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Some Reflections on Wisdom and its Mathematical Formulations

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ABSTRACT

This article focuses on recent definitions of the wisdom concept. From each of those western definitions a mathematical formulation is arrived at. Based on that insight two further mathematical formulations are proposed. The first formula which is based on the product of intuition, knowledge and values is then analysed from the perspectives of three eastern philosophers. Our second proposed formulation is based on the concept of an improper integral. This mathematical formulation is based on the following two main assumptions: an individual's decisions become progressively matured and comprehensive over his or her life-time; his or her wisdom evolves over that time period. Then the proposed improper integral formulation of wisdom is explained in terms of three case studies which focus on the decisions made by great philosophical personalities over their life-times.

Keywords: *knowledge, wisdom, mathematical formulation.*

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INTRODUCTION

The researchers that collaborated for this study came from two completely different backgrounds. While one worked in mathematics at a university in Southern Africa the others worked in computer science at a university in Northern India. The university in Southern Africa is consistently ranked amongst the top 500 universities in the world and focuses on a traditional western education. On the other hand, the university in India deliberately focuses on a more balanced development of individuals by focusing on how science and spirituality can contribute to each other, and converge. There is a memorandum of understanding signed between those universities with regard to student exchange programmes and collaborations with staff. This study was a result of collaborations among staff at those two universities.

The main research question for this study was: How could the concept of wisdom be mathematically modelled? We formulated the following sub-questions to help us answer the main research question: What are the recent definitions on wisdom? What are the mathematical formulations of those definitions? Can we workout Wisdom empirically (Brown & Greene 2006)? How could those ideas be used to propose and explain mathematical models for wisdom?

INSIGHTS FROM LITERATURE

This section presents recent definitions on the wisdom concept by four researchers. For easy readability the following are the four subsections according to the contributions of the relevant researchers: Craig Lemasters (2019); Stephen Aboud (2015); Jamie (2017); Colin Coyne (2012). Under each of those we give the relevant definitions and the mathematical formulations that are implied. After each of those formulations we then focus on the prons and cons of each definition. So, this section includes the answers to the first two research sub-questions: What are the recent definitions on wisdom? What are the mathematical formulations of those definitions?

CRAIG LEMASTERS

Lemasters (2019) defined wisdom *as the intersection of knowledge and experience***.** The formulation that was given is:

$$Wisdom = Knowledge \times Experience.$$

Since the word *intersection* was used in our opinion the mathematical formulation should be as follows:

$$Wisdom = Knowledge \cap Experience$$

So, this definition of wisdom is based on the intersection of the knowledge and experience that one possesses. Since one's knowledge and experience is influenced external factors the implication is that the external factors in which one finds oneself is an important contributor to wisdom. Lemasters (2019) also suggested that the people who have experience are more helpful in providing solutions towards the problems that exist. Note that in a broader sense, one's experience is also liked to one's knowledge. So the implication here is that the more the struggles or challenges an individual faces, the greater should be the possibility of his or her attaining wisdom. Note that further one's personal experience could be positive or negative in nature and thus impact on one's outlook towards life and resulting behaviour. It depends on how one uses that experience to develop one's knowledge. So, it could be argued that overall one's experience contributes towards one's knowledge. The implication of this is that wisdom is not the same as knowledge, but more likely to be the intersection of one's knowledge and experience as defined by Lemasters (2019).

STEPHEN ABOUD

Aboud (2015) defined wisdom *as the sum of self-awareness (A), times depth of*

Knowledge (K), all to the power of Experience (e). The formulation given by Aboud was: $W = [A \times K]^e$. Since the words used in the definition are sum of self-awareness mathematical formulation in our opinion should be: $W = [(\sum A) \times K]^e$. Self-awareness is a process that requires self-management and for this to happen one consistently needs to be aware of and also know one's self. Aboud used the words, *intuitive approach*, and described wisdom as *understanding*. He further argued that the focus should not be on accumulating knowledge or experience rather it should be on learning with understanding, for overcoming the lesser self. Therefore, one's sum of self-awareness multiplied by one's depth of knowledge, all raised to one's experience could be conceived as wisdom. Therefore Aboud's conceptualisation of wisdom is more comprehensive when compared to that of Lemasters (2019). It follows from the perspective of Aboud (2015) that knowledge and experiences are two different aspects, and the intuitive approach leads to self-awareness. However, how one can have this intuitive approach is unclear. Further, the self-awareness, is a broader term. We are unsure whether he meant for overcoming the lesser self, this included the accumulating of virtues or good qualities or controlling one's emotions.

