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ИНТЕГРАЛЬНЫЙ ПОДХОД К ЛИТЕРАТУРНОМУ ТЕКСТУ КАК ОТРАЖЕНИЕ СОВРЕМЕННЫХ СТРАТЕГИЙ НАУЧНОГО ПОЗНАНИЯ

An Integral Approach to Literary Text as a Reflection of Modern Strategies of Scientific Knowledge

Аннотация. В статье сделана попытка показать необходимость изучения текста художественной литературы вне единой предметности. Автор перечисляет науки, на пересечении которых возникла теория текста. Кратко раскрывается специфика изучения текста каждой из этих наук. Делается акцент на актуальности коммуникативного подхода к изучению текста художественной литературы как целостности.

Ключевые слова. Текст, художественная литература, текстология, коммуникативный подход.

Annotation. The article attempts to show the need to study the text of fiction outside of a single subject matter. The author lists the sciences at the intersection of which the theory of text arose. The specifics of studying the text of each of these sciences is briefly revealed. The emphasis is placed on the relevance of the communicative approach to the study of the text of fiction as a whole.

Keywords. Text, fiction, textology, communicative approach.

Понятие текста является предметом исследования различных наук и поэтому его по-разному описывают лингвисты, семиотики, психологи, лингводидактики и журналисты. Современная наука стремится возродить идеал цельного знания, восходящего к представлениям П. А. Флоренского, С. Н. Булгакова и А. Ф. Лосева. Это обуславливает возрастание научного интереса к тексту, в котором видят ключевое понятие культуры и важнейшую универсалию времени. Текст делает возможной полифонию наук, поскольку современное осмысление феномена текста помогает поиску новых путей постижения целостности мира и объединению усилий различных научных школ.

Проблема литературного текста обретает актуальность в начале XXI века, когда гуманитарная мысль обращается к вопросам раскрытия ресурсов смыслопорождения и трансформации значения в знаковых образованиях. Поскольку запечатленные в тексте знания составляют основу цивилизации, расширение сферы его исследований закономерно.

Целью нашего исследования является попытка охарактеризовать интеграционные процессы в науках о тексте, что выражается в таких задачах:

1. Осмыслить феномен текста с позиций новых стратегий научного познания;
2. Сформулировать новые ракурсы изучения текста художественной литературы.

Необходимо подчеркнуть, что современная наука является органичной составляющей усложнившегося глобального контекста и обеспечивает ретрансляцию накопленных научных знаний, в том числе гуманитарных, модифицируя картину мира. В широком понимании “текст”, – это объединенная смысловой связью последовательность знаковых единиц, основными свойствами которой являются связность и цельность, связная и полная последовательность знаков, которая отображает сложность отображаемого мира.

Текст выступает сегодня предметом изучения различных наук, и каждая рассматривает текст со своих позиций, выделяя те его аспекты, которые в наибольшей степени отражают интересы осваиваемой области научного знания. Прежде всего, это филология, социология, культурология, семиотика, которые обращают нас к особенностям социальных взаимодействий, которые в значительной степени осуществляются через тексты, акцентируя внимание на порождении, восприятии и интерпретации текста как культурного явления.

Важной для нашего исследования является текстология, которая изучает рукописные и печатные тексты, предназначенные для издания и интерпретации, определяя истинность их принадлежности автору, выявляет из нескольких существующих вариантов текста канонический текст. Наукой понимания смыслов, толкованием текста является герменевтика, которая стремится к исторической реконструкции текста и поддерживает, таким образом, традиции.

Наукой о системе средств выражения в литературе и одной из старейших литературоведческих дисциплин является поэтика. Она исследует, как устроен текст, описывает его структуру и композицию, рассматривает участие элементов текста в формировании эстетического впечатления.

Семиотика обращается к производству, строению и функционированию знаковых систем, хранящих и передающих информацию и признаваемых ядром информационных систем. Она находит свои объекты в языке, художественной литературе, широко рассматривая текст как интегративный сложный знак, способный обозначить связную последовательность знаков и предопределяет изучение как вербальных, так и невербальных текстов. Семиотическое

пространство может восприниматься как пересечение различных текстов, со сложными внутренними соотношениями, что в совокупности образуют семиотику культуры. Программными исследованиями в этом направлении являются работы Ю. М. Лотмана, в которых автор раскрывает понятие мира как содержания искусства как моделирующей системы, с помощью которой строится модель мира или его фрагментов.

Риторика изучает способы построения художественно выразительной речи, прежде всего прозаической и устной, близко соприкасаясь со стилистикой и поэтикой. Огромную роль в формировании ораторской теории и практики сыграли философские и риторические произведения Цицерона, большинство из которых были написаны в форме диалогов и отличались легкостью построения, богатством слов и благозвучием. Существовали целые эпохи, ориентированные на риторические фигуры. К ним относятся мифопоэтический период, средневековье, барокко, романтизм, символизм и авангард.

Текст издавна выступает предметом изучения стилистики, которая исследовала принципы и эффект выбора и использования языковых средств, которые передают мысли и эмоции в разных условиях общения. Стилистика обращается к разным типам и жанрам текста, усматривая в тексте направленное на адресата интенциональное произведение автора. Специфика рассмотрения текста стилистикой во многом зависит от того, как именно трактуется стиль и какие принципы подразделения стилистики при этом соблюдаются, сосредотачиваясь на функциональном расслоении литературного языка и особенностям его использования в различных коммуникативных сферах, обращаясь к художественной и научной прозе, газетным текстам, публицистическим выступлениям, текстам официальных документов.

