeh and a friend of Paul Feyerabend, Hugh Ching believes that the Scientific Method based on empirical verification should not be the only method in knowledge, and a human or a robot with a finite range of tolerance is better than a robot with a zero range of tolerance.

In objection to the backward-looking habit in science, where laws of nature are derived in the past, and in support of forward-looking method of decision-making, where a rational decision should be based on the future expectation, “Ching Paradox” which states that the peer review process filters out truly original ideas, which should have not peers, lend confirmation to the breakthrough of Logical Life Science, which claims that life science resembles computer science based on logic more than science based on experimental verification, and that life science is fuzzy rather than exact. Post-science concludes that the universe contains cosmos and DNA, where cosmos is derived by chance, which is backward-looking, and DNA is created by design, which is forward-looking. Mankind will never be able to understand cosmos and DNA in their full details because cosmos has an infinite history, and DNA contains wisdom accumulated from the infinite past.

6. Fuzzy Logic

Post-science provides support to fuzzy logic with solutions in social and life sciences. Fuzzy logic provides post-science with a new foundation of knowledge of reality with a finite range of tolerance replacing the exact logic with a zero range of tolerance. Post-science is currently extending the understanding of fuzzy logic to involve the very nature of change, which is necessarily fuzzy, and to the existence, which may not be possible or may be stuck in a dead loop with exact logic or zero tolerance. Fuzzy logic progresses in three stages: (Stage-1) Lukasiewicz–Tarski logic of the 1920s for mathematicians, (Stage-2) Lotfi A. Zadeh fuzzy logic for engineers, and (Stage-3) Hugh Ching extension of the concept of the range of value of Zadeh to that of the range of tolerance. Zadeh jumped directly to fuzzy logic from science, and Hugh Ching filled in the gap in knowledge progressing from science to social science to life science to robotics to self-creation, and finally guided by Zadeh to fuzzy logic. Fuzzy logic deals with sacrificing precision and relaxing rigor to change the range of tolerance and the range of possibilities to cover all the eventuality of the unlimited range of uncertainty

of the future to determine the range of solutions or survival. The disjunction of the range of tolerance T and the range of possibilities P is to be compared to the range of certainty C to determine the range of survival S which is the conjunction of T, P and C or S=(T∨P)∧C.

Fuzzy logic with a finite range of tolerance should replace exact logic with a zero range of tolerance as the new foundation of knowledge of reality, for a solution should be defined as all the answers lie within the range of tolerance of the solution. Hugh Ching believes that problems of reality cannot be solved perfectly and must make compromises by exploiting the range of tolerance by sacrificing precision and relaxing rigor, signaling a complete departure from science. Fuzzy Logic is explained in four recent papers by Hugh Ching and post-science students: 1. Fuzzy Logic, the Genius of Lotfi A. Zadeh, 2. Fuzzy Completeness Theory, and 3. Culture Level Quotient, and 4. Ching Paradox. Hugh Ching has demonstrated fuzzy logic with three examples: 1. The solution of value, 2. Robot touch, and 3. Biodiversity. Currently, the financial market depends on the invisible hand to adjust the price, generally accompanied by a market crash or a recession. The solution of value determines the range of possibilities of prices, say, within 20% of the average equilibrium price. The range of tolerance of the market for price fluctuation has been surveyed to be 40% +/- 10%. When the range of tolerance (40%) covers the range of uncertainty (20%), a market crash can be permanently avoided. Robot touch is a problem yet to be solved because the range of tolerance of touch or collision without bouncing off is less than 2 milliseconds, but currently, the fastest reaction to a collision is greater than 20 milliseconds, which represent the range of uncertainty. A jumpulse, a sudden change of force, must be applied and guided by sensors based on Artificial Intelligence created by a Self-generated Neural Network of unlimited Software Cells, which needs to have the capability of the human brain to bring the range of certainty of executing the jumpulse from 20 milliseconds down to below 2 milliseconds. Double hitting predicted by Hugh Ching shares the same physics as touch and has been legalized in tennis in 1982, table tennis in 2004, and golf in 2019. Biodiversification, where 99% of the four billion species that have evolved on earth are now extinct (1% range of survival), shows the open-ended nature of the problems of reality, solvable only with imperfect solutions (S=(T∨P)∧C=1%).

