The Fundamental Theory of Knowledge

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Abstract: This paper summarizes the theory of knowledge from the book of the same title by the same author. The paper begins by asking, and answering, what knowledge is. In searching for precise definitions it rids itself of the ambiguous term of infinity. The seven main laws of knowledge are laid out and discussed. The theory is an economic theory and as such must mention how people choose to seek knowledge. Knowledge is treated like any other commodity or product such as an apple, copper or a television set. Choices must be made in order to acquire knowledge. The tool used is the same tool used for analyzing other commodities - marginal utility analysis. The paper moves on to develop a working function of knowledge. This function helps to give a clear picture of how knowledge gains and loses occur within a society. The function leads to an understanding of critical levels of knowledge as well as the term obsolete knowledge. The paper introduces the term 'negative' knowledge and demonstrates how time is lost and gained within the context of knowledge. The sum of knowledge is the last major issue discussed in this paper and it can be considered the 'signature' of the theory. The concept that two plus two is not always four differentiates the commodity knowledge from other commodities and products. Finally the implications of this unique property of the commodity knowledge are discussed with the aim of demonstrating how the world would end up as a better place for all with food, shelter, and security for all.

Humans exist in the three dimensional plain known as space. Space consists of all existence - . the earth, the solar system, and the universe.. No matter how many countless or parallel universes people claim there are, the fact remains there is only one existence.

Since energy cannot be destroyed but only transformed, the amount of energy today cannot exceed the amount of energy there was at the beginning of existence (regardless of whether that beginning resulted from a big bang or a divine creation. Given this, the universe is not infinite. Infinity (represented by the symbol ∞) is a word with its origins in mysticism. Forever and ever. God is forever and ever. The universe is forever and ever. This, however, directly contradicts the fact that energy cannot be destroyed,merely transformed. To eliminate this complication that arises from using the word infinity and resulting unwinnable arguments ; existence and the laws that govern it have been termed Konke - a Zulu word that means everything. Konke is represented by the symbol ●. Konke's properties are similar to that of infinity but for one major difference. Whereas ∞ - 1 = ∞, ● -1 ≠ ●. The rationale is simple. Once you subtract out one Konke is no longer everything.

At the same time ● x ● = ● because there is only one existence. Also when added upon itself Konke must equal itself, i.e. ● + ● = ●. This property will be made clearer towards the end of the chapter when the sum of knowledge is discussed. Given that existence is singular and clearly defined as the limit it follows that the mathematical expression ● + 1 is impossible for the reason that there is nothing more to add up. This is very different from the concept of infinity as the expression ∞ + 1 can be used and the answer is still infinity. One existence means that the mathematical expression ● ÷ ● can exist and the answer will be one. Having defined Konke and demonstrated its mathematical properties the question of knowledge can now be answered.

The basis of knowledge is understanding the laws of the universe. The production of goods is determined upon understanding some law of the universe. One cannot produce automobiles without understanding the properties of metals and combustion. This paper looks at the foundations of knowledge economics. Therefore, while it is true to say that cars are produced in order to be consumed, this paper looks at the question of the knowledge that is needed to create that car that is to be consumed. These laws of the universe have been given the term mthetho - a Zulu word meaning law. Thus Konke can be defined as the five dimensions of space, time and konke (don't understand this statement). (also not sure about the next statement but don't want to change it because it might not make sense then) Three dimensions of space, one of time and one more of mthetho, and was clearly elaborated upon by Einstein four of the dimensions are constant whilst the fifth dimension time can vary and is usually not constant for long periods of time. If time where constant men today if they where building pyramids five thousand years ago would be very much capable of interstellar travel, but time is not constant, in many times it reverses.

The fundamentals of knowledge can therefore be defined as understanding the laws of the universe. This paper (and the book it summarizes) refuses to look at or attempt to answer political and ideological questions of knowledge. It does not answer the questions of the three blind men and the elephant. *Three blind men were put next to an elephant and each asked what it was. The first blind man holding the trunk said an elephant is like a big snake. The second blind man holding the leg said it is like a big tree trunk. The third blind man holding the tail said it is furry. The moral of this story is "look at the whole picture.".*

Before entering the economic analysis of knowledge the laws of knowledge must be discussed and their importance understood. There are seven laws of knowledge that can be summarized as follows:

1. Knowledge is a real factor.
2. The law of consistency.
3. Knowledge is gathered by the mind.
4. Knowledge has a cause and effect factor.
5. Knowledge creates a force.
6. Where the gain of knowledge can be freely pursued and disseminated within a society, the more that society will be able to attract knowledge seekers.
7. The limit of knowledge is konke.

The first law - knowledge is a real factor - is obvious yet must be mentioned. The property of iron is such and such, the property of gold is such and such, and the property of an apple is such and such.

The second law - the law of consistency - is the most powerful law in terms of gathering knowledge. If it is A, then it must be A everywhere. A plutonium atom can not behave differently in Pakistan than in Canada. If it does behave differently it is not the same atom. The laws of creating capital cannot be different in New York than they are in Zambia. This immediately nullifies development economics as suggested by Tobin and Simon Kuznets. The law of consistency says you do not need a separate branch of economics to answer the questions of less developed countries; you need the same principles that exist everywhere else to create capital. The law of consistency however is much more than that. For example, it means that work in physics must be work in economics. If work in physics is that something is done, then work in economics must mean that something is also done. The law of consistency is the underlying principle of any unifying theory.

The third law - that knowledge is gathered by the mind - might seem obvious and not warrant mention. . Sadly, however, it is not that obvious. Even today, in 2006, there are people who believe that skin color gathers knowledge, others believe ethnicity gathers knowledge rather than the human mind and indeed

policies exist to fulfill that condition. This is part of the harsh political reality that this paper does not seek to solve.

That knowledge has a cause and effect factor (law #4) means that for every new law of the universe that is discovered the door is opened to uses of that law. Take fire as an example. From the humble cave men who took fire from, perhaps a tree struck by lightning, to the space shuttle of today, all are effects of fire. How would man have learnt to smelt iron if not for the knowledge of fire? .

The fifth law - that knowledge creates a force - might not seem that obvious at first. The more knowledge a country or a society has, the more other countries or societies that want to keep up, will be forced to come to that first country to seek that knowledge.

The sixth law is simple to understand. In a society where a human being can live in peace and express themselves freely, the more that society will draw other humans. That society will be dominant because it will attract the worlds knowledgable. Consider for exampleGreat Zimbabwe, Babylon, Egypt, China, Tyre all of whom, thousands of years ago, attracted scientists . In theory a society that adheres to this law does not need sheer numbers of knowledgable people to be recognized. However, the harsh political reality is that all too often societies prefer the "who you are" scenario rather than how capable you are, with the result that the society with the larger number will dominate as opposed to the one with the most knowledge.