Необходимо подчеркнуть, что интеграция ценностей, характерная для мировоззрения Средневековья, присуща, по нашему мнению, и современным подходам к тексту. Интегральный подход к тексту представляется сегодня объективной необходимостью, которая объясняется невозможностью описать текст на одном основании. Текст понимается сегодня как многомерное, многоаспектное и многофункциональное системное образование, которое сочетает характеристики сложного знака и коммуникативного целого, учитывает сложность и диалектичность текста.

В современной гуманитаристике преобладают коммуникативные и когнитивные модели текста. Они подтверждают субъективный характер современных стилей научного мышления, но создают необходимые предпосылки для использования интегральных методов исследований в когнитивной лингвистике, психолингвистике, социолингвистике.

Выводы. Таким образом, интегральный подход к тексту становится объективной необходимостью, поскольку знания, полученные различными дисциплинарными областями, не в силах решить сложные проблемы текста. Вхождение в пределы единой предметности при исследовании текста соответствует общим стратегиям научного развития интегральной текстологии.

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К ВОПРОСУ ОБ УЧЕБНИКАХ ИСТОРИИ

On the Question of History Textbooks

Аннотация. В статье в тезисной форме рассмотрена основная проблема исторического знания – чему и как должны учить учебники истории. Материал носит дискуссионный характер и направлен на решение ключевых вопросов связанных с интегральным подходом к воспитанию и образованию.

Ключевые слова: история, учебник, человек, смысл жизни.

Annotation. The article considers the main problem of historical knowledge in the abstract form – what and how history textbooks should teach. The material is of a debatable nature and is aimed at solving key issues related to an integral approach to upbringing and education.

Keywords: history, textbook, person, meaning of life.

Тезис 1. Описание ситуации

За последние годы особенно бурно развернулась дискуссия о том, каким должен быть учебник по истории в средней школе (Алексашина, 2001). Много написано текстов, проведено и проводится большое количество дискуссий, и все они, на мой взгляд, не то, что бессмысленны, но толку от них мало (Вяземский и Стрелова, 2000, 2006). Похоже на процесс, который обозначен фразеологизмом «толочь воду в ступе».

Тезис 2. Причина «бестолковщины»

Ведут подобные дискуссии люди, как правило, умные и знающие. Естественно возникает вопрос: почему же толку мало? Ответ и прост, и сложен для восприятия. Человеку с традиционным типом мышления, то есть воспитанным и образованным в общепринятой системе ценностей, на которую ориентирована массовая школа, просто невозможно вырваться из сугубо порочного, замкнутого на самом себе, образа мира и своей роли в этом мире.

Тезис 3. Точка бифуркации

Зададимся вроде бы очевидным вопросом: с какой целью изучается история? Любая история. История родного края, история государства, в котором родился и воспитывается учащийся, история зарубежных стран, древняя история и т.п. Ответ тоже вроде бы очевиден: для того, чтобы знать, как жили люди до нас, какие события произошли на различных территориях земного шара и как эти события отразились на судьбах различных народов, в том числе на моей собственной судьбе. И вот здесь-то и кроется подвох, приводящий вначале авторов учебников – маститых учёных, а, впоследствии, учителей и всё остальное человечество к совершенно неверному пониманию не только самой истории человечества, но и к смыслу собственного существования.

Тезис 4. Отсутствие подлинной цели и стратегического мышления

В чём же подлинная или истинная цель? Попробуем построить традиционную для ребёнка и весьма полезную цепочку рассуждений на базе вопросов «почему» и «зачем».

Вопрос №1. Почему, с какой целью мы изучаем историю?

Ответ на вопрос №1. Чтобы знать прошлое своего и других народов.

Вопрос №2. А зачем нам нужно знать прошлое?

Ответ на вопрос №2. Чтобы лучше понимать, что происходит с моим и другими народами, населяющими Землю.

Вопрос №3. А зачем нам нужно это понимание?

Ответ на вопрос №3. Чтобы лучше строить и планировать свою жизнь и правильно строить отношения с другими народами.

Вопрос №4. А что значит лучше жить и правильно строить отношения?

Стоп. Прежде чем переходить к дальнейшим рассуждениям следует не только остановиться, но принять всем своим существом, всем смыслом своего существования (прошу прощения за не всегда корректные с точки зрения формальной логики выражения, но сейчас важна не логика, а эмоционально-чувственное состояние) невероятную, бесконечную важность последующего ответа. Почему? Да потому, что он напрямую связан с самым главным вопросом: для чего, с какой целью живут люди на Земле? И в зависимости от содержания ответа будет построена не только структура учебника, но и вся дальнейшая жизнь, как отдельного человека, так и всего человечества.

Итак, ответ на вопрос №4. Вот традиционный и уже привычный для миллионов людей ответ. Лучше жить — это значит быть довольным жизнью или, по крайней мере, стремиться к ощущению этого довольства, а именно: не болеть, быть сытым, одетым, защищённым от неприятностей, иметь хорошие отношения с близкими людьми и т.п.

Что же здесь плохого, спросите Вы. Абсолютно ничего. Плохо то, что затем происходит подмена понятий, приводящая к результату, по поводу которого давным-давно сказано: «благими намерениями дорога в ад вымощена».

Так вот, после вполне правильного ответа, делается следующий переход, сводящий все благие намерения к отрицательному результату. Говорится примерно следующее. Для того чтобы достигнуть такого благополучного состояния, необходимо подчинить себе по возможности всю окружающую действительность: землю, растения, животных, людей, вообще всё и всех. И тогда будем жить хорошо. И если принять этот ответ за исходный постулат (догму, правило, закон поведения), то тогда начнёт происходить то, что люди наблюдают и по собственному желанию продолжают уже не первое тысячелетие. А что же именно?