JAMIE

According to Jamie (2017) *knowledge (K) with love (L) on a foundation of truth (T)* equals wisdom. The formulation given by Jamie is Wisdom = (Knowledge + Love) / Truth. In our opinion the mathematical formula based on the ideas of Jamie should be:

$$Wisdom = \frac{K_W^G \cup L_G}{T}$$

Our motivation for this follows. According to Jamie knowledge comprised of worldly knowledge (*w*) as well as Godly (*G*) knowledge. Jamie also pointed out the warnings of the Bible that we should not attain that knowledge, which moves us away from Jesus. Further that Godly love is very important and when the worldly knowledge is balanced with God's love and truth, one becomes wise. Hence, our formulation of the above formula which in the numerator indicates the union of worldly knowledge and Godly love, and the denominator which represents the foundation of truth. So according to Jamie's conceptualisation wisdom comprises of the union of worldly and Godly knowledge with God's love built upon the foundation of truth. In our opinion the Jesus love and the truth are two aspects which needs to be clearly defined. The distinction between God's love and truth whereas one is in numerator and another one in denominator shows the equation's ambiguity. Further it seems one's wisdom will be with the interval from 0 to a maximum of 1, but this depends on truth which was not clearly defined.

COLIN COYNE

In his TED talk, Coyne (2011) defines wisdom as *mistakes (M) divided by experiences (E) and raised to the power of self-reflection (SR) and objectivity (O)*. The formulation given by Coyne was: Wisdom = (Mistakes / Experiences) $^{\text{(Self-reflection X Objectivity)}}$. Based on the above definition our mathematical formula of Coyne's perspective on wisdom is:

$$Wisdom = \left(\frac{M}{E}\right)^{(SR) \cap O}$$

The Coyne conceptualization of wisdom is more comprehensive and straightforward. It tries to convey that experiences are more important and if one commits mistakes, there is a possibility that he or she may attain wisdom. It includes the capacity of self-reflection together with objectivity. These require that one also display honesty in the context of self-reflection with objectivity. Coyne stated that the more a

person makes mistake, the more the possibility of attaining wisdom. This statement is could be regarded as a half-true, since practice is more likely to make one more perfect rather making more mistakes. One could also argue that it depends on what one learns from one's mistakes. Further, if one makes regular mistakes then the the loss of self-confidence together with its implications could come into the play. Also, it could be argued that the self-reflection depends on some more factors apart from objectivity; for example, one's living environment or the thought processes and the resulting actions taken. These imply that further refinements are required in this equation.

TWO PROPOSED MATHEMATICAL WISDOM FORMULATIONS

In this section we give our derivations of our two proposed mathematical wisdom formulations. To aid readability these are discussed under the following sub-sections: Proposed mathematical wisdom formulation 1; Proposed mathematical wisdom formulation 2. Note that to denote the suitable operation between the different aspects indicated we used *. This operation should be interpreted as a mutually beneficial combining of the relevant aspects.

PROPOSED MATHEMATICAL WISDOM FORMULATION 1

Informed by the insights from the literature we could conceptualise wisdom as *the sum (combination) of knowledge (K) and virtues (V) and its collective value will be in product (combination) with intuition (I).* The resulting mathematical formulation of wisdom (W) is:

$$W = I\,(K + V) \quad \ldots \quad \text{Derived Formula 1}$$

We now evaluate this formula from the following perspectives: Lord Buddha Perspective; Pundit Shriram Sharma Acharya Perspective; Acharya Shankar Perspective.

LORD BUDDHA PERSPECTIVE

This perspective comprises of two phases (Goenka, 2010).

Wisdom = (Knowledge of the world * acquisition of virtues on time period)

--- Phase 1

Over the time Lord Buddha did meditation, penance and spiritual practices, and later he attained Vipaasnna Panna (V), where Vipaasnna refers to a higher state of mind and Panna – Insight. Virtues which are primarily promoted in Buddhism are: Perfection (Paramitas); Generosity (Dana); Proper conduct (Sila); Renunciation (Nekhhamma); Wisdom (Panna); Patience (Khanti); Honest (Sacca); Goodwill (Metta). The spiritual practices focused on are for mindfulness (sati), investigation (dhamma vicaya), energy (viriya), joy (piti), relaxation (passaddhi), equanimity (uppekha) and to attain concentration (samadhi), and ultimately the attainment of enlightenment or Wisdom (Bodh).

Wisdom = V * (prajna), where Prajna = (virtues based knowledge)

Since Wisdom (Bodh) can be defined as Enlightenment or Bodhi state, the final phase is:

Wisdom (Bodh) = Higher state of Mind with insight (Vipassna Panna) * virtue based knowledge (Prajna)

….. Final phase

The attainment of enlightenment according to the Buddhist Dharma (way of life) and how it could be spread with the aim of achieving wisdom is illustrated in Figure 1.