No being can know more than everything. Assume that God does exist. He himself can know everything, but he cannot know more than everything. The limit of knowledge is everything - konke (law #7).

The laws are the foundations of any discipline and a discipline without laws cannot possibly have structure. Having understood and laid out the laws of knowledge the economic analysis of knowledge can now be undertaken. Economics is about the study of distribution, however before we can understand distribution we must be able to quantify what it is that is being distributed. The commodity under analysis must be quantifiable. How do we measure knowledge?

In utility theory it is rightly assumed that utility has a measure. When one has enough of a good one does not want any more. This is basic economics.. The unit of measure given to utility has been accepted as utils. To understand knowledge a measuring scale must be also drawn up. In this instance the unit of measure has been given as a knowl. The word knowl is merely shortened the word **knowl**edge.

In theory 1,000 knowls is the amount of knowledge a grown cave man would have, therefore 1,000

knowls is the minimum amount of knowledge needed to survive. Based on giving knowledge a unit of measure it is now possible to give a brief marginal analysis of knowledge. . Marginal analysis is needed to demonstrate that knowledge is merely a commodity (albeit the most important commodity because it allows humans to value other commodities)

Acquiring Knowledge

When a human desires to acquire knowledge that he or she has choices. An adult chooses to acquire knowledge or to undertake another activity. This can easily be demonstrated on an indifference map and the utility function defining such a choice is given below.

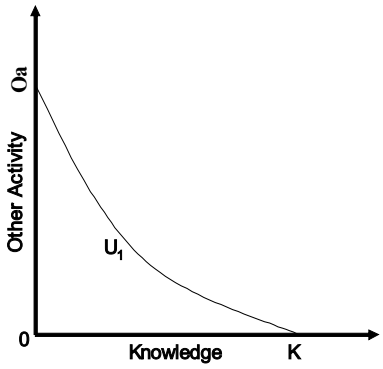

Fig 1

Fig 1 is a familiar diagram except the two choices available are knowledge and another activity. The individual has a utility function U_1 specifying how much knowledge he is willing to seek in a given day as compared to doing another activity. At Oa the individual spends all their time chasing another activity as compared to K where the individual spends all their time looking for knowledge. As with all indifference curves point Oa gives as much utility as point K. .

As with all other marginal analysis the individual will be faced by a budget constraint. The budget constraint in this case is time. . The budget line itself is a function of other variables, the main variable being income. One cannot make time to pursue education if they have no shelter and no money to purchase food and clothing. The budget line is also a function of will, if one does not have the will to seek knowledge then they will not. . The budget line is given in Fig 2 below. Fig 3 below gives us the solution for the particular individual given the utility function U_1 and the budget constraint T_1.

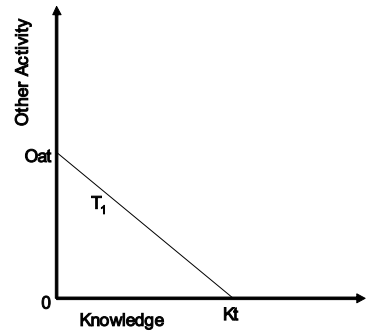

Fig 2

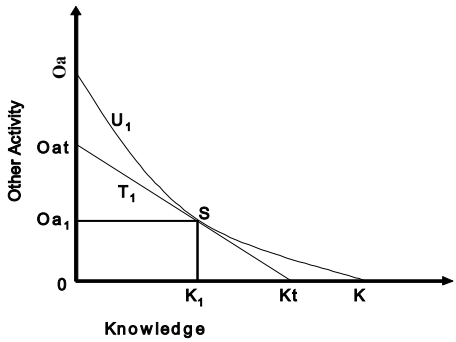

Fig 3

Fig 2 introduces the budget line T_1. Given such a budget constraint the individual is willing to spend Kt amount of time chasing knowledge or alternatively Oat amount of time doing another activity. Fig 3 gives us the solution given the budget constraint as well as the individual's particular utility function. The solution S is such that the individual will be most satisfied spending K_1 amount of time chasing knowledge and Oa_1 amount of time doing another activity.

The above solution as depicted in Fig 3 above is not realistic enough when we look at the real world. Knowledge, although a good as well as a commodity, is not like apples and pears where one can say "I will take three apples and four pears". In the real world except for a few exceptions, knowledge is either a full time pursuit or else it is sacrificed to another activity which is a full time pursuit. There are however many instances where Fig 3 is perfect. for example part time students. One will find somebody is working in a factory and in the evenings they are at college doing some business course. In the real world most solutions are corner solutions where one is either chasing knowledge full time or doing another activity full time as depicted in Fig 4 and 5 below. In Fig 4 the individual is most satisfied doing another activity all together given the utility function U_1 and the budget constraint T_1. In Fig 5 the individual is most satisfied chasing knowledge all together given the budget constraint T_1 and the utility function U_1.

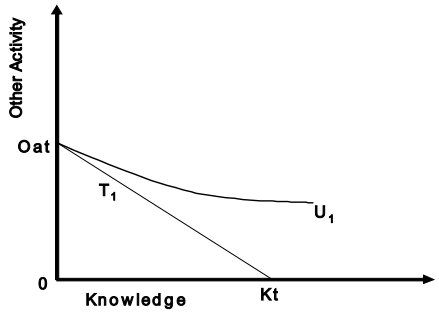

Fig 4

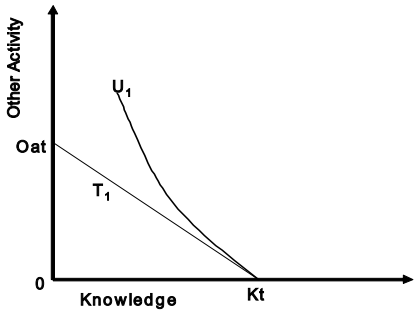

Fig 5

In Fig 4 the individual would be most satisfied spending Oat time doing another activity. In Fig 5 the individual would rather spend Kt time chasing knowledge and no other activity.

If one pursues the activity of gathering knowledge it reasonable to accept that ones knowledge will increase. For example, if one spends time analyzing the stars it is reasonable to expect that one will better understand the stars and the laws that govern the existence of those stars compared to one who does not pursue the activity of learning about the stars. If one decides to pursue knowledge there must be a point

when they say that they have pursued enough knowledge - where they would rather go and use this knowledge to contribute to the wider society. After all it can be reasonably assumed that one chases knowledge because they want to use that knowledge for some purpose. A mechanic eventually wants to fix or build cars, a doctor wants to cure patients, a psychologist wants to understand people and a soldier wants to defend their society.