Life science in the current Age of Science is not real-life science, which should be dealing with complete automation and permanent creations. Life science is not empirically verifiable because DNA is designed to last to infinity, which never arrives for empirical verification, and is fuzzy because the finite range of tolerance of humans makes humans fuzzy, while science is based on empirical verification and is trying to achieve exact solutions. Today's life scientists should realize that it is impossible to arrive at conclusive drug tests because DNA propagates to infinity, and, therefore, not empirically verifiable, solutions in life science must be accepted based on complete mathematical rigor.

7. Post-Science Notable Inventions

There are many inventions that are byproducts or extensions of post-science solutions. The following is a list of inventions compiled by post-science students:

1) The Invention of Money: Universal Permanent Money for funding innovative research projects justified by the solution of value in a Knowledge-Oriented Society: Basically, the problem of money is to find something that can be used as money with the technical requirements of being (1) universal and (2) permanent. The requirement of permanence is solved by complete automation. Universal Permanent Money (UPM) is a subset of Universal Permanent Number, which is a byproduct of completely automated Universal Permanent Software, which can remember Universal Permanent Numbers. In fact, Universal Permanent Software, involving over 500 variables, has eliminated all the technical barriers in computer usage, based mainly on Human Associative Memory, which allows humans and now computers to access an unlimited amount of information. Universal Permanent Number is a set of integers from minus to plus infinity. Universal Permanent Money and Number are listed at the price by the formula: P oz of Gold = 10^(N-12) where P is the Price and N is the Number of Digits of the Universal Permanent Number. Thus, a 12-digit UPN or UPM is worth 1 oz of gold. Currently, the US dollar has the advantage of being accepted internationally and serving as the standard against which other nations re-valuate their currencies. Yet, the US dollar has the fatal disadvantage of not being able to re-valuate in order to bring its trade deficit into balance. Unable to adjust the value of the US dollar against other currencies forces the USA to resort to other means, such as tariffs, sanctions, and ultimately military actions, to bring its trade deficit into balance. The USA-China standoff is really a trade war, which threatens to deteriorate into a military war putting the whole world under a cloud of a nuclear confrontation. Throughout history, the world's many leading nations, such as the Rome Empire, Great Britain, and, potentially, the USA, fall because their internationally dominating currencies prevent them from re-valuating their currencies. Each sovereign nation should have one flexible domestic currency and one stable international currency. The value of the domestic currency can be adjusted for inflation and trade deficit. The value of the international currency should be pegged to, say, Universal Permanent Money, which has intrinsic value, as gold, each nation should be responsible for the value of its international currency in international trade.
2) Ching Test: Test the ability of a robot arm to double hit a ping pong ball with one smooth jumpulse stroke, which was legalized in tennis in 1982, table tennis in 2004, and golf in 2019: Double hitting shares the same physics principle with prolonged contact or touch. For a robot arm to double hit, it needs an electronic brain, which can "see with the mind" and put the double hitting on autopilot. The Ching Test is akin to the Turing Test, which tests the common sense of a robot.
3) Ching's Law: The Law of Touch states that all spatial derivatives equal or higher than acceleration can change instantaneously to be applied within an impulse.

4) Ching Rule: The logical order of rates for setting the interest rate, replacing the Taylor Rule, is that Rate of Return on Investment > Interest Rate > Inflation Rate, which the current Fed Chairman Jorome Powell is applying, just the last two Rates.
5) Ching Code: Completely automated and self-generating computer source code is formally known as Universal Computer Source Code invented by Chien Yi Lee and officially approved by Prof. Chittoor V. Ramamoorthy, but it is one of the 3 innovations of completely automated software invented by Ching; the other two are Universal User Interface and Universal Data File.
6) Ching Encryption: The problem of encryption is to change one integer into another integer and to change the encrypted integer back to the original integer. The completely automated software is a general scrambler, which can change any integer into any other integer. The scrambling software is the lock. The key to the lock can be completely automatically created by the auto-updating capability of the completely automated software.
7) I Ching Numeral or Ching Numeral named after I Ching, not Hugh Ching: I Ching (易經), the Book (經) of Changes (易), is the most popular book in China, as the Bible is the most popular book in the West and is known to billions. As a simple demonstration, the I Ching pictogram, ䷁, ䷗, ䷆, ䷇, ䷒, ䷊, ䷉, and ䷀, corresponds to the binary system of the computer 0, $1=2^0$, $2=2^1$, $3=2^0+2^1$, $4=2^2$, $5=2^0+2^2$, $6=2^1+2^2$, and $7=2^0+2^1+2^2$, where the broken line represents 0, and the solid line represents 1 with the order of the digit counting upward. Number systems improve through progress in human knowledge. I Ching is an ancient number system. Arabic Numeral is the most common number representation today. The digital computer uses integers as its native language, where binary numbers are represented by 0 and 1. DNA can use 0, 1, 2, and 3 to represent the nucleotides A, C, G, and T. A knowledgeable life scientist of the future can program a living system using a 64-base number system for the 64 codons to generate a living thing or even an entire living system. Post-science believes that I Ching is a form to provide a logical self-explanatory number system, without the user having to memorize any symbolic representations. Examples of the application of the I Ching Numeral are for expressing DNA sequences, for replacing the current standard of 64-based number system using the typable keys for YouTube video naming, for readable bar codes, etc. Below is the conversion of A, C, G, and T to 0, 1, 2, and 3 for naming codons:

0=A C=1 G=2 T=3 U=4 or 5

0=AAA 1=AAC 2=AAG 3=AAT 4=ACA 5=ACC 6=ACG 7=ACT

8=AGA 9=AGC 10=AGG 11=AGT 12=ATA 13=ATC 14=ATG 15=ATT

16=CAA 17=CAC 18=CAG 19=CAT 20=CCA 21=CCC 22=CCG 23=CCT

24=CGA 25=CGC 26=CGG 27=CGT 28=CTA 29=CTG 30=CTG 31=CTT

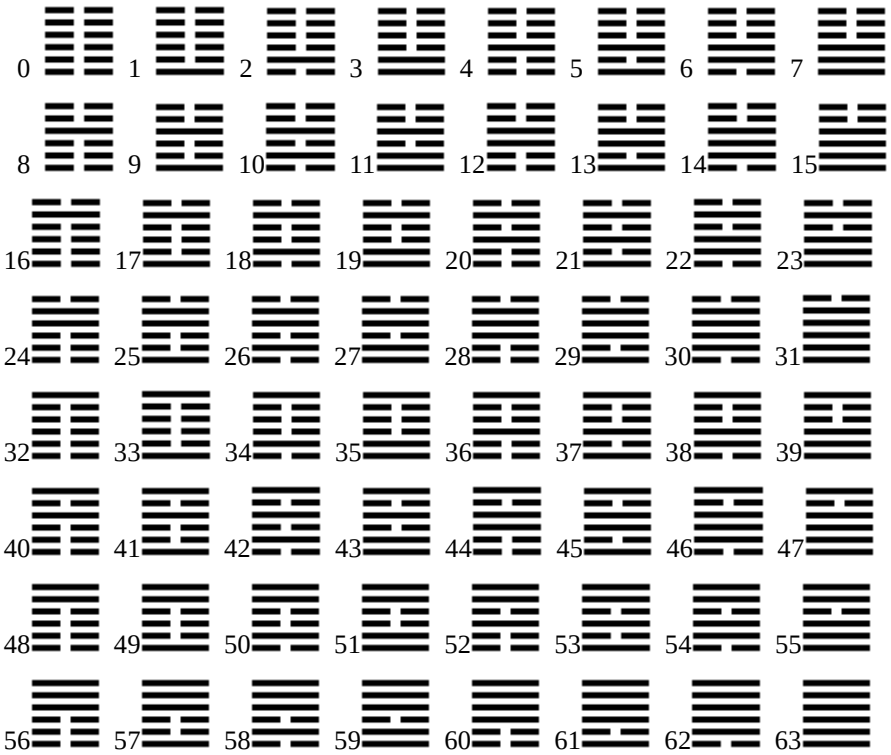
32=GAA 33=GAC 34=GAG 35=GAT 36=GCA 37=GCC 38=GCG 39=GCT

40=GGA 41=GGC 42=GGG 43=GGT 44=GTA 45=GTC 46=GTG 47=GTT

48=TAA 49=TAC 50=TAG 51=TAT 52=TCA 53=TCC 54=TCG 55=TCT

56=TGA 57=TGC 58=TGG 59=TGT 60=TTA 61=TTC 62=TTG 63=TTT.