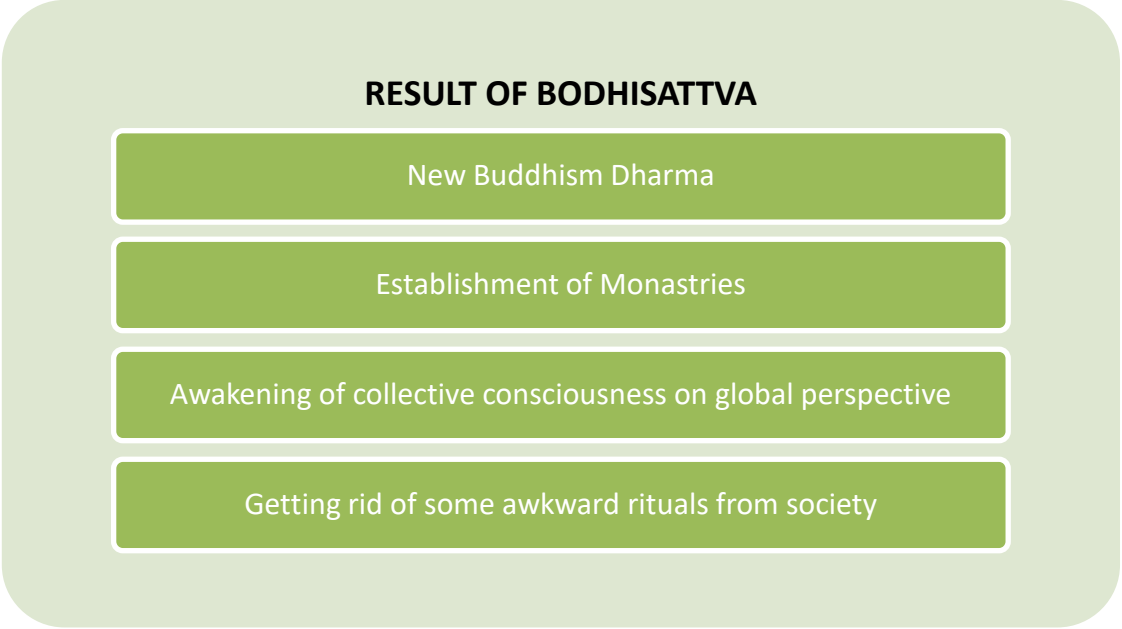

Figure 1. Buddhist Dharma and its goals

PUNDIT SHRIRAM SHARMA ACHARYA PERSPECTIVE

According to this perspective the attainment of wisdom is over 3 stages (Shriram Sharma Acharya, 1988). How Stage 1 relates to Formula 1 is indicated below.

$$W = I(K + V)$$
$$= \begin{pmatrix} Acquired\ knowledge\ of\ the\ world \\ and\ subtle\ knowledge \end{pmatrix} * \begin{pmatrix} Developed\ virtues\ with \\ Gayatri\ \&\ Yagya \end{pmatrix}$$

…. Stage 1

Pundit Shriram Sharma Acharya performed 24 Gayatri Mahapurushcharan Anusthans of 2.4 million Gayatri Mantra Japas. He had also performed spiritual practices during his 5 visits to Himalayas and attained Gayatri Riddhi and Siddhi with the development of intuitive powers. In his words, **I is Intuition (दूरदर्शी विवेकशीलता)**

while taking (K * V = परिष्कृत प्रतिभा= Refined Talent)

W **= Intuitive Power (दूरदर्शी विवेकशीलता) * Refined Talent (परिष्कृत प्रतिभा)** … Stage 2

He had labelled wisdom as प्रखर प्रज्ञा.
So, we can conclude wisdom in terms of Pundit Shriram Sharma Acharya as:

Wisdom (प्रखर प्रज्ञा) = Intuitive Power (दूरदर्शी विवेकशीलता) * Refined Talent (परिष्कृत प्रतिभा) …. Stage 3

How he intended to assist others to attain wisdom through his perspective is illustrated in Figure 2.