When does an individual decide to stop pursuing knowledge? Again utility analysis gives us an idea when an individual believes they have had enough of gathering knowledge and they would rather begin to pursue another activity. This is self-evident. There are people with masters, PhD's, bachelors and diplomas. The utility function is described below in Fig 6. The solution to such a choice is given in Fig 7 below.

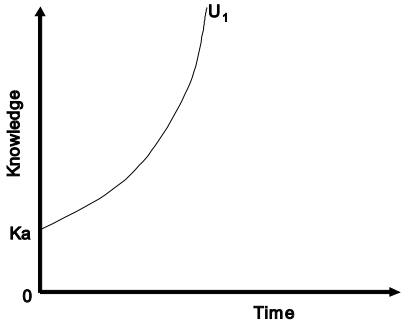

Fig 6

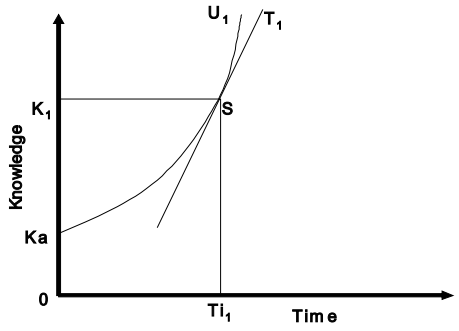

Fig 7

In Fig 6 there is the utility function U_1 that describes the relationship between time and knowledge for this particular individual. With time the individual gains more knowledge. The term Ka has been introduced and this is the minimum 1,000 knowls of knowledge that any individual needs to merely survive on the earth. The utility function U_1 is upward sloping because with time knowledge increases.

In Fig 7 the time constraint T_1 has been introduced. The particular individual depicted in Fig 7 would be most comfortable given their circumstances in life to pursue knowledge for Ti_1 amount of time and in return gain K_1 amount of knowledge from this time spent gathering knowledge. After time Ti_1 this particular individual would rather do another activity. Ti_1 could depict a situation where the individual just has a high school education or it could depict a situation where they have discovered a new law of the universe that was previously not known to society.

Knowledge and Society

Given time the knowledge of a society is expected to increase. Even if one does nothing but hunt and eat

once every few years they are likely to discover (even if accidentally) something new with their surroundings, such as a new plant that has some healing power, or that different types of soils are more fertile than others. .

The concept of relativity can now be introduced. In this paper when talking about relativity it is merely in a scientific sense within the context of the subject matter of the economics of knowledge. The knowledge that a society or indeed that a human possesses is given the symbol⊙. The level of knowledge that a society has at a present time is largely dependent on knowledge that a society had in the previous period. However the knowledge of the present is a mutually exclusive event in real terms This seeming contradiction will be better understood with a follow up paper. For now, so that we can better understand present knowledge, let us assume that current levels are dependent on past knowledge levels. Therefore it would be correct to express this relationship as $\odot = f(\odot_{t-1})$. Take the formal education system as an example. What one learns in grade six is the building block for what one will learn in grades seven and eight. Again taking economics at university level, what one learns first (particularly demand and supply) will be useful for the rest of their economic lessons. Afterall, an analysis of apples is merely about deriving a demand and supply function - more apples than the market needs and the price of apples will fall.

It is agreed then that knowledge is reliant on past knowledge in terms of building up knowledge (al*though the reality is that once a knowledge level is passed, that passed knowledge level becomes irrelevant).* A function for determining the value of knowledge can now be determined over time. Whenever one talks of time the concept of relativity immediately applies. One can draw up a basic linear function as a way of illustrating knowledge. The basic linear function of course being y = mx + b. Having assumed that knowledge should increase over time, y = knowledge, x = time, m = slope of the line, and b = Ka, the minimum amount of knowledge needed to survive and this is 1,000 knowls. We can therefore say for our purposes that y = mx + Ka

. We therefore have two equations for determining our understanding of knowledge these being:

$\odot = f(\odot t\text{-}1)$ (1)

$y = mx + Ka$ (2)

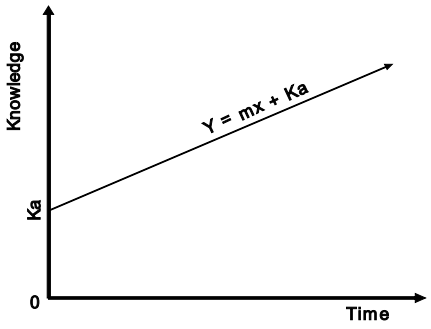

Fig 8

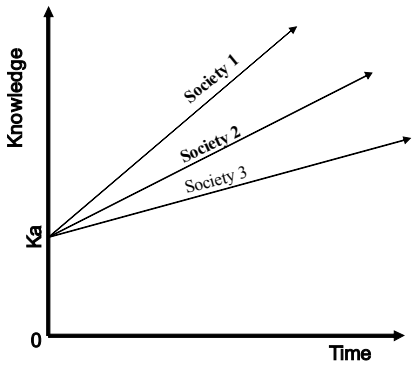

Fig 9

If knowledge grew in a linear projection over time Fig 8 above would be an acceptable illustration of how knowledge grows. However, this is not the case. Where today are Babylon, the great civilizations that built pyramids, the Mayan temples or Great Zimbabwe? Therefore knowledge is not expected to grow in a linear fashion. If it did we would end up with the situation as described by Fig 9 above. Fig 9 depicts three societies, societies 1, 2, and 3. If the gain of knowledge was a linear projection society 1 would always in terms of knowledge possess more than society 2, and society 2 would always possess more knowledge than society 3. This as explained above cannot be true. If it where those who built the pyramids would be flying interstellar travel and those that built Great Zimbabwe or Babylon would be premier global powers today.

However Fig 8 and Fig 9 give us the opportunity to look at the argument of what determines m, the rate of change of knowledge. It does not matter if the growth of knowledge is linear or nonlinear, that is be the rate of change of knowledge be constant or not, that rate of change must be influenced by something. The clue to that something is found within the laws of knowledge. The four particular laws that determine m or the rate of change of knowledge in order of importance are:

1 Knowledge is gathered by the mind.
2 Knowledge has a cause and effect factor.
3 The law of consistency.
4 Where the gain of knowledge can be freely pursued and disseminated, that more free society will attract knowledge seekers.