Вопрос №5. Как пишутся, какова архитектура любого, подчёркиваю, любого учебника по истории?

Ответ на вопрос №5. Если принять за основу вышеприведённые соображения о целевой установке для достижения благополучной жизни, то придётся признать, что существующие учебники написаны правильно (Грицевский, 2010). Всё их содержание построено на описании событий, посвящённых завоеваниям территорий, людей, покорению (подчинению) природных ресурсов и т.п (Гуляев, 2004). Упоминаются, но, как правило, на периферии военных событий возникшие новые учения, новые религии и т.п.

Тезис 5. Последствия ложной трактовки способов достижения цели

Каков же результат такой трактовки истории человечества? С самого младенчества и до самой смерти человеку внушается, что завоевания — это то, чему стоит посвятить свою жизнь и жизнь своих детей. В сознание ребят и взрослых буквально вбивается мысль о том, что подлинными героями, великими людьми, образцами для подражания и почитания следует считать завоевателей. Примеры приводить нет смысла — откройте любой учебник. Какая игра является самой популярной среди мальчиков? Игра в войну. Что является наиболее популярным среди мужчин? Различные виды борьбы друг с другом. Эти рассуждения можно продолжить и дальше с помощью реальных и многочисленных примеров.

Тезис 6. Переход к истинной цели

Так каким же, в конце концов, должен быть учебник по истории?

То, что Вы прочтёте далее нелегко принять из-за необычности, но попробуйте посмотреть на ситуацию непредвзято.

Истинной целью, истинным предназначением пребывания человека на земле, в отличие от растений и животных, является духовное развитие, или, говоря языком различных учений — «спасение души». Тогда человек действительно может стать человеком в подлинном смысле этого слова и соответствовать «образу и подобию божьему». Иначе он остаётся на уровне животного, высокоразвитого и социально организованного животного. Единственное отличие — это потенциал, заложенный в человека для духовного становления.

Тезис 7. На что ориентируют учебники истории?

Любой учебник истории, плохой или хороший, ориентирует учащегося на борьбу с себе подобными и с окружающим миром (Кинкулькин, 2001). А ведь это абсолютно противоположная цель по отношению к духовному развитию. И вот эта ложная цель в результате многолетних усилий и в образовании, и в воспитании человека, постепенно становится смыслом жизни, ради которой, и умереть не страшно. Страшная, искажённая картина мира вкладывается в голову и детей, и взрослых.

И вот реальная судьба человечества: бесконечная гонка вооружений, бесконечные войны и конфликты ...

Тезис 8. Что делать?

Начинать следует с кардинальной переориентации учебников. И в первую очередь учебников истории (Свешников, 2004). Основным стержнем для изложения и структурирования материала должно быть описание любых попыток, удачных и неудачных, как отдельных людей, так и целых народов по развитию духовного начала. Таких примеров масса, и они должны стать светом, освещающим историю развития человечества, а именно - попыток превращения человекообразного существа в Человека и, главное, показывающим пути дальнейшего развития на пути к истинной цели.

Описание же борьбы друг с другом, должно быть иллюстрацией неудач, плохих примеров, образцов перехода к ложным целям (Шевырев, 2012). Тогда в сознание людей будет заложено верное, гармоничное, интегральное восприятие действительности, связанное не с разрушением, а с созиданием и поддержанием красоты и гармонии в окружающем мире и в отношениях друг с другом.

Тезис 9. Последствия

Изменение сознания повлечёт за собой изменение поведения, ориентацию людей не на захват всего окружающего, приведшее к так называемому «обществу потребления», а мы можем добавить - к обществу взаимного отчуждения и истребления друг друга.

Примерно к семидесятым годам прошлого века исполнилась многовековая мечта человечества. При рациональном распределении сил и плодов труда, всё человечество приобрело реальную возможность избавиться от голода и различных стихийных бедствий. Люди получили возможность воплощения рая на земле. Но из-за затуманенного, изуродованного сознания, создание этого рая никогда не будет достигнуто при имеющемся содержании и соответствующей направленности подготовки детей к будущей жизни.

Тезис 10. Вывод

Очевидно, что при существующем варианте управления вышеописанное невозможно. И дело здесь не в конкретных людях, а в искажённом с детства восприятии мира. Могла бы помочь церковь, но её основные усилия на практике связаны с двумя направлениями: послушание начальству и противостояние другим религиям.

В кратких тезисах не опишешь всех проблем и задач. Очевидно одно – необходимо полностью изменить сознание людей, объяснив истинный смысл существования на Земле. А сделать это можно только с помощью обучения интегральному подходу и соответствующих учебников, в первую очередь учебников по истории.