Below is the corresponding expression in I Ching Numeral:



DNA, representing the highest intelligence in the universe, defies the fact that reality is in general fuzzy. There is a need for absolute exactness as the foundation for the most complex system in the universe. The sequencing of DNA belongs to Culture Level Quotient=12, while the programming and the documentation of DNA belong to Culture Level Quotient=16 or even 17.

1) Universal Permanent Education starting with I Ching Numeral: Universal Permanent Education is a complete educational system, which has eliminated all technical barriers and memorization in education. From a very young age, children develop the habit of memorization as the main mechanism for acquiring knowledge. Science, which dominates the culture of the establishment, is an extension of religion, for both of which memorize Divine Laws (CLQ=9), or laws of nature (CLQ=10) based on empirical observation of reality without reason. Universal Permanent Education is designed for developing the habit of reason, not memorization from a young age. The memorization will be done by completely automated software, which can remember the meaning of its byproduct Universal Permanent Number, as all the technical barriers or memorization can be replaced by the Universal Permanent Number. In practice, Universal Permanent Education starts from two numerals 0 and 1 represented logically by an empty space and a line, such as " " and "_". How to logically represent 2? If we consider a binary system, 2 can be written as "-", a line one space higher than "_". How to logically represent 3? 3 can be represented by both one and two combined, such as "-". This

logic is like the logical representation in the binary system using Arabic numerals 0 and 1, where 0 = 0, 1 = 01, 2 = 10, 3 = 11, 4 = 100, 5 = 101, 6 = 110, and 7 = 111. Correspondingly, Universal Permanent Education can write 0 to 7 formally as I Ching Numerals ☷, ☳, ☲, ☰, ☶, ☵, ☴, and ☱, which are more logical and self-explanatory than corresponding Arabic Numerals 0, 1, 2, 3, 4, 5, 6, and 7, and more compact than binary numerals 000, 001, 010, 011, 100, 101, 110, 111, which require 3 spaces plus a null space to represent an integer. The practical goal of Universal Permanent Education is to convert all learning to a completely automated Universal Permanent Software where memorization of an unlimited amount of information is done by the computer, not the user. Thus, Universal Permanent Education has eliminated virtually all technical barriers to learning, except logic and reason. The students will aim their education toward Universal Permanent Software. Initially, the education can be done manually, where the memorization is done voluntarily, and eventually, the education will be completely automated.

2) DNA Virtual Machine: Life is designed for permanent existence and is characterized by complete automation. Ching has identified DNA as a complete automated software with source code 0, 1, 2, and 3 or A, C, G, and T and provided the theoretical foundation for life science, which is the programming and the documentation of DNA and which, involving infinity, is not subject to empirical verification. Completely automated software satisfies the requirements of self-generation, auto-updating, and auto-documentation. Self-generation means that the initial program generating program can generate itself, so that the entire software system consists of only generated programs, which correspond to proteins. Auto-updating and auto-documentation are needed to update current software to those of DNA-protein systems needing an unlimited number of updates of the source codes and their documentation. Life science should be like computer science based on logic, not like science based on experimentation. The following can be inserted into the completely automated Universal Permanent Software (UPS) for any future auto-update of the constructed DNA Virtual Machine:

Choose 0 to 3 for the 3 levels of questions:

Level 1: 0, (1) 1, (2) 2, (3) 3?

Level 2: 0, (1) 1, (2) 2, (3) 3?

Level 3: 0, (1) 1, (2) 2, (3) 3?

Input 3 at Level 1 question, 1 at Level 2 question, and 2 at level 3 question, the resulting DNA Virtual Machine source code will be: 312, which represents a codon. If 0, 1, 2, and 3 are converted to I Ching Numerals ☷, ☳, ☲, and ☰, the 3 levels of questions will be:

Choose ☷ to ☰ for the ☰ levels of questions:

Level 1: ☷, (☳) ☳, (☲) ☲, (☰) ☰?

Level 2: ☷, (☳) ☳, (☲) ☲, (☰) ☰?

Level 3: ☳, (☲) ☲, (☲) ☲, (☲) ☲?

Input ☲ at Level 1 question, ☲ at Level 2 question, and ☲ at level 3 question, the resulting DNA Virtual Machine source code will be: ☲☲☲ which represents a codon or simplified to just one symbol  with minimum memorization or 54 in Arabic Numeral with two symbols.