The willingness of the mind is a major variable in how fast the rate of change of knowledge is within a society or human being. As more knowledge is discovered it leads to more discoveries of knowledge. Knowledge turns from theory to practical use (this being part of the cause and effect factor). If there are inconsistencies in theory then the rate of knowledge will not be as fast.. Consistency in terms and definitions allow for a greater hitchhiking ability where a subject can borrow from another subject and applying it the first subject. If the gain of knowledge cannot be freely pursued the mind will be less willing to gather that knowledge simply because of the harsh political realities.

The conversion rate of knowledge can now be raised.. The conversion rate determines the limits of gathering knowledge. The conversion rate of knowledge is the process from idea to theory to practice. “The Fundamental Theory of Knowledge”, states that “knowledge cannot increase at a faster rate than the conversion rate or else ??? it will become meaningless. It will become meaningless because it cannot be imagined.” Indeed the process is quasi-circular. Practice is behind a new idea, which is behind theory,

which is itself behind practice, and so on and on the process goes , . Before stainless steel could be manufactured the properties of metals that would be mixed with iron had to be known. Before these properties could be known an idea of their properties had to be known . "The faster theory is converted into practice and use the higher is the conversion rate the more knowledge a society will gather, the more distance a society will cover in konke plain." Not sure about the word plain here

Therefore the slope of the equation at any one time is determined by how much a society or individual adheres to the laws of knowledge. It *is best never to canonize knowledge or we end up with a situation where one will believe in that theory even when it is being proven to be contradictory. For example zero percent interest rates have not returned Japan to seven percent growth per annum. A complete theory has no contradictions in the short or long run.*

Having discussed what would affect the change of knowledge and having discarded the notion that the rate of change is linear we can now establish a function for determining knowledge. We already have five factors that determine the growth of knowledge These include the four laws mentioned above plus the knowledge of the last time period. We can reasonably say the determinants of the knowledge thus far are:

- Knowledge of the last time period
- Economic freedom (which will determine the use of knowledge, which will determine the conversion rate of knowledge. Indeed economic freedom plays a larger role than intellect. To gather knowledge a society must be able to sustain itself. It is irrelevant that the Soviets invented modern communications with the satellite Sputnik - they were unable to sustain this. Another means of measuring of economic freedom is examining who is allowed to own the media. Whoever owns the media has the ability to promote their own agenda and the ability to criticize other groups

Difficult as it may be the Fraser Institute based in Vancouver, British Columbia, Canada has attempted to measure economic freedom. While, with greater knowledge the Institute's measures will become more accurate at least they are trying something for the betterment of mankind.??whats the purpose of this statement It would be reasonable to say one can use their measure as a function in a knowledge equation if we can assign value to knowledge over and above knowls and if we could assign value to utility over and above using utils as a tool to determine satisfaction. However, with knowledge at least a particular law can be given a defined quantity of knowls as compared to utility where each individual values something differently.

We can with enough confidence say that:

$$Y = f(Y_{t-1}, X_1, X_2, X_3, X_4) + Ka \qquad (3)$$

Where:

Y_{t-1} = knowledge level of last time period

X_1 = Economic freedom

X_2 = Conversion rate (use of knowledge)

X_3 = Academic Freedom

X_4 = Research, Private and government.

Ka = 1 000 knowls of knowledge needed to survive.

Academic freedom also means intellectual freedom. This again is largely determined , not only by institutions such as universities, but also by private institutions such as foundations, journals and the media, whose purpose is to dispense ideas solely for the sake of ideas not based on any ideology. That is to say "giving credit where it is due". The function for equation 3 can be depicted in Fig 10 below.

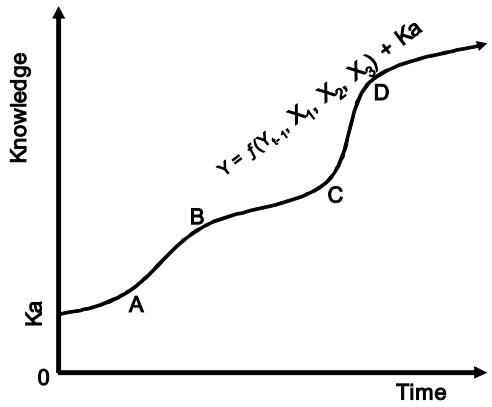

Fig 10

Fig 10 above depicts a more realistic change in knowledge, it cannot be linear. Fig 10 allows us to draw interesting conclusions before we analyze time and knowledge. At point A knowledge gathering speeds up before slowing down at point B. Again at point C knowledge gathering speeds up and then slows down at point D. What in effect is happening? When the pace of knowledge increases time speeds up, and when the pace of gathering knowledge slows down time slows down. When the pace of gathering knowledge slows down a society covers less distance in the konke plain as compared to gathering more distance.. Time is a distance; the measure of that distance in terms of knowledge is knowls. Time is rarely constant in that konke plain. Only space and mthetho are constant. Time is not.. After all mthetho cannot be anything else but constant, the law governing an oxygen atom cannot change from day to day or from year to year.

Critical Levels

To undertake a certain task one needs a certain amount of knowledge – a critical level in order to undertake that task.. . To fix a car, one needs a certain amount of training about automobiles, to carry out brain surgery one needs a certain amount of knowledge. To survive amongst the San people in the Kalahari Desert needs a critical amount of knowledge All tasks need a critical level of knowledge before they can be undertaken.. This concept is demonstrated in Fig 11 below.

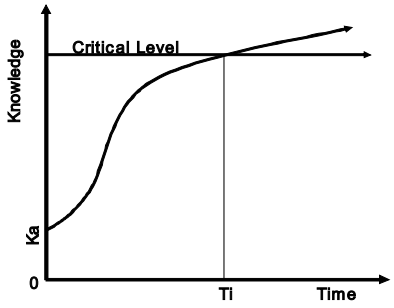

Fig 11

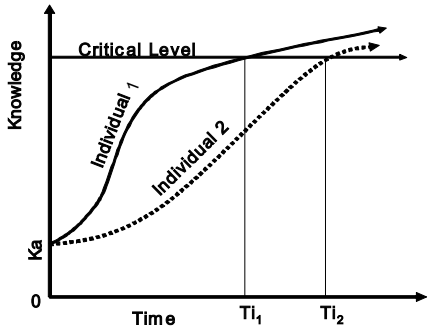

Fig 12

Fig 11 depicts an individual who seeks knowledge to undertake a particular task. That task to be undertaken needs a certain amount of knowledge as depicted by the critical level. At time Ti that individual has enough knowledge to undertake the task. To demonstrate relativity Fig 12 depicts two individuals; Individual 1 and Individual 2. Both individuals would like the knowledge to undertake the same task. Individual 1 arrives at the critical level before Individual 2, with Individual 1 arriveing at time Ti_1. To have the knowledge to undertake the same task Individual 2 takes Ti_2 time. Maybe Individual 2 had to repeat some years but when they arrive at the critical level they both can undertake the task. In fact Individual 1 covered more distance than Individual 2. Although having taken longer Individual 2 eventually could also do the task. There are two vital economic lessons that can be learnt from Fig 11 and Fig 12.