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Seeking the Middle Line: General Theory and Novel Application in Social-Emotional Learning Evaluation

Abstract. *An insightful children's story takes us to the very heights of mathematical abstraction and the addressing of some fundamental questions about the holarchical relationship of the differentiation of asymmetry, the unification of symmetry, and the endless interweaving of consciousness between them down from macrocosm into microcosm. This corresponds well with certain modern scientific perspectives on consciousness, as well as a growing view in physics that the perception of spacetime itself is a mere psychological phenomenon, rather than an objective reality. Such may prove crucial to human integration into a system that emphasizes the whole while still celebrating the individual, and allows us to work constructively with, as opposed to suicidally against, the grain of Nature. Tomorrow is determined by today's education, and with all the above in mind, a novel integral, three-tiered social-emotional learning (SEL) measure and analysis tool set is introduced. It is based upon a multiscale restructuring of the standard children's emoji variation of the Likert scale. It is designed to follow that conscious interweaving to deeper levels of the young student's processes of opinion formation and self-evaluation.*

Keywords: *consciousness, educational evaluation, integral education, scale-free network, social-emotional learning, social justice, paradox.*

"Well," said Milo, who had thought about this problem very carefully ever since leaving Dictionopolis. "Then with whatever Azaz agrees, you disagree." "Correct," said the Mathemagician with a tolerant smile. "And with whatever Azaz disagrees, you agree." "Also correct," yawned the Mathemagician, nonchalantly cleaning his fingernails with the point of his staff. "Then each of you agrees that he will disagree with whatever each of you agrees with," said Milo triumphantly; "and if you both disagree with the same thing, then aren't you really in agreement?" "I'VE BEEN TRICKED!" cried the Mathemagician helplessly, for no matter how he figured, it still came out just that way.

– The Phantom Tollbooth

It is a wonder that all opposites in Nature generally seem to conspire, as right and left hands, to together evolve a most magnificent integrally systematic world. There is a continuum of interacting local structure and dynamic on each subsystem level, sharing a short-term equifinality of homeostasis, and apparently a long-term equifinality in evolution towards a unification into a global, scale-free network. Research reported in 2019 purported that such networks are rare, constituting perhaps 10% of the micro-to-macrocosm (Broido & Clauset, 2019). However, research reported in 2021 demonstrated the earlier claim to be mistaken due to the boundary effects on bounded scale-free networks, and that, in fact, such networks really are ubiquitous (Serafino *et al.*, 2021). [The nature of the error appears to be analogous to misinterpreting a wave pulse due to its length being sufficient to reach a nearby boundary, at least partially reflect, and undergo superposition with itself.]

Why then does humanity, the foremost product of Nature, become the blatant exception? Our systems don't couple with outside systems that they come into contact with; rather ours destroy them. Our systems overeat from the general environment, and over excrete into it; themselves failing as their own subsystems follow suit.

In particular, as the students of today will be the leaders of tomorrow, education is our best hope to stem the tide. However, can we turn around an educational system that is failing due to being caught in the same general morass? How can we bring Nature's balancing mechanism to the learners, the learning, and to what is learned?

Well, to begin with we must determine where to start. Here's some sage advice: *"'Begin at the beginning,' the King said, very gravely, 'and go on till you come to the end: then stop.'" Nothing is a straight path but if you have a sound starting point and know where you need to go, regardless of the obstacles, you'll get there.*

– "Go Ask Alice: 25 Business Tips from Wonderland Help You Keep Your Head," Strategic Solutions

Real science begins with testable hypotheses. Real engineering includes "design for test" from the get-go. If one is to engineer a truly scientific design for

education, can evaluation methodology not already be prepared at the starting gate? We will culminate with the examination of this crucial particular. However, for now we will begin on the more general, more abstract side – from the sublime theoretical. The deeper the foundations, the more assured we are of that which will arise from the ground up – the beginning considerations of brass tacks practice.

In the opening quote, our young friend Milo provides an example par excellence of the essential problem, and the key to its general solution. Our own right and left hands will provide the details. In the end, in practical example for the area of educational evaluation, we shall use our very faces.

The Essential Problem:

Azaz and the Mathemagician are brothers who do not act as brothers should. They fight counterproductively over the supposed superiority of their respective specializations, communication and computation (letters and numbers). In truth, each has its domain of application where it is superior, but as a whole, the true power lies in unity – not cancellation. They should rather see themselves as vital components of a larger whole, even in (ultimately balanced-out) moments of asymmetric authority. That whole, as all finite wholes, are holons, composed of lower holons and part of higher holons – a tier in a holarchy. In human-made as well as natural systems, there is a particular tendency towards a fractal structure in this.

Consider the matter in terms of these particularly diverse specialties of the Mathemagician and Azaz. After all, mathematics is itself a language with, for many, a very difficult grammar and semantics. Further, language itself is a slowly evolving linguistic complex – a fluctuating “fractal basin” of interpretive attraction [McDonald *et al.*, 1985; Ott, 2006; (and for graphic example) Wolfram Mathematica Users, 2017]. This apparently follows a neural network mathematical logic, programmed by deep learning into the human brain (Dombrovan, 2018; Nicolis & Katsikas, 1993). This is approximately, and only temporarily on a historic scale, modeled by a given limited set of grammatical rules that are in essence, mathematical.

Let's head into the human head – seeking both the root cause underlying all of our problems, and its solution which should prove to be located at the same site. Arriving at the brain, we note that at large scale it is a structure separated into right and left hemispheres of dominantly the basic humanities/arts communications, and the computationally analytic, respectively. Yet, it too is a fractal, a scale-free network of interconnections. Such brings an interdependent processing where different levels of dominion by one half-brain prove hubs that still parcel out parts of processing to lower levels including some in the other half-brain [Hervé *et al.*, 2013; Mihov *et al.*, 2010; Nielsen *et al.*, 2013; Owen *et al.*, 2021; Dartmouth College (RE: Owen *et al.*), 2021; Smith *et al.*, 2021; Vigneau *et al.*, 2011;].