Figure 2. Illustration of Pundit Shriram Sharma Acharya's vision to assist others in attaining wisdom

ACHARYA SHANKAR PERSPECTIVE

This perspective has two stages (Adi Shankracharya, 1910). How Formula 1 relates to Stage 1 is as follows:

$$W = I(K + V)$$
$$= \left(\begin{matrix}Knowledge\ of\ Vedas, Upanishads \\ and\ \text{Vedic Treatise}\end{matrix}\right) * \left(\begin{matrix}\text{Acquisition of Life defining} \\ Virtues\end{matrix}\right) \quad \text{…. Stage 1}$$

Acharya Shankar performed penance, austerity and spiritual exercises with his Master for the attainment of Intuitive Vision I = Intuitive power (अतीन्द्रिय क्षमता). He had given wisdom (विवेक) and the Refined Knowledge (परिष्कृत ज्ञान) = (collective virtues based knowledge)

Wisdom (विवेक) = Intuitive power (अतीन्द्रिय क्षमता) * Virtues based knowledge (परिष्कृत ज्ञान) … Stage 2

His vision to assist others in attaining wisdom is indicated in Figure 3.

Figure 3. Illustration of Acharya Shankar's vision to assist others in attaining wisdom

PROPOSED MATHEMATICAL WISDOM FORMULATION 2

This formulation is based on knowledge, virtues, intuitions and decisions. So, we first discuss what we mean by these before stating the formulation.

Knowledge = (Practicality * Utility / Comprehensive Knowledge) = K_w

Here we would like to clarify the Knowledge concept. The comprehensive knowledge is the summation of all the available knowledge (Denney, Dew & Kroupa, 1995). The practicality indicates the practical knowledge about a certain situation. Practical knowledge could be about a process like chemical, biological, or about an activity may be mechanical, electrical, or about a person like any relative, student or teacher (Kaiser, 2015). The utility refers to the actual utilization of the possessed knowledge. For example, the practical knowledge about how an electrical engine runs will not be of any utility value in the context of farming (Bangen, Meeks & Jeste, 2013). What we are focusing on over here is that knowledge should be practical as well as useful, so that it can be utilized in daily life (Takahashi, 2000).

Therefore, in most of the cases this value of (practicality * utility) will be a positive value and therefore if it is divided by comprehensive knowledge, then the value will be a positive fraction. So $0 < K_w \leq 1$. In brief, we can say that the knowledge possessed by an individual is a subset of comprehensive knowledge (i.e. we are taking it as Absolute Knowledge) and no one can say that he or she doesn't have any practical or utility knowledge too.

Virtues = (Practicality * Utility / Comprehensive Virtues) = V_k

The virtues are the qualities, which one possess while attaining knowledge or taking life lessons. Here the comprehensive virtues are the total number of virtues, which are in the world. We are talking about Absolute virtues, which may be 'n' in number. Here practicality is the

value of practical virtues and utility show the utilization of the virtues. Since an individual could possess a minimum of one practical virtue but not utilise it, the minimum value for $V_k = 0$. Therefore, the final value of virtues in every possible case will be a positive fraction, with $0 \leq V_k \leq 1$.

Intuition = (Godly help + Awakening of Inner Being) = I_k

Intuition is the value, which gets develop with the purification of inner consciousness. The intuition is likely to based upon the individual perception, in depth knowledge and farsightedness. The values may differ from person to person based on the possessed knowledge, performance and purity of the heart. $\boldsymbol{I_k \geq 0}$.

Decision = D

This is based on available knowledge and acquired values along with intuition. Here Decision cannot be zero, since if the person is thinking not to take any decision it is also a decision. Hence the value of Decision over time *t* will be range from 1 to α (infinity). Therefore, D is a function of time, *t*.

The proposed formula of wisdom is

$$Wisdom = \int_{D=1}^{D=\infty} [(K_w + V_k)I_k]dt$$

While working with this formula we want to integrate the entire integrand, $[(K_w + V_k)I_k]$, which is a function of time, *t*. We would like to emphasis *our two assumptions*:

- Over the timeframe, the individuals' decisions become more matured and comprehensive.
- The wisdom evolves over the time period.

We now evaluate these two assumptions with some case studies.

EXAMINATION OF $\int_{D=1}^{D=\infty}[(K_w + V_k)I_k]dt$ IN THE CONTEXT OF CASE STUDIES

In this section we present our examination of the formula

$$Wisdom = \int_{D=1}^{D=\infty} [(K_w + V_k)I_k]dt$$

In the context of 3 case studies.

Case study 1: Lord Buddha decisions over the time-frame.

We examine the formula in terms of the four decisions taken by Lord Buddha (Rick Field, 1997).

Decision 1: To have a look of the society along with his chariot man.

Once the Siddhartha decided to move around the kingdom with his chariot man. While moving around he found ill men, old men and a death procession. He was surprised to find these three stages of every human being. The decision of Siddhartha to move around into kingdom was very ordinary in nature and one can find no novelty into the same, but the lessons Siddhartha obtained from that decision changed his whole life perspective.

Decision 2: To renounce the world and to move to forest for penance and austerity.