Lesson 1: The standards of an education system cannot be reduced for the sake of anybody. Eventually one will get the critical level needed to undertake a task. (im not sure how you draw this conclusion?)

Lesson 2: If an individual has the critical level to undertake a task he/ she must be allowed to participate in the economy. This is part of economic freedom. If individuals with the critical level are barred from competing to protect the incomes of others then that society will suffer. In the long run the society that will determine global policy and survive the longest is the society that allows freedom. .

With the increase in knowledge critical levels change. The mechanic of the 1950's would find it very confusing in today's world of automobile repair. . A modern Lexus has far more parts (and far more knowledge put into its production) than a Thunderbird from the 1950's. These changing critical points are

depicted in Fig 13 below.

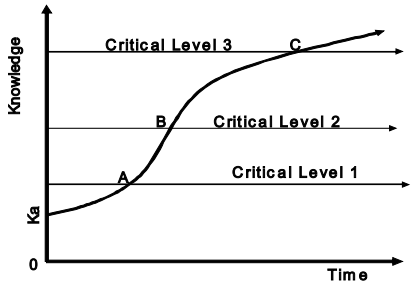

Fig 13

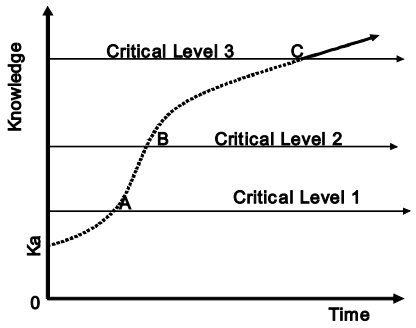

Fig 14

Fig 13 depicts changing knowledge over time. In the 1950's one needed knowledge equal to critical level 1 to be considered fit to be a mechanic. In the 1980's one needed critical level 2 amount of knowledge to fix a car, today an individual needs critical level 3 amount of knowledge to be considered fit to be a mechanic.

Fig 14 demonstrates what happens to this knowledge. Fig 14 is demonstrating a phenomenon known as obsolete knowledge. In today's world- 2006 - all knowledge below (below what the critical level?) is obsolete. The reason is that all information contained at point C, includes information from before point C. All the knowledge a grade eight pupil has contains information from grade 1 – 7. At this juncture an important economic lesson can be derived.

Lesson three: As higher levels of knowledge contain all information from below there is no need to re invent the wheel. For example a developing country can disregard analogue when developing its communications industry since modern digital technology contains all information about telephones that preceded it.

The Concept of Negative Knowledge

Many people once thought the world was flat . That they where wrong is not at all a problem. That they thought about the nature of their universe is what is important. In fact this investigation, starting from a wrong premise, led to the correct premise and more knowledge about the nature of the universe. This wrong premise can be termed negative knowledge.

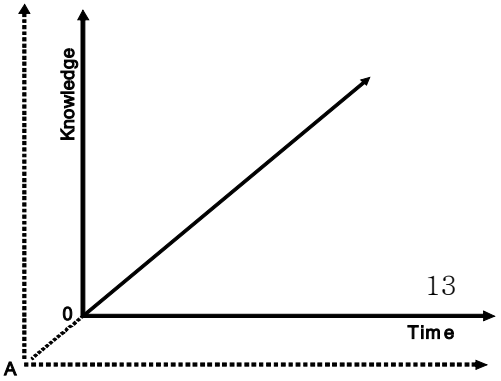

Fig 15

Fig 15 above demonstrates this phenomenon that has been termed 'negative' knowledge. At point A people concerned about the nature of the universe and others in general merely looked at the horizon and believed the world to be flat. At 0 however with new correct evidence it was understood that the world is not flat rather it is a spherical in shape. It is at that point that we can say time began for the understanding of the nature of the world. Otherwise time was static or rather it did not exceed because the true knowledge of the nature of the universe was not comprehended. What is meant by time is time specific to the knowledge of understanding the true nature of the earth.

Forgetting politics and ideology, the concept of 'negative' knowledge has a very important role to play in analyzing the behaviour of the investigative process of knowledge. In the book "The Fundamental Theory of Knowledge" Maria Curie, discoverer of Radium was used as an example.. . Ms Curie refused money for her patents because she wanted to help the world in terms of advancement of medical purposes of radiation, the x ray.

On her quest to discover Radium Maria Curie could not have had a straight path. . Among much research she must have met numerous stumbling blocks and had to rework many principles she thought right which were in fact wrong.

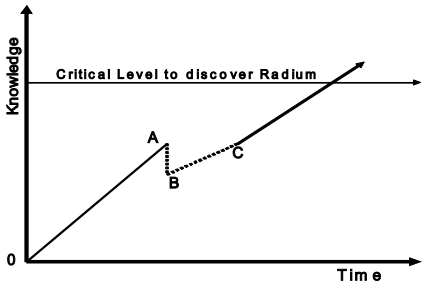

Fig 16

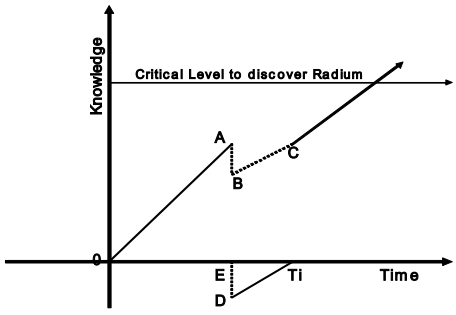

Fig 17

Fig 16 and 17 above demonstrate what this process. Note Fig 16 and 17 both start at the origin not at Ka, therefore there is no intercept. The reason is we are dealing with what can be termed specific knowledge. There is a point when Maria Curie started to learn about Radium. This is the point of origin for specific knowledge. At point A Maria Curie makes a wrong premise and that wrong premise leads her to point B. She has to rework herself back to point C which is equal to point A in terms of knowls of knowledge.

From point C she makes the correct conclusions and moves forward until she has enough knowledge to discover Radium.