At the lowest levels, the plasticity of the brain allows individual neurons to connect in makeshift high-dimensional simplices for specific microtasks (Riemann, 2017). [The dimensionality here is of course not of physical space, but in terms of connection. A simplex is a higher dimensional object continuing the pattern of a line segment in 1-D, a triangle in 2-D, and a tetrahedron in 3-D. In connection terms, this only means that every neuron of a group of N has a synapse connection to every other; the dimensionality being defined as $N-1$.]

Processing breaks down still further into microtubules, its tubulin protein building blocks, their amino acids, the benzene ring structures connected with those, and finally the quantum resonance within those structures – coupling upwards. There is evidence that this meeting place of the linear quantum world and our nonlinear spacetime, is where consciousness itself enters the scene (Hameroff & Penrose, 2014). Possibly at the macroscopic level this takes on aspects of global wavelet sensation, decision, and action – somewhat analogous to the emergence of a holographic unity (Di biase, 2009; Joye, 2016). The nature of the whole human body, if not its nurture, is outside of the general reach of human egoism, and so also follows the general pattern of natural short-term homeostasis in the course of a longer-term evolution (Bogdan *et al.*, 2020; Ghorbani *et al.*, 2018; Goldberger *et al.*, 2002). However, this unity largely ends at the body. What extension there is outward degrades rapidly approaching and beyond the level of immediate family, friends, and local community – only extending further into fractured groupings also centered about the individual: nationality, ethnicity, race, and religion and/or secular ideology.

The problem is human ego. In all Nature there are tendencies towards association and dissociation at all scales. These tendencies acting in balance and unison, guarantee multiscale independent specialization and interdependent emergence beyond the immediate self, leading to healthy integral supersystem development. Independent specialization at the still level involves evolution to structures that can maintain material integrity and form through internal and environmental means (England, 2015). At the vegetative level, it's a matter of interdependent communal growth (Rhodes, 2017). At the animal level it is a matter of individual mobile action with some rudimentary communal linkage (Breyer, 2018; Marabito, 2021). When it comes to the human level, it's a matter of social relationships starting animal-like at the clan level, but evolving broader and deeper over history. As such, independent specialization is no longer an absolute matter, but one relative to others in society. This is particularly true regarding the arenas of wealth, honor, power, and knowledge that aggrandize the individual in personal gain, and more ominously, also, at times, through loss to others. This is magnified by human intelligence, and comes into direct conflict with the interdependent emergence and consequently intersystem cohesion and supersystem subordination – the net upward flow of homeostasis, and growth toward unity, seen in the rest of Nature.

Nature will only allow the stress caused by an egoistic revolution against the backdrop of the growth of human civilization under what are in broader analysis, really natural evolutionary forces driving its globalization, to go just so far. It has gone from a mere fly in the ointment, into a cancer of the body that is already heading towards metastasis. Simply put, if we do not properly associate, we will be dissociated very unpleasantly down to a rudimentary level, and Nature – the ultimate conservationist (even down to conservation of mass if need be) will recover its building materials and try again. There are obvious matters such as climate change and natural disasters (World Meteorological Organization, 2021), others that may be deeper in the woodwork as interspecies transfer of viral infection. There are our own created toxins, biohazards, and potential artificial intelligence threats – and the continuing – likely growing, nuclear threat, in the face of the dissemination of enabling technologies. These must be considered in the context of ever-growing egoism of both nationalist and ideological forms of imperialism and disintegration into factionalism, as well as corrupt individual agendas trying to ride the resulting socio-economic tsunamis to advantage.

In short, we are marching as lemmings to the sea, taking minor rest breaks to soothe our egoistic legs for the next stage of the march. The pandemic should have given us pause to “stop and smell the roses” (as well as one could in a mask), but our concern was only to get back on track to doomsday.

One cannot help but think of Cyril Kornbluth’s 1951 science fiction story, *The Marching Morons*, and give a shudder – but for a reason opposite to the premise of the story. Here, it is not a matter of individual intelligence of the majority being lacking, but rather a lack of (ultimate fractal) system intelligence of our global entirety – precisely because we are individually “too smart.” Some lack of individual intelligence might actually be a blessing here, as one is more open to collective, instinctive knowledge, and a higher, broader intelligence with greater and deeper peripheral vision. A one-day old fly puts an air force’s best fighter pilots to shame with its skill at dodging a fly swatter. However, this little fellow is already too smart for his own good. It gets better with slime mold that more deeply shares knowledge between its individual nuclei, demonstrating a mighty intelligence, peripheral sensory system, and precise group action. For example, a slime mold “designed” a near duplicate of the layout of the advanced Tokyo railway system a great deal faster than Japan’s premier civil engineers (Johnson, 2021). The bacterial world is no slacker in social networking and coordination either (Ben-Jacob, 2011; Blanchard & Lu, 2015; National Science Foundation, 2013).

Don’t think that we aren’t Nature’s children and that it doesn’t want to help us in a gentler way – a mild dissociation for the sake of a leap forward in association. The minor destruction of muscle cells is the key to bodybuilding. This goes for collective intelligence as well. Studies indicate that towards the dawn of our globalization age, we took a mild hit in individual intelligence. Studies indicate that

despite surface appearances from our much further and accelerating technological advancement – and, in fact, what may have actually enabled this, we've declined notably from a peak in individual intelligence during the Victorian era. At least this is the case for Western countries (Woodley *et al.*, 2013). Per analysis from comparative reaction times, it appears that the detective ingenuity of England's Sir Arthur Conan Doyle's Sherlock Holmes, and the criminal masterminding of his nemesis Professor Moriarty, as well as the inventive genius of an Artemus Gordon of the old American television series and its recent film remake, *The Wild Wild West*, are not mere romanticized nostalgia. They may well be almost realistic reflections of the sheer cleverness displayed during that period.