3) A workable fusion reactor: There are two major technological obstacles facing mankind in the early 21st century. The first one is the fusion problem of confining and heating fusion materials to fusion temperature. The second one is the heat limit of a chip as the size of the chip continues to decrease and the heat increases. Fusion needs high temperature in a small space. The nuclear fusion chip has a small size and high temperature. One of the imminent threats to survival will be climate crises arising from the tilting of the earth in around 20,000 to 40,000 years, according to the Milankovitch cycles. Even today, the earth could be threatened by global warming, a man-made climate crisis. The nuclear fusion chip can play a central role in both types of climate crises. If a nuclear reactor can be constructed based on the chip, the heating will be done by high frequency fed to the chip and there will be negligible, if any, nuclear waste products. In the not-too-distant future, most heat on earth should be produced by two methods: 1. By clean nuclear fusion and 2. By solar and wind. When the earth is too hot, solar and wind should be used so that there will be no net gain in the energy on earth, and when the earth is too cold, nuclear fusion should be used so that there will be net gain on the amount of energy on earth to keep the earth warm. Both nuclear and solar are from fusion. Nuclear fusion chips will be made of materials that can produce fusion and can perform like a chip. From the packing fraction graph, the candidates of materials based on P= M-A where A is the mass number and M is the actual isotopic mass, is an isotope's packing fraction (P) are D, T, He, Li, etc. with Beryllium mirror coating. Other suitable materials can be found using quantum mechanics software.

8. Post-Science Future Priorities

In 2024, post-science future priorities are:

(1) Epigenetic Lifestyle, which has shaved 28 years off Dr. Ching's biological age, for promoting physical and mental health around the world and for spreading happiness in the Silicon Valley,

(2) Promotion of the knowledge of post-science: Ching, who successfully nominated Dr. Kunii for the Taylor Booth Award, Prof. Zadeh and Prof. Ramamoorthy for their permanent Academician Awards from China. Ching and post-science mentors are nominated for awards by post-science students for awards on almost all fields of knowledge,

(3) Post-Science Entrepreneur Projects:

1). Age Reduction: Epigenetic Lifestyle, according to GlycanAge Test, has shaved 28 years off Ching's biological age from 76 to 48 and has extended the life span of post-science mentors, almost all of whom lived beyond the age of 90. Post-science members are promoting physical and mental health

around the world and spreading happiness in Silicon Valley. Epigenetic Lifestyle depends on Epigenetic rejuvenation, in which, as speculated experienced by post-science members, senescent cells are demolished through BSIN (Body Self-Inflicted Necrosis) and replaced by satellite stem cells during DOMS (Delayed Onset of Muscle Soreness). Life science can be defined as the programming and the documentation of DNA. The documentation of DNA consists of two distinct parts: (1) The documentation of the DNA source code A, C, G, T or 0, 1, 2, and 3 and (2) The documentation of the creation of DNA, such as the human. Part (1) is very difficult, like trying to understand the machine code in computer science. Part (2) is relatively easier than Part (1) because the creations of DNA are generally very user-friendly. Epigenetic Lifestyle will be concerned with both Parts, but the emphasis will be on Part (2). On Aging, Part (2) deals with mainly the User Manual of the Human Body for Aging. Yet, having formulated the foundation of Part (1) in the form of completely automated software, post-science has recognized and hoped to tap into the virtually unlimited intelligence of DNA.

2). Real estate prediction with Infinite Spreadsheet http://123is.com/verify.htm.

3). Stock prediction with http://123is.com/stock.htm, Quantity Theory of Money, Game Theory,

4). Stock or Real Estate Market Prediction—Ranking of Determining Factors

The ranking of the order of authorities in determining the performance of a stock are:

(1). Non-violable Laws of Nature,

(2). Game Theory,

(3). Monetary Theory,

(4). Quantitative Supply and Demand Model,

(5). Fuzzy Infinite Spreadsheet,

(6). Infinite Spreadsheet (NOTE: Due to the large size of the real estate market, the focus is here.)

(7). Invisible Hand,

(8). Technical Analysis, and

(9). Market Comparison Method.

The market comparison method is used in most trades, but it is correct only when the future expectations of the financial conditions of the market do not change. A more sophisticated approach is technical analysis, but, again, the past does not reflect the future; technical analysis is as unreliable as the market comparison method.