Fig 17 shows more because it shows what happens to time due to the wrong premise. The triangle EDTi is similar to the triangle ABC. The premise that led her to B is 'negative' knowledge and is equal to ED. The amount of time lost is equal to ETi because it takes her that long to arrive at point C which is equal to point A.

'Negative' knowledge is merely a term used to simplify understanding. Negative numbers also exist merely to simplify understanding. Again this is like infinity for one can argue forever and still some people will insist negative numbers exist. They exist, but merely for our convenience.. Laws of the universe either exist or they do not exist. There is no such thing as a negative law. . Negative knowledge is a lie; it does not exist, no matter how much one persists in it for ideological and political reasons. That the earth is flat is not true. That it is spherical is true. That the earth is flat is not the opposite of the fact that the earth is spherical - it just is not true. Non-existence cannot be proved because it does not exist. One cannot know less than nothing. To know less than zero would be negative in the truest sense - but that is impossibility. Even an amoeba knows something. If one has fifty rocks, one then cannot subtract more than those fifty rocks because one then is entering the real of non-existence - a realm that does not exist. This being said, the negative concept is most helpful. In Fig 16 above Maria Curie did actually lose time, but she still got older. In her investigations that would eventually lead to her discovery of time she did lose time ??. Fig 18 below demonstrates the four quadrants.

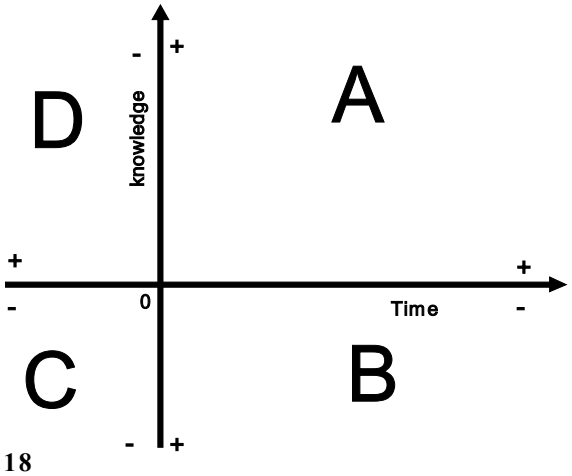

Fig 18

In each of the four quadrants above, A, B, C and D we have a positive or negative effect on either time or knowledge. In quadrant A both time and knowledge are in the positive – namely the plain in which we exist.. In quadrant B time is positive but knowledge is negative. In quadrant C both time and knowledge are negative. In quadrant D knowledge is positive but time is negative. In truth Fig 17 should demonstrate

a loss both of knowledge and time because that is what a wrong premise does - the untruth leads to untruthful results. (should you explain this paragraph a bit more?)

To understand anything scientifically one must make the best attempt to fully understand that phenomenon. If an economist studies bananas to fully understand the economics of that banana that economist must go over and above supply and demand. He or she must know what causes the supply to fluctuate, what causes the demand of that good to fluctuate, what kind of soils would make that banana healthy, characteristics of the banana, are there substitutes.Many variables must enter the equation.

In economics to understand better there is the need to quantify, or to be able to imagine the quantification process. It is when knowledge is to be quantified that we get unsuspecting results. Earlier on in this paper a function for knowledge was formulated (equation number 3). In this equation it was stipulated that knowledge is a function of knowledge level of the last time period, economic freedom, conversion rate (use of knowledge), and academic freedom. This would give us the total knowledge of a society. The function represented by equation 3 would give us the total knowledge of society - that is to say every individual's knowledge would be added up. This is more complex than it seems. Knowledge is not an orange, bicycle, automobile, or any other physical good. Knowledge is not a physical good that once acquired is kept it for life.

The Sum of Knowledge

At the onset of this paper the properties of konke where explained. Both konke and infinity (more or less) when it comes to multiplication, division and subtraction behave exactly like the number 1. However the property of konke that will allow us to understand the addition of knowledge is the expression ● + ● = ●. One could give the expression in terms of infinity, ∞ + ∞ = ∞. Although the two results seem similar the logic behind their similarity is very different. Infinity added upon itself is equal to itself because infinity is so big that even if you add something to it, itis still equal that big thing that goes on forever. (and although we have all agreed that energy cannot be created but only transformed). Remember that the expression ● + 1 is an impossibility because there is nothing else to add. Therefore logically speaking from the properties of konke, adding konke to itself equals itself because you are adding the same thing to itself; you are adding one existence to itself.

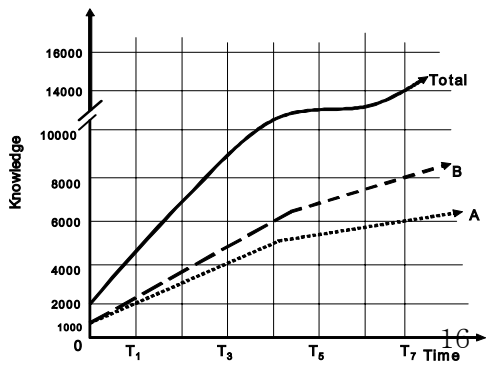

Fig 19

Take two individuals A and B represented in Fig 19 above. Remember to survive you need 1,000 knowls of knowledge, that is basic knowledge to survive in that society The both need to eat, to have shelter and to have clothing. We take their totals and we should end up with table 1 below. Table 1 is merely contains the numbers that created the graphical illustration in Fig 19.

Taking the conventional sense of addition we would end up with a total that is graphically illustrated in Fig 19 and easily appreciated in Table 1. However there is something fundamentally wrong with that picture. First of all both Individual A and Individual B have some knowledge in common – knowledge that is the same to both of them. Theey both know they need to eat, have shelter, and have clothing to survive. This knowledge is the same. It cannot be added twice. As this knowledge is similar for both of them it must be subtracted when the total is added up. The maximum that can be arrived at is that demonstrated in Table 2 where the common knowledge has been subtracted. There can be no double counting. We say the maximum knowledge that can be arrived at because the result can vary from the same figures.

Time	Individual A	Individual B	Total
0	1 000	1 000	2 000
T1	2 000	2 200	4 200
T2	3 000	4 000	7 000
T3	4 000	5 000	9 000
T4	5 000	6 000	11 000
T5	5 500	7 000	12 500
T6	5 750	7 500	13 250
T7	6 000	8 000	14 000

Table 1

Time	Individual A	Individual B	Total
0	1 000	1 000	1 000
T1	2 000	2 200	3 200
T2	3 000	4 000	6 000
T3	4 000	5 000	8 000
T4	5 000	6 000	10 000
T5	5 500	7 000	11 500
T6	5 750	7 500	12 250
T7	6 000	8 000	13 000

Table 2

What if Individual B knows exactly what Individual A knows. What if he knows all what Individual A knows and more. That means that from the total, not only is the common knowledge subtracted, but also everything that Individual A knows. We end up with the minimum amount of knowledge that the two individuals can have when their knowledge is added together which is demonstrated in table 3. .