Yet, we know the advantage of the modern collaborative research team over the hermit genius of old. One may dare say that minimal computers with a stable, high-speed Internet connection, even smart phones, have capabilities far beyond isolated supercomputers. Globally this Internet connection complex is so vast and powerful as to be far beyond our capability to realistically model.

However, it is not enough without our willful cooperation with, much less open rebellion against, the open-ended unifying forces of Nature pressing hard up against human civilization.

Milo's Insight:

Two finite, opposite sets, by definition, form a discrete space limited to the union of the two sets. Absolute opposites can't really exist, for with no common ground, they would be absolute non-sequiturs. By analogy, perpendicular forces are not "more opposite" than positive and negative forces sharing the same dimension. Rather such are, for all intents and purposes, in separate, one-dimensional worlds.

If one will, from a sort of quantum mathematics perspective, there is a border of complementary sets of the same subspace, or one may say a sub-quantum of intersection, which we will term, "the middle line." This is at once also the union of these complementary sets in their subspace and their intersection with the complementary subspace of superspace.

An example of this idea can be understood regarding the many-worlds interpretation of quantum mechanics, using the famous example of Schrödinger's cat. Here we place a cat in a sealed box with a vial of concentrated poisonous gas. There is a mechanism to break the vial and release the gas, based upon the decay of a certain radioactive sample with a 50% emission probability within 1 hour. We dutifully open the box 1 hour later, and along with the cat, we are two different realities in superposition that split into two new worlds – one where the cat is alive, one where it is dead. Let's refer to them as the complementary worlds A and D, respectively. We see that the point of superposition is at their branch point, and a conjunction with the unified prior world back to still prior branch points, and all the other branched worlds descending from those. As such, we see in terms of sets,

that the intersection of complementary sets A and D, is also the union of these, and as well is the intersection of the union of A and D, with their superspace complement of all that came before, and the pathways there into the cascade of parallel worlds.

We may note regarding identification of this “middle” as a “line” that: (a) such a set, per even Euclidean geometry, can minimally apply to two points, as such must be a line segment (for between every two points is a third, *ad infinitum*) in one-to-one (point) correspondence with any line, (b) per non-Euclidean geometry, a line can take on any non-crossing curvature within a given space dimensionality, up to, and including, a closed figure, and (c) per fractal geometry, through fractal curvature, such can tile a space of any dimensionality.

The point is that all finite opposites (and as will be discussed shortly, there are no other kinds), share in a higher, more general root. These aren’t really absolute opposites, but only opposites beyond the branch point. Prior to that, they are merely parts embedded in a whole – revealed through the middle line. Milo needed only to go, so to speak, to the ultimate of superspace branching for his model of approach – and from there he could imprison the Mathemagician with no route of escape.

It goes like this: What is the ultimate abstraction of opposites that one can imagine? Simply this, there exist A and B such that the only property of each is that it is not the other – in short, all possible divisions of the universal set. Yes, but of course, then really – that is at the root, don't they have the same definition?

“Wait just a minute!” might cry a real mathematician who really ought to be able to outreason an adolescent boy. What about Infinity and Zero, are these not opposites without a common root? “Oh really?” might Milo answer. “Is an infinity of anything, not infinite? Is not zero of anything, zero? Then as well as swallowing up anything between them, they swallow up each other – Infinity and Zero being the same, just without end. Further, is not the logarithm (for any base) of zero, just negative infinity? If so, like with anything else finite, surely infinity swallows up a factor of – 1.” Another way to look at all this “swallowing” is to liken Infinity to a great circle – with its end in its beginning, and its beginning in its end.

As Plato warns us – though maybe not in this sense – there is nothing wrong with an adolescent boy that trying to reason with him won’t only make worse.

Now, of course, no real mathematician will surrender so easily to such “garbling of definitions.” [Although, can one even “de-fine” the “in-fine”, even in principle?]

“Do we not know that an infinity is a superset, and that there is an ordered infinite series of such supersets?” – Yes, Infinity is indeed an open set – that is, without limit, as stated. Zero follows suit. Neither is actually a cardinal number – in any

sense of the term. A progression of concentric circles will never expand to the “point at infinity,” nor contract to the point at zero; we can hardly define a point circle (there’s that word “de-fine” again...). At their branch point, so to speak, at the concept of “radius” – they are a simple unity. There is no defining – no axiom of perception there. We may “intuit” different levels in it, but they are not truly logical – that is, constructable.

[“Intuition” of matters not evolved as instinct, present as memory of the physically sensed (which could include ESP), or an associative coupling of such into the holistic as is likely the Eureka phenomenon – are either some level of prophetic attainment, or imagination. Regarding Georg Cantor’s transfinite set theory referenced below, it is noteworthy that David Hilbert grasped this “paradise” as he called it, for dear life, as a way out of the infinity problem for mathematics. As he put it (Hilbert, 1926):

The foregoing remarks are intended only to establish the fact that the definitive clarification of the nature of the infinite, instead of pertaining just to the sphere of specialized scientific interests, is needed for the dignity of the human intellect itself.

It is mind boggling that he didn’t recognize it as the very type of “inane infinite process” that he condemned others for. It is noteworthy, too, that in his discussions, he meticulously avoids the use of the term “zero,” but rather only refers to “the infinitely small.” Cantor, for his part, claimed that he received it as Divine inspiration, in counterpoint to his chief opponent, Leopold Kronecker, who proclaimed Cantor’s system to be “Panteism.”]