Before one can quantify supply and demand model, one has to rely on the invisible hand, which is the earliest description of a qualitative supply and demand model. To derive the quantitative supply and demand model, one needs to first solve the Infinite Spreadsheet, which is the solution of value, where value is defined as the sum total of all the benefits and losses to infinity. Since the inputs to the Infinite Spreadsheet have a range of value, the Fuzzy Infinite Spreadsheet provides a more accurate description of the reality of the market. The Fuzzy Infinite Spreadsheet can be used to predict market crashes, and when the price is within the range of tolerance of market cash, the market will never crash. The

quantities at a certain price determined by the Fuzzy Infinite Spreadsheet are summarized to form the quantitative supply and demand model.

However, the money supply moves the supply and demand curves up and down, regardless of the calculation by the Fuzzy Infinite Spreadsheet and by the Quantitative Supply and Demand Model and holds a higher authority in determining the stock price. The Quantitative Theory of Money represents the simplest form of monetary theory and can be written as Price x Quantity of Products = Velocity of Circulation of Money x Money Supply or PQ = VM. The money supply can be roughly estimated by PQ=VM or M=PQ/V.

Even more powerful than the money supply in determining the stock price is game theory, where roughly the probability of an agent A with available amount of money a in winning over an agent B with available amount of money b is a/(a+b).

Game Theory of John von Neumann developed into Theory of Value of Gerard Debreu and finally end up as the solution of value or the Infinite Spreadsheet of post-science http://123is.com/verify.htm, which, as a completely mathematically rigorous law of nature or Rules of Morality, should replace all man-made laws, which Milton Friedman wanted to deregulate, but offered no alternatives. Friedman's deregulation should advance to regulation by non-violable laws of nature in social science, as well as already in science. Otherwise, many rule-of-law democracies will start to weaponize their legal systems for political gain just because the winning politicians have won the vote under popular mandate.

The USA is the current New World and has attracted the world's best minds in science but is still plagued by financial crises and trade imbalances, the solutions of which require knowledge beyond science or post-science. Post-science solution to the problem of value posed by Gerard Debreu in his book Theory of Value has predicted the S&L Crisis and the Subprime Woe for Fed Chairmen Greenspan and Bernanke. A byproduct Integer Gold of the solution of completely automated software will provide the world with an international currency standard, which will allow all nations, including the USA, to balance their trade deficits by revaluating their domestic currencies against Integer Gold, not the US Dollar. These innovations will be delivered by this project and used to financially support the Next New World to be initiated by people of knowledge, not money or power. Post-science will search for the world's best thinkers spending about 6 months for 6 Next New Worlds: Silicon Valley, Vatican, Oslo, Singapore, Auckland, and Taipei. Post-science is known to many national leaders and will be able to negotiate with them on dominating valuation and international currency based on the solutions of value and complete automation as in CLQ=11, 12, and 15.

The highest authority in determining the stock price is non-violable laws of nature, which calculates the Fuzzy Infinite Spreadsheet instantly and determines the infallible price. Non-violable laws of nature are presented in theory from 1 to 7 of the lists of the ranking of the order of authorities in determining the performance of a stock. But the theory and calculation methods from 1 to 7 of the lists can only be an imitation of the non-violable laws of nature. The market comparison method is the main cause of

financial crises because it keeps the price rigid even when the economic conditions have changed. Technical analysis is based on the concept of market comparison and is equally wrong.

5). Selling S-UPN: In the distant future, people will be remembered by their Universal Permanent Numbers, not their names, which are designed neither to be universally distinct nor to be permanent. Post-Science Institute has reserved a group of Special UPNs for members of special knowledge groups at a discount:

UPNs	**Price to Members**	**Price to the Public (Starting Auction Price)**
200,000,000,$X_9X_8X_7$,000,000	$200,000.00	$2,000,000.00
200,000,000,$X_9X_8X_7$,000,001	$20,000.00	$200,000.00
200,000,000,$X_9X_8X_7$,000,002	$20,000.00	$200,000.00
200,000,000,$X_9X_8X_7$,000,003	$20,000.00	$200,000.00
200,000,000,$X_9X_8X_7$,000,004	$20,000.00	$200,000.00
200,000,000,$X_9X_8X_7$,000,005	$20,000.00	$200,000.00
200,000,000,$X_9X_8X_7$,000,006	$20,000.00	$200,000.00
200,000,000,$X_9X_8X_7$,000,007	$20,000.00	$200,000.00
200,000,000,$X_9X_8X_7$,000,008	$20,000.00	$200,000.00
200,000,000,$X_9X_8X_7$,000,009	$20,000.00	$200,000.00
200,000,000,$X_9X_8X_7$,000,010		
to	$2,000.00	$20,000.00
200,000,000,$X_9X_8X_7$,000,099		
200,000,000,$X_9X_8X_7$,000,100		
To	$200.00	$2,000.00
200,000,000,$X_9X_8X_7$,000,999		
200,000,000,$X_9X_8X_7$,001,000		
To	$20.00	$200.00
200,000,000,$X_9X_8X_7$,999,999		

6). Selling UPM: All UPM will be backed by gold resulting in no net monetary gain for Post-Science Institute, which owns all UPM, except in commissions of 1%. Universal Permanent Money and Number are listed at the price by the formula: P oz of Gold = 10^(N-12) where P is the Price and N is the Number of Digits of the Universal Permanent Number. Thus, a 12-digit UPN is worth 1 oz. of gold.

Post-Science Institute is working on 5 post-science papers before 2025 : 1. Post-Scientific Method, 2. Culture Level Quotient 2025, 3. Fuzzy Logic 2025, 4. Universal Permanent Information and Decoding Noncoding, Nonregulating, and Nonfunctional DNA, and 5. Next Religion of Knowledge for the Survival of Mankind. Additionally, post-science is speculating on the religion after the religion: Religion of Alien Technology CLQ=17. Post-science believes that DNA represents the accumulated wisdom of the universe from the infinite past and, therefore, is alien technology, not originated from earth.

The immediate application of DNA Intelligence, an alien technology, is in health and longevity. The human body is a self-rejuvenating machine based on DNA. DNA Intelligence contains the capability of the human body to achieve sustainable rejuvenation. Post-science has contributed the concept of BSIN (Body Self-Inflicted Necrosis), which speculates that microtear from exercise causes micronecrosis, which attracts invariant Natural Killer T (iNKT) cells to the site of the microtear to eliminate senescent cells. Mechanical tension from exercise stimulates satellite stem cell production and differentiation. In sum, DNA Intelligence contains the wisdom of Universal Permanent Existence or Permanent Survival and possibly also of sustainable rejuvenation at an advanced age, as speculated below:

When cells no longer divisible, say, after 80 years old, invariant Natural Killer T Cells (iNKT) clean up the debris left by not divisible senescent cells destructed by Body Self-Inflicted Necrosis (BSIN) produced by micro-necrosis created by microtears caused by intensive exercise. Satellite stem cells turn into divisible new cells through Epigenetic feedback, which makes the human body into a self-healing machine, with mechanical tension and Delayed Onset of Muscle Soreness (DOMS), which is an indication and the cause of microtears resulted from intensive exercise.

Post-science views that the human culture progresses through the cycle of the domination of religion to the rebellion against the religion and the founding of the next religion based on the new knowledge gained since the formation of the previous religion in a span of about every several millennia. A religion is formed based on the complete set of the most advanced knowledge at the time when the religion is founded. For example, the current religion is based on the most advanced knowledge 2,000 years ago with some promotional materials, the next religion will be formed in about 4,000 years, as preview by the current partial religion of science, which lacks knowledge in social and life sciences and fuzzy logic characterizing post-science. However, the rebellion of science against religion without any replacement for knowledge outside the domain of science is increasing the possibility of mankind's self-annihilation without the moral guidance of human behaviors. In particular, the guidance from religion against excessive evil, which in moderation is unavoidable because evil is a survival mechanism created by the intelligence of DNA for the weak to compete against the strong. The height of a civilization depends on the foundation of its knowledge, which identifies its cultural level. With post-science's support of religions, mankind will survive.