After lots of doubts on the life and its outcome, one day Siddhartha decided to renounce the kingdom and to perform penance in the forest. This decision looks to be a bold one. The Siddhartha must have thought about the consequences of this decision, still he went ahead with it. This was a mature decision as compared to Decision 1, but the emphasis here was on the individual interest.

Decision 3: After enlightenment, he should approach society to give them new thought and knowledge set.
This decision was a life changing one. Here the Siddhartha attained wisdom and with the time frame he is looking to give back something to the society. This was a wise decision and it emphasized on societal interest.

Decision 4: To establish monasteries for bhikshu and to propagate Buddhism philosophy across the globe

This was a wise decision and here the Lord Buddha was likely to establish a new wave of thought and societal movement – Buddhism. The life style of bhiksu is always challenging and to set up monasteries will give them a right place for doing various types of spiritual practices and vipasna meditation.

From the formulae of the

$$Wisdom = \int_{D=1}^{D=\infty} [(K_w + V_k)I_k]dt$$

and its integration with the Decisions over the time period, the two proposed assumptions are fulfilled.

The decisions taken by Lord Buddha were more matured and effective with respect to time and once he attained wisdom, he actually established a new thought wave – Buddhism, which helped others to attain wisdom; see Figure 1.

Case study 2: Acharya Shankar decisions over the time frame
We examine this in terms of the four decision that were taken over time (Adi Shankracharya, 1910).

Decision 1: To renounce the world and move to his Guru Ashram
The decision was a bold one. At the age of eight, he was willing to become a Sanyasi and go to his Guru Ashram. His decision was not acceptable to his mother but the firmness and determination of Acharya Shankar made his mother to allow him to go to his Guru Govindpada who is almost 1500 km from his house, at the bank of Narmada River. This decision was individual centric.

Decision 2: After wisdom attainment at the age 16, to go for the Parivraja
By translating the Prasthana Trayi Bhashya (which includes commentaries of Shrimad Bhagwat Geeta, Brahma Sutras and 10 upanishads) and other phenomenal volumes on life, philosophy, Vedic scriptures he attained the wisdom. His knowledge was so immense, even his Guru also had a thought that he must go for the Parivraja. That decision was a wise one. At the merely age of 16, he possessed the wisdom and he decided to move around the India as a Parivrajak. That decision was a noble one and based on the social wellbeing.

Decision 3: To establish the four Shaktipeeths across the India
Acharya Shankar established four knowledge dissemination centers (Shaktipeeths) across the India for promoting the Hinduism knowledge across the India. The establishment of four Shakti peethams i.e. Sharda, Kalika, Jyotih and Govardhanam across India, was a wise decision and clearly indicates his farsightedness to promote and propagate knowledge across the world. That decision was noble enough to help the talent and knowledge seekers across the globe and was based on global welfare.

Decision 4: To establish Hindu philosophy in South Asian countries
During the 4th Century, there were many traditions, variants of Hindu philosophy (actually Sanatana Dharma) established and most of them were exercising their supremacy over others. Generally Sanatana Dharma consists of virtues such as honesty, refraining from injuring living beings, purity, goodwill, mercy, patience,

forbearance, self-restraint, generosity, and asceticism. The contribution of Acharya Shankar was that he gave a comprehensive vision and definitions of Vedic literature along with establishment of Prominent Hinduism philosophy across the South Asian countries. That decision was based on his wisdom and it shows the class and epitome of knowledge he possessed.

From the Acharya Shankar perspective, the formula of wisdom looks to be perfectly aligned,

$$Wisdom = \int_{D=1}^{D=\infty} [(K_w + V_k)I_k]dt$$

and its integration with the time period and the two proposed assumptions are fulfilled.

The decisions taken by Acharya Shankar were prompt and effective with respect to time and after attainment of the wisdom, he actually established Hinduism more phenomenally across the South Asian countries. Evidence of this could be found in South Asians countries even today, for example in Indonesia and Malaysia. His epic writings contribution is still an effective base for searching the original versions of Vedic treatise and knowledge.

Case study 3: Pundit Shriram Sharma Acharya decisions over the time frame

The proposed mathematical formula 2 is now examined in the context of his 5 decisions (Shriram Sharma Acharya, 1988).

Decision 1: To follow Guru's instructions and to perform penance for 24 years

His decision to follow his Guru Swami Sarveshvaranada ji's instructions at the tender age of 12 was remarkable. He not only performed 24 Gayatri Mahapurushcharan (very big spiritual refinement exercises) but also followed a spiritual lifestyle in his early days. This early life decision was a path breaking one and it was more towards the individual attainment.

Decision 2: To establish Gayatri Pariwar and to give an equal right to everyone to chant Gayatri mantra and to perform Yagna.