For starters, note “Milo’s” logarithm argument above. The antilogarithm of $\aleph_0$, the simple (countable) infinity of the whole numbers, is supposed to be the infinity of $\aleph_1$, that of the real numbers (or any continuous subset thereof). Then again, the logarithm of $\aleph_0$ is also $\aleph_0$ as it is the least of the infinities, and the antilogarithm of any finite number is finite. By induction then, $\aleph_0 = \aleph_1 = \aleph_2 = \dots$, all simply being the open set, Infinity.

To be still more sophisticated about this, return to Cantor’s supposed infinite diagonalization method. We may start counting the whole numbers in binary. As we do so, we mirror these at where the decimal point should go. We will, by this method, continue on to construct all the reals of the subset of $0 \leq x < 1$. If someone should begin to actually construct a Cantor diagonal, we can chase its tail each step of the way – and provide a whole-number mirror image to match it. You will note that the limit of the whole numbers (in binary), as it were, is: ... 111. In this, the number of places is as infinite as the infinity of those whole numbers. This observation corresponds to the logarithm argument of the previous paragraph.

This is not to say that finite Cantor diagonals are worthless. On the contrary, they are remarkably useful. Such led Alan Turing to a simplified proof of Gödel’s Theorem, and further through that, a proof that the halting problem was unsolvable

(Turing, 1937). The latter was a crucial matter to understand clearly for the development of computer science.

Even Handedness

Extension from the middle line comes with balance due to symmetry.

Even stating this immediately brings up the issue of how asymmetry ultimately comes into existence, for even being specifically in a state of non-extension and extension, demonstrates an asymmetry. [One might, for that matter, also ask why this is even a question. That broader question will relate other grand issues and bring us ultimately to truly understand how the middle line manifests practically.]

Among countless others, the issue was investigated very broadly approaching the turn of the century, by Nobel laureate Steven Weinberg (Weinberg, 1994), and in the particular case of evolutionary chirality – the why of the fairly universal dextrorotatory nature of the chemical makeup of life on Earth – by Mark Silverman (Silverman, 1998). [The terminology of the latter will be explained shortly.] While neither successfully concluded their respective searches, what they do consider will be enlightening for us to review.

To understand Weinberg's search, let's start with the concept of stable and unstable equilibrium. The example par excellence of the former is a marble at the bottom of a bowl. Any random displacement from the equilibrium point will be met by a feedback restorative force. The example par excellence of the latter, is a marble atop an inverted bowl. Any random displacement from the equilibrium will be met by a feedforward destabilizing force – the initially symmetrically stationed marble rolling off the bowl onto the table in one direction – asymmetrically. So, unstable equilibria provide the principle of going from perfect symmetry to asymmetry then? No, they do not, due to the nagging problem of the asymmetric random displacement. From whatever the Pre-Big-Bang/Quantum-Gravity Era looked like (if anything); we then enter into a spontaneous symmetry breaking in a cooling universe.

[Imagine an independent, energetic tennis ball bouncing freely back-and-forth over the net as though it weren't there. However, as it "cools down," there comes a point where it has insufficient energy to go over the net. So, it is now trapped on one side or the other – thus the full court symmetry is "spontaneously broken." To complete the analogy, imagine that the net itself might not have been centered on the full court.]

Whether one could say that the asymmetry is in the random instantaneous particle motions or wave group velocities of the thermal bath, or some a priori asymmetric probability distribution of the possible final stable states (present detailed physical laws), still where did THAT asymmetry come from? Weinberg went into the many-

worlds interpretation of quantum mechanics as a supposed solution – simply that symmetry never ends. We are unaware of realities beyond our parallel selves, nor of our parallel selves, as it were, operating at different “frequencies” – like channels on a radio. Therefore, regarding our model of unstable equilibrium, all would be well for, in fact, the marble rolls off in all possible directions – only divided between different branch universes. In this, though, Weinberg was stymied with why there were separate realities – the very asymmetry between the (in some sense) “prior” state of a parent universe, and “subsequent” state of daughter universes in its “place.”

The understanding of Mark Silverman’s search is different – less abstract. Regarding chirality in molecular structure, those that rotate the plane clockwise to the right are said to be dextrorotatory – from the Latin dexter, “right”. Those that rotate the plane counterclockwise to the left are called levorotatory – from the Latin laevus, “left” (Fleming, 2019). It seems to be that these very names may themselves arrive from that evolutionary dextrorotatory development of humans – why perhaps– if such became probabilistically reflected in our genes, we are mostly right-handed. This right-handed tendency at least, certainly caused our cultures to evoke praises of the Right, and degradation of the Left. In English we have “right” – authority, correctness, vs. what’s “left” (over). In French, “right” (droit) has the same meaning as in English, and “left” (la gauche) also means “awkward.” In Japanese, “left,” kanji (左) symbolizes a hand supporting a hoe, that is, the left hand being in an inferior, subsidiary role. It continues similarly in different languages – in fact in Latin, a synonym for “laevus” (“left,” as mentioned above) is “sinister.” As well, this culturally inborn preferential prejudice may have entered even our political conventions, starting with the seating arrangements of the Assemblée Nationale Constituante (the French parliamentary body established in the 18th century, revolutionary period). Those sitting on the right preferred holding more to traditional standards, the “right” way to do things, with only slow and precautionary change. Those on the left part of the chamber sought to rapidly move away, “deviate” (the word itself implying negative behavior as in a “sexual deviant”) from those standards. [Naturally, today’s Left prefers the much more positive term, “Progressive.”] Such even enters engineering convention, as for example, the rule of the standard screw: “Righty, tighty; lefty, loosey.”