9. Conclusion

This paper contains the breakthrough solutions in science and post-science to four unsolved classical problems of historical significance. The problems are: 1). The Contact Problem, 2). The problem of value, 3). The problem of complete automation, and 4). The problem of explaining fuzzy logic. It would not be of great exaggeration to claim that the solutions are respectively 1). The foundation of robotics or the definition of a robot as an intelligent machine capable of safely coming into contact with the environment, 2). The foundation of social science, 3). The foundation of life science, and 4. The foundation of knowledge. Hugh Ching solved the Contact Problem in 1968 in the form of prolonged

contact in racket sports. Ching introduced the problem and the solution of touch to Ta-You Wu in the late 1990s, and Wu coined the word “jumpulse” to denote a sudden change of force, a concept missing in classical mechanics. Ching solved the problem of value in 1972 in the form of the Infinite Spreadsheet for real estate price determination, which later predicted both the Savings and Loan Crisis and the Subprime Woe. Ching conceived the solution of complete automation originally in the form of a solution to a completely automated and self-generating software system in 1986 and later extended to the hardware design of the Self-manufactured General-Purpose Robot with the ability to touch including the concept of fuzzy logic. Furthermore, the Fuzzy Infinite Spreadsheet developed by Ching using the fuzzy logic of Lotfi A. Zadeh in the 2010’s provided a formal solution to market crashes based on keeping the range of tolerance of market crashes (Ti) outside the limits of the range of certainty of the market prices (Ci), such that Ti ∧ Ci = Si (Range of Solution). Ching extended the concept of range of value of Zadeh to that of range of tolerance advancing the application of fuzzy logic in engineering to that in all real-world problems, which must sacrifice precision or relax rigor to expand the range of tolerance to fit into the range of possibilities to arrive at a solution. Fuzzy logic can deal with open-ended problems of reality with unlimited variables. In the early 21st century completely logically solutions in life science, such as the solutions to biodiversification, origin of life, and the theoretical foundation of life science for programming and documentation of DNA, are still not available, except the solution to complete automation. Even the available human intelligence is rare, such that only two people, Ching and Ta-You Wu, plus possibly Richard Feynman, can think the 25-varible Contact Problem; only Ching can solve the 50-variable problem of value, and only Kenneth Arrow, Gerard Debreu, and John von Neumann can understand the solution; no one except the inventor Ching and understand the solution to the 500-varialbe problem of completely automated software, where the number of variables corresponds to the number of machine instructions in a microprocessor chip or the number of keywords in robot software, and the solution escapes C. V. Ramamoorthy, a con-founder of Software Engineering, who, however, admitted that current software, being partially automated and requirement unlimited manual update, was wrong. Ching continues to search for rare people who can understand these solutions and welcomes all to join the research in post-science. This paper is a demonstration of the Ching Paradox, which states that original ideas should have no peers. For paper with peerless ideas, the paper, aside from satisfying the standard of excellence of the journal and the requirement of full disclosure and full accountability with the Infinite Spreadsheet valuation, should state that the publication will hold the reviewers harmless and without direct responsibility for the content of the paper. This paper will hold the reviewers harmless and without direct responsibility for the content of the paper. Ching designed Culture Level Quotient to measure a person or a society by differentiating the distinct methods of reason for solving problems of different complexity. It also helps to present a full picture of post-science, the most advanced knowledge in the history of mankind, not of the universe.

10. Synopsis of Culture Level Quotient (CLQ)

Beliefs of people form the foundation of human culture. Beliefs are based ultimately on faith which is supported by evidence and reason in the form of mathematics and logic. The method of reason of religion is faith. Human culture progresses from religion to religion. CLQ basically summarizes the development of faith or religion from CLQ = 1 to CLQ = 5 to CLQ = 9 to CLQ = 13 and finally to CLQ = 17. Each of these 5 CLQs represents a collective behavior based on a particular set of faith or a religion. The human culture progresses from religion to religion and disrupted by new rebellious beliefs, which will form the next religion. With CLQ, the behavior pattern of an individual or a society might be described by one of these CLQs: 1. Exact incomplete faith, such as morality, 5. Fuzzy incomplete faith, such as incomplete Religion of Science, where people believe in scientific Laws of Nature based on faith, not understanding, 9. Exact complete faith, such as the current traditional Religion, where people believes in Devine Laws based on faith, not reason, 13. Fuzzy complete faith, such as Religion of Knowledge, where most people believe in subtle science and very subtle post-science based on faith, not reason, and 17. Universal Permanent Faith, such as the Religion of Alien Knowledge contained in DNA Intelligence, which only the creators of living system can understand.

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