After the independence of India in 1947, he was invited to join politics but he preferred to go for societal change. In 1956 after the completion of 1008 Kundi Yagna, he had established Gayatri Pariwar to promote and propagate Righteous knowledge (Gayatri) and righteous actions (Yagna). This was a bold decision. It clearly indicates his commitment towards the societal wellbeing.

Decision 3: After attaining Wisdom, translation of Vedic Treatise and writing of 3200 books on every aspect of life

Pt. Shriram Sharma Acharya after attainment of wisdom wrote nearly 3200 books covering various aspects of life. He had translated all the Vedic Scriptures into a common man language, Hindi. It includes 4 Vedas, 6 Darshans, 18 Purans, 108 Upanishads, Brahaman, Aranayaks and various Sanhitas. That decision of translating Vedic scriptures was historic, as many future generations thereafter are able to find authentic and contemporary knowledge on Vedic Treatise through his commentaries. So that decision was more on societal wellbeing.

Decision 4: To establish 2400 centres in India for the awakening of collective Consciousness among masses

The decision to establish 2400 centers across India was a herculean task. However, he had felt the need of the hour and established Gayatri Shaktipeeths and Gayatri Pragyapeeths across the nation, to awaken the common man. So that decision clearly shows his farsightedness and it was and still is for the welfare of the larger society.

Decision 5: Giving a new vision on Scientific Spirituality

It is a common belief that the spiritual practices are just dogmas and therefore the spiritual exercises do not possess any scientific base and they are merely rituals, which are old fashioned and useless. Pt. Shriram Sharma's decision to establish Brahmavarchas Research Center in 1978 to establish Scientific Spirituality was phenomenal in nature and gave a new definition and meaning to spiritual belief and practices. The establishment of Scientific Spirituality was a wise decision. It shows his class and supremacy over the time.

It looks from the perspective of Pt. Shriram Sharma Acharya the formula of wisdom is correctly formulated. We can sum up as

$$Wisdom = \int_{D=1}^{D=\infty} [(K_w + V_k)I_k]dt$$

with the integrand, $[(K_w + V_k)I_k]$, a function of time, *t*, and the two proposed assumptions are satisfied.

The decisions taken by Pt. Shriram Sharma Acharya from time to time were phenomenal and extraordinary. Moreover, after attainment of wisdom, he actually established Vedic knowledge and treatise. His commentaries on Vedas, Upanishad, Puranas and other vedic treatise are providing a contemporary base and authentic data sets to study.

VALIDATING PROPOSED MATHEMATICAL FORMULA 2

We used the following wisdom mathematical model by putting certain values in it and then validating the outcome to justify the wisdom value.

$$Wisdom = \int_{D=1}^{D=\infty} [(K_w + V_k) * I_k]dt$$

For ease of reading those are indicated under the following sub-headings: Categorization and assumptions for K_w, V_k and I_k; Preliminary wisdom with assumptions; Mediocre wisdom with assumptions; Matured wisdom with assumptions.

Categorization and assumptions for K_w, V_k and I_k

Here we discuss our categorization and assumptions for K_w, V_k and I_k. Earlier we pointed out why $0 < K_w \leq 1$. Therefore, we used the basic value for $K_w = 0.1$. Further, if the person is wise enough the value for $K_w = 0.5$ and if the person has full of knowledge the value for $K_w = 1$. That was how we categorized the values for K_w to indicate the different knowledge categories. So, for those highest to lower knowledge categories, the values respectively are: K_w= 1, 0.5, 0.1.

V_k= 0, 0.5, 1. We assumed that V_k can be zero as the person may possess no virtues. Therefore, we had used the basic value 0. If the person owns some sets of virtues, we have taken value V_k = 0.5 and if the person is full of virtues the Ve value is 1. So, we have categorize the values of V_k as 0, 0.5 and 1.

I_k = 0, 0.5, 1. We assumed that intuition can be zero as a person may possess any sort of Intuitions. So, we took the basic value 0. If the person owns some set of Intuition the value of $I_k = 0.5$ and if the person is intuitive in nature, the value of I_k =1. Therefore we categorized the values of I_k as 0.1, 0.5 and 1.

DL = 1 and DH = 1, where DL is lower limit of decision and DH is the higher limit of Decision and we assumed that the person who owns preliminary wisdom can take at least one decision. So, in this case both the lower limit and higher limit of decisions is 1. Using the mathematical model with the following assumed values: $K_w = 0.1$, $V_k = 0.1$, $I_k = 0$, DL =1, DH =

1
we get
W= $\int_{D=1}^{D=1}[(0.1+0.1)0]dt$ = $\int_{D=1}^{D=1}[(0.2)0]dt = \int_{D=1}^{D=1}[0]dt = 0$
.