The problem that Silverman points out is that all interactions in Nature seem to demonstrate symmetry in chirality – “heterochirality,” while life demonstrates the mysterious dextrorotatory “homochirality.” This is a serious matter. Matching chirality between food supply and consumer can be a matter of vital nutrition versus deadly poison. Basic physical mechanisms such as magnetism, electricity, heat, *etc.*, all result in symmetry. Silverman has but one suggestion: While on average such effects are symmetric, he had seen studies that early morning sunlight shows some domination of one chirality of circularly polarized light, balanced by its opposite’s domination in late afternoon light. However, temperature

tends to be higher in the afternoon than in the morning due to the daylight hours solar heating. Perhaps this makes the light of one of those periods have more effect on the development of life than the other to the point of controlling the arrow of evolutionary development.

The problem with this is that, to begin with, such asymmetry itself is uncertain. Then there is the question of whether or not this would even be a sufficient mechanism, even any sort of mechanism at all, to evoke such a totally unbalanced evolutionary development. Further of course, the global problem is the same one faced squarely by Weinberg, “Where does any asymmetry come from in the first place?” However, again, that broadening of the issue was not Silverman’s concern.

We may learn something from Weinberg’s observation that if we are split up between countless quantum realities within a relatively tiny slice of parallel universes where we would exist, we seem to see only the universe that we reside in at “the moment.” Regarding the entire approach of many worlds, a notable objection came from Nobel Laureate Roger Penrose (Penrose, 1994, 2004). His argument principally rested on two points. Firstly, virtually all particles – all mass in the universe, are in connection through quantum entanglement. Secondly, there is an asymmetry awaiting quantum states in superposition – the curvature of spacetime itself.

The first point along with a later theory, ER = EPR (the connection of two seemingly separate entanglements by a wormhole; Maldacena & Susskind, 2013), would eventually lead to the realization that the curvature of spacetime itself resulted from the breaking of that universal quantum entanglement. The second point implied that the quantum superposition (of potential “real” states), a state that all entangled particles are in, is broken by the curvature of spacetime. This latter results in another theory, Orchestrated Objective Reduction, or “Orch OR,” to be discussed in a bit (Hameroff & Penrose, 2014; Penrose 1994, 2004).

This curvature is per Albert Einstein’s General Relativity, gravity which is also mass. Ultimately, per a theory by Erik Verlinde (closely connected to the physics of black holes – specifically the “Holographic principle”), it’s all just entropy – disconnection, disorder (Verlinde, 2017). However, black hole physics implies something else, as well.

Zero – the infinitely small, and Infinity – the infinitely large, was carefully avoided by philosophers for millennia, mistakenly thought tamed by mathematicians at the dawn of the 18th century. When they later realized their mistake (Hilbert, 1926; Weierstrass, 1872), they joined the philosophers in trying to rid themselves of them – or rather really, again, “It.” Then, in the early 20th century came Albert Einstein’s General Relativity and shortly thereafter, Karl Schwarzschild’s solution of the spherically symmetric case, and his consequent theoretical derivation of the

black hole – bringing the potential nightmare of "It" actually touching our physical reality. By the late 20th century, this was no longer just a theoretical issue, as such great cosmic beasts of infinitely-small-point/infinite-large-density-gravity core, began to actually be discovered even in our own galaxy. In fact, an enormous one, Sagittarius A*, has even proven to be the very core of our galaxy. The worst nightmare though, is literally metaphysical. – If even one such ravenous beast's singularity actually made contact with the causal information composing our reality – that reality would be torn asunder!

How is such an occurrence prevented? Clearly it is, for would it ever happen anywhere/any-when in our spacetime, we would, retroactively, never have existed. – There is a two-fold concept.

On the one hand, there is the Penrose Cosmic censorship principle that basically says that since it is impossible to make causal contact with a singularity, the event horizon must prevent it. [Although, there was a subsequent analysis arguing that one could possibly go a little beyond the event horizon – it is not by much (Dafermos & Luk, 2017).] Similarly, as it were, the Heisenberg Uncertainty principle serves to censor instantaneous actions and infinitesimal/infinity impossibilities, implicit on the microstate level, from contact with our measurable/perception-axiomatized/logical reality. [More correctly, it is an indeterminacy principle, for the information concerned is neither "uncertain" nor merely "unknowable" – it doesn't even exist.]

On the other hand, per Leonard Susskind and Stephen Hawking, there is a "Minus One Law of Thermodynamics." This law states that information can never be created or destroyed. Entropy is merely the absorption of the information into a growing variation of microstates.

Putting this law together with Verlinde Gravity and General Relativity, we discover something astounding about matter in particular, and mass in general – including energy, and presumably dark energy, as well, given that we only recognize such through gravitational effects (at least dark matter appears to be merely a holographic reflection of dark energy per Verlinde). It all appears to be nothing but "thick" "buried" information. Reciprocally, it is only through matter – or mass in general, that we can perceive information. This is also why we cannot perceive abstract information – why quantum effects can only be surmised statistically through after-effects involving matter (mass).

Again, all of the above are derivable from, or at least certainly not contradicted by, the Holographic principle.

A similar relationship to the one expressed by the "Minus One Law" was foreseen by Robert Shaw, the first to realize that the fractal phase-space orbit (strange

attractor) of deterministic chaos ubiquitous to the nonlinear systems within spacetime, implied a two-way communication across scale (Shaw, 1981). This is now considered a crucial part