Time	Individual A	Individual B	Total
0	1 000	1 000	1 000
T1	2 000	2 200	2 200
T2	3 000	4 000	4 000
T3	4 000	5 000	5 000
T4	5 000	6 000	6 000
T5	5 500	7 000	7 000
T6	5 750	7 500	7 500
T7	6 000	8 000	8 000

Table 3

Take two Individuals A and B, whose total knowledge is equal to Y represented by this basic equation:

$Y = A + B - Ka = D$ (4)

$Y = D - A$ (5)

Equation 4 is maximum knowledge the two can have together and equation 5 is the minimum knowledge. In Equation 5 B is taken out because B knows everything that A knows. The general sum of knowledge for the two would be:

$Y = A + B - Ka - C$ (6) where C is the knowledge common to them over and above Ka.

Take n individuals in a society then the sum of knowledge would be:

$Y = \Sigma A_i - (n-1)Ka - \Sigma C_{ij}$ (7)

In equation 7 above it is (n-1)Ka because Ka will be double counted n times yet it needs only to be included once. We must also add?? the different knowledge that individuals know over and above Ka hence the expression ΣC_{ij} that must be subtracted.

Assuming that A_1 has the most knowledge and giving the total sum of equation 7 as X i.e.

$Y = \Sigma A_i - (n-1)Ka - \Sigma C_{ij} = X$ then X must lie in the range:

$A_1 \leq X \leq |\Sigma A_i| - (n-1)Ka$ (8)

In equation 8, the expression $|\Sigma Ai|$ means the conventional addition of the sum of knowledge. The maximum range therefore as expressed in equation 8 assumes that besides the conventional knowledge the individuals know different things, have mutually exclusive knowledge.

The expression in equation 8 is refers to knowledge that is not specific. It is talking generally about all the knowledge one possesses. However, an expression for knowledge is needed that deals strictly with specific knowledge, that is to say where Ka is not a factor. For example the knowledge of a discipline, the knowledge of what we use on a daily basis in our various occupations. Coming to specific knowledge then X must lie in the range:

$A_1 \leq X \leq |\Sigma A_i|$ (9)

The expression derived in Fig 7 and 8 are laws of the universe, they exist, however difficult to understand. However let us say that humans have advanced so far and we all know everything. Six billion humans know the laws of all existence, travelling between dimensions, the secrets to eternal life, traveling in an

instant to distant planets. Everyone knows everything.. If we add up that knowledge in a conventional sense we would end up with more knowledge than actually exists. Even if two of us know everything and we add up what we know it still cannot be larger than konke. This is why the expression ● + ● = ● must hold.

Take two rooms: one with 10 people and another with 100 people. Assume the only knowledge in existence is the ability to count and for each digit one can count one has one knowl of knowledge, therefore if you can count up to fifty you have fifty knowls of knowledge and if you can count up to one hundred you have one hundred knowls of knowledge. In the first room all ten people can count up to 100 and in the second room all one hundred people can count up to 100. Both rooms have the same amount of knowledge, 100 knowls of knowledge. This is because in both rooms there only exists the ability to count up to 100. Thhat is all they know. In a conventional sense the first room should have 1,000 knowls of knowledge but how is that possible because nobody can count up to 1,000 because a knowl is the ability to count each digit and nobody can count above 100.. In the first room one person discovers how to count to 120. In the second room five people discover how to count to 110. The first room contains more knowledge. It should be obvious now. This property of knowledge is its strongest point for disciplines of life.

Economic Lesson: If one person knows a piece of knowledge in a society that knowledge is available to that society. That one person has the ability to share that piece of knowledge.out. In a free market situation there is no hindrance with whom that person shall share that knowledge. This is self evident. Although the majority of people in India and Pakistan live on less than a dollar a day they possess nuclear capability like the USA where people earn on average maybe one hundred times that dollar a day.

Economic Lesson: There is not much total difference in knowledge levels between societies due to the easier dissemination of knowledge via the Internet and other modern telecommunications equipment. The knowledge level between societies is more balanced out now than at the beginning of the twentieth century. It is not true to say that one doctor knows better than another doctor when they used the same text book, even if they are from societies with two different living standards.

Making the World Better

Knowledge Economics cannot be knowledge economics without the understanding of the equations laid out above and in particularequations 7 – 9. ??? whe the word that? is not knowledge economics that is ideology, politics, or sociology. That is the basic property of knowledge..

In order to maximize its potential a firm or business unit needs to maximize the expression $|\Sigma A_i|$, that is to say to minimize the relationship $A_1/|\Sigma A_i|$. It is this expression that determines the degree of specialization that allows fewer people to do the same job. Take a bank. It needs to lend out money. If it lends out too much money to the same sector then the bank has lent out money to the same knowledge base, has not diversified and could end up in trouble.

Maximizing the expression $|\Sigma A_i|$ does not mean the need for over-specialization. If two accountants are needed because the workload is too heavy for one, then it is most prudent to hire another accountant. A factory needs many people doing the same thing to make a product for sale, it needs to ensure the that the right number of people are utilised. If the marginal revenue is equal to marginal cost the firm has hired the right amount of people to maximize profit. However, real world competition has more to do with producing in order to maximize revenue in order to undercut the competition.

Depending on the time frame knowledge theory gives us a clue at what a firm would do in a competitive environment. If the job is needed immediately then a firm will hire an established professional. If the job is only needed later then the firm will hire somebody it can train. Training can be cheaper if the person can be tied to the firm for a certain period of time

Having developed a theory of knowledge based on economic tools we look at a crisis that covers a large part of the world - poverty.

Knowledge is a commodity. Taking knowledge as a commodity demystifies knowledge. It is taken out of the realm of philosophers, where the subject is discussed by few and in a language too complicated for the masses.

Development Economics is a branch of economics that has developed rapidly since Simon Kuznets won the Nobel Prize of economics in 1971 and more importantly when James Tobin won the same prize in 1981. However, there is a flaw in the subject of development economics. The flaw was well put by Milton Friedman when he said, “there is just bad economics and good economics.”

The mainstay of development economics is how to transfer capital from wealthy countries to lesser-developed countries. This precisely is the flaw of development economics. Africa alone has received billions of dollars in aid yet poverty has, for the most part, continued to increase. Given such failures one of the prominent development experts suggested that there should be a small negligible tax on foreign currency transactions. The proceeds of this tax would go to the deserving lesser-developed countries. The Tobin tax was rightly frowned upon. Here, Tobin had reached a stage of frustration with his theories not

working, to suggest such a tax was admitting defeat. It was an acknowledgement that development economics cannot be separated from economics.

Capital is a creation of man and his knowledge. . – this knowledge being the prime commodity. Just as iron ore is the basic commodity of many products, it is because of mankind's knowledge of iron ore that humanity knows that iron ore has a value.

One could talk of a society having knowledge, however it isthe basic individual who gathers this knowledge. It is the individual who will have an idea of how to build a better motor engine. Individuals, andnot a society, discover elements. Marie Curie discovered the element Rhodium and radiation - not Poland.

The individual must be free to gather knowledge. If a society is against the individual gathering knowledge individuals will move to other societies where they think they will be allowed to gather knowledge. This is a basic law of knowledge. There is never a brain drain or a shortage of skills. A country has enough skills for the policies it follows. When a Ndebele leaves Matabeleland for Canada for whatever reason causes, this shift in domicileis because they believe they can utilize their skills better, and live a better life. This need not be necessarily truce – it can be merely a perception. When a Canadian leaves Canada for the USA, it is basically because they believe they can be more self fulfilled.

The laws of demand and supply dictate that when there is a shortage the price of a good or service rises. If there is too much of a good or service the price will fall. If there truly was a shortage of skills in Africa, the prices of those with skill will witness a real rise of their wages and salaries. Why the are skilled people then leaving lesser-developed countries? The answer simply is that for the development level of these societies their skills are not needed. migration.

In many instances even if there is an oversupply wages are kept artificially high due to laws prohibiting competition.

The above is essentially is the difference between development theorists and this economic theory based on knowledge. There is no shortage of capital in lesser-developed countries; they have enough capital for the economic policies they advocate.

Development economics basically claim there is a shortage of capital and capital needs to be pumped into these countries to develop. Many of them talk of privatization is needed in order to pump capital in the inefficient state monopolies and run them for profit. What is really meant is the transformation of these

monopolies from state controlled monopolies to private monopolies still to be protected by legislation. In order to provide loans quite often the IMF and World Bank require governments to privatize their state industries. Ironically these champions of free markets and reform want protection from competition for the privatized company while good economics states there must be competition.

Any theory that is based on knowledge, the prime commodity, has to follow a basic law of knowledge. This is the law of consistency. The philosopher Ayn Rand put this neatly when she said A is A. A fact is a fact no matter how much wishful thinking there is. Rhodium has certain properties that distinguish it from other elements. Rhodium will behave in the same manner in Poland, as it will in France, USA, Canada, as well as in Africa and India. If it is capital in New York surely then it is capital in Johannesburg, Bulawayo, or Mumbai. The same laws in Mumbai must create this capital, just as it is created in New York. It therefore is senseless to bring capital from New York to Pakistan if Pakistan does not adhere to the laws of capital creation. It will just be throwing capital down a bottomless pit.

One cannot fake the act of doing with policies geared towards knowledge as compared to policies geared towards attracting capital. With knowledge, you either have it or you do not.. No matter what kind of legislation is created, one cannot legislate knowledge into your mind. Even if there are laws prohibiting competition one will still be a better engineer, doctor, businessman, economist, or pharmacist than those being protected by non-competitive laws. Such legislation endures the world over - even where it is least expected.

With an emphasis on capital however, one can fake the art of doing. Being protected from competition those without ability will appear to have excellent ability. Being protected from competition they will seek those with knowledge whom they consider to be the ideal kind of human being. In many cases these ideal human beings are major shareholders who sit on the boards of companies protected from competition..

In many countries there is an outcry that directors are being overpaid. In fact they are not. If the shareholders do not want to gather knowledge then they have to vote high pay packages for directors even when losses are being made, as they do not want to run the company. You cannot pretend to gather knowledge.

An important factor about taking knowledge as a commodity is that one can discuss critical levels of knowledge. The reality of the world is that to undertake any task a minimum amount of knowledge is needed. Knowledge creates capital, capital that must be relevant to that society. This means that a society must be able to pay for it.

Consider leaders of lesser-developed countries discussing the need to place telephones in rural areas. They claim that private investors cannot do this but the government can, hence the reason for having State monopolies in this sector. Though in State hands many of these companies (for example in Africa) do not provide services in rural areas or else provide very erratic service.. Yet in private, competitive hands using scrap copper or scrap fiber optics one could easily connect two villages. Is this not a telephone company? These leaders want to be seen to be doing for the people rather than having the people doing for themselves. They want to be seen as mystics ?? when all they are doing is driving lesser-developed economies further behind.

Another important law of knowledge - the cause and effect factor - is considered in a theory based on knowledge rather than capital. This effect factor cannot be known until knowledge is discovered. Take fire for example. Fire was probably first used for warmth. Yet next to knowledge, fire is probably the most important commodity in the history of mankind. It is fire that melts copper ore to extract the copper, it is fire that melts sand to get glass, it is fire that powers combustion engines, it is fire that creates electricity when coal burns heating water that drives the turbines, fire melts the iron to make steel, guns, spears, fire powers the airplane, and fire distills petroleum to get plastic. All these have their own causes and effects. This paragraph seems to be a repeat of one earlier in the paper?

Knowledge is the foundation of mature societies of which there are few. Most societies are still based on the mystical. Having understood knowledge, the society that is most free will prosper and win, the society that can attract the worlds thinkers will outstrip any other society.

Let people gather knowledge and use this knowledge to progress so that the world can enjoy peace and prosperity.

This paper did not touch on the subject of dissemination of knowledge, or why knowledge is better, and more easily, transferable in cities versus rural areas, or to the small world-big world problem. It does not deal with collaboration between economic agents, or non- collaboration. Those questions have been talked about and satisfactory arguments are available in a good economics library or on the Internet. This paper at most was building up to prove that because two plus two is not four in knowledge equations this property is useful and gives a clear insight into the progression of humankind. This equation answers why spillovers of knowledge occur. This paper rejects the notion that interaction is the basis of knowledge increases. Investigation and thinking are the main facts. Interaction is for business, one has knowledge whether they share it or not. Basically knowledge will flourish where it is allowed to and not because there is a city where interaction (and politics and ideology) can easily take place. . Since time

immemorial all economies have depended on knowledge. The cave man had to know how to hunt.

Reference:

Khumalo, Bhekuzulu: The Fundamental Theory of Knowledge. Bhekuzulu Khumalo 2005 Toronto.