Similarly, we will find out all the relevant values. For example, for the case when DL = DH = 1 for preliminary wisdom the calculations are summarised in Table 1

Table 1. Preliminary Wisdom with Decision Limit is 1 to 1

S. No.	K_w	V_k	I_k	DL	DH	$(K_w + V_k)$	$(K_w + V_k)I_k$	DH-DL	Wisdom
1	1	0.1	0	1	1	1.1	0	0	0
2	1	0.1	0.5	1	1	1.1	0.55	0	0
3	1	0.1	1	1	1	1.1	1.1	0	0
4	0.5	0.5	0	1	1	1.5	0	0	0
5	0.5	0.5	0.5	1	1	1.5	0.75	0	0
6	0.5	0.5	1	1	1	1.5	1.5	0	0
7	0.1	1	0	1	1	2	0	0	0
8	0.1	1	0.5	1	1	2	1	0	0
9	0.1	1	1	1	1	2	2	0	0

Preliminary wisdom with assumptions
$K_w = 0.1$
$V_k = 0.1,\ 0.5,\ 1$
$I_k = 0,\ 0.5,\ 1$ Here, $0 < I_k < 1$
DL =1, DH =5 (where DL is lower limit of decision and DH is the higher limit of Decision)
Using our formulated wisdom model the different values for the variables, the Wisdom calculations are summarised in Table 2.

Table 2. Preliminary wisdom with the Decisions limit from 1 to 5

S. No.	K_w	V_k	I_k	DL	DH	$(K_w + V_k)$	$(K_w + V_k)I_k$	DH-DL	Wisdom
1	0.1	0.1	0	1	5	0.2	0	4	0
2	0.1	0.1	0.5	1	5	0.2	0.1	4	0.4
3	0.1	0.1	1	1	5	0.2	0.2	4	0.8
4	0.1	0.5	0	1	5	0.6	0	4	0
5	0.1	0.5	0.5	1	5	0.6	0.3	4	1.2
6	0.1	0.5	1	1	5	0.6	0.6	4	2.4
7	0.1	1	0	1	5	1.1	0	4	0
8	0.1	1	0.5	1	5	1.1	0.55	4	2.2
9	0.1	1	1	1	5	1.1	1.1	4	4.4

Mediocre Wisdom with Assumptions

Now let us consider the second set of people who are in the Mediocre Wisdom range. They have some sets of Knowledge, so $K_w = 0.5$ and they could have virtues at least one so the values could be 0.1, 0.5 and a maximum of 1. Further their intuition could be varied from 0 for none, 0.5 for average and 1 for the maximum. So, the values of the variables could be:

$K_w = 0.5$

$V_k = 0.1, 0.5, 1$

$I_k = 0.1, 0.5, 1$

and DL 1 to DH 5 (where DL is lower limit of decision and DH is the higher limit of Decision)

For example, if we calculate the value of Mediocre Wisdom by the assumed values

$K_w = 0.5$, $V_k = 0.1$, $I_k = 0.5$, DL =1, Dh = 5

we have:

$W = \int_{D=1}^{D=5}[(0.5 + 0.1)0.5]dt = \int_{D=1}^{D=5}[(0.6)0.5]dt = \int_{D=1}^{D=5}(0.3)dt = 0.3\int_{D=1}^{D=5}dt$

$= 0.3\,[t]_1^5$

$= 0.3\,[5-1]$

$= 1.2$

Similarly, we will find out all the relevant values for the mediocre wisdom. See Table 3 for a summary of the assumed values the resulting wisdom values.

Table 3. Mediocre Wisdom with the Decisions Limit from 1 to 5

S. No.	K_w	V_k	I_k	DL	DH	$(K_w + V_k)$	$(K_w + V_k)\ I_k$	DH-DL	Wisdom
1	0.5	0.1	0.1	1	5	0.6	0.06	4	0.24
2	0.5	0.1	0.5	1	5	0.6	0.3	4	1.2
3	0.5	0.1	1	1	5	0.6	0.6	4	2.4
4	0.5	0.5	0.1	1	5	1	0.1	4	0.4
5	0.5	0.5	0.5	1	5	1	0.5	4	2
6	0.5	0.5	1	1	5	1	1	4	4
7	0.5	1	0.1	1	5	1.5	0.15	4	0.6
8	0.5	1	0.5	1	5	1.5	0.75	4	3
9	0.5	1	1	1	5	1.5	1.5	4	6

Note that if $I_w = 0$ then Wisdom has a value of 0. This indicates the importance of contribution of intuition towards the attainment of wisdom. Recall that we defined intuition as:

Intuition = (Godly help + Awakening of Inner Being) = I_k

Therefore $I_w = 0$ if and only if (Godly help = 0 = Awakening of Inner Being).

Matured Wisdom with Assumptions

We now evaluate the case of people in the Matured Wisdom range. Their knowledge is regarded as complete or perfect, so the value of $K_w = 1$. Their virtues and intuition could range from 0.1 to 1. Further they are capable of taking some serious decisions. In this case

we consider the following values for the variables:
$K_w = 1$,
$V_k = 0.1, 0.5, 1$
$I_k = 0.1, 0.5, 1$
and DL = 1, DH = 5.
For example, calculating the value of Mediocre Wisdom with the following assumed values
$K_w = 1, V_k = 1, I_k = 1$, DL =1, Dh = 5
we have:

$$W = \int_{D=1}^{D=5}[(1+1)1]dt$$
$$= \int_{D=1}^{D=5}[(2)1]dt$$
$$= \int_{D=1}^{D=5}(2)dt$$
$$= 2\int_{D=1}^{D=5}dt$$
$$= 2\,[t]_1^{\,5}$$
$$= 2\,[5\text{-}1]$$
$$= 8$$

Similarly, we can use our mathematical model with the different inputs for the variables to calculate the resulting Matured Wisdom values. See Table 4 for the different inputs and the resulting wisdom values.

Table 4. Matured Wisdom with Decision Limit is 1 to 5

S. No.	K_w	V_k	I_k	DL	DH	$(K_w + V_k)$	$(K_w + V_k)\ I_k$	DH-DL	Wisdom
1	1	0.1	0.1	1	5	1.01	0.11	4	0.44
2	1	0.1	0.5	1	5	1.1	0.55	4	2.2
3	1	0.1	1	1	5	1.1	1.1	4	4.4
4	1	0.5	0.1	1	5	1.5	0.15	4	0.6
5	1	0.5	0.5	1	5	1.5	0.75	4	3
6	1	0.5	1	1	5	1.5	1.5	4	6
7	1	1	0.1	1	5	2	0.2	4	0.8
8	1	1	0.5	1	5	2	1	4	4
9	1	1	1	1	5	2	2	4	8

Let us now increase the decision numbers i.e. 50, 100 , 500, 1000 for matured wisdom and assume that each of the first three variables take on their maximum value.

Table 5. Matured Wisdom with Decision Limit is 50, 100, 500, 1000

S.No.	K_w	V_k	I_k	DL	DH	$(K_w + V_k)$	S. No.	DH-DL	Wisdom
1	1	1	1	1	50	2	2	49	98
2	1	1	1	1	100	2	2	99	198
3	1	1	1	1	500	2	2	499	998
4	1	1	1	1	1000	2	2	999	1998

It is clear from Table 5 that the number of decisions taken by those regarded as having matured wisdom is proportional to the output of the wisdom value.

If our formulation and its validation in terms of the case studies and numerical calculations is acceptable then we propose that wisdom can be measured in the unit of **Ram.** The Ram connects more with the wisdom and it signifies the practicality in terms of attainment of the wisdom and its effective use as illustrated by Lord Ram and by Pt. Shriram Sharma Acharya. Moreover, The Ram is phenomenal and is associated with knowledge, Intuition and belief.

CONCLUSION ABOUT THE MATHEMATICAL DERIVATION OF WISDOM

We had started with the following two assumptions:

1. With the timeframe, the individuals' decisions are more matured and comprehensive.
2. An individual's wisdom evolves over the time-period.

The final proposed mathematical model derivation is:

$$Wisdom = \int_{D=1}^{D=\infty} [(K_w + V_k)I_k]dt$$

where

Knowledge = (Practicality * Utility / Comprehensive Knowledge) = K_w
Virtues = (Practicality * Utility / Comprehensive Virtues) = V_k
Intuition = (Godly help + Awakening of Inner Being) = I_k
Decision = D

and are as defined in this paper.

It is evident from Tables 1 to 5 that an individual's wisdom should increase over the time-frame. One's intuition as we defined it is an integral contributor to the output of wisdom over the time-frame. Once the intuition value is in the interval $0 < I_k \leq 1$ then wisdom output depends on the number of decisions taken over time. The greater the number of decisions, in this context, the greater the value of the wisdom output. One would expect the decisions to be more comprehensive (Brown & Greene, 2006), with the existence of more knowledge, intuition and the experience in dealing situations over the time-frame (Mihai, 2020). Therefore, it was also observed that the wisdom evolves with the time-period (Bangen, Meeks & Jeste, 2013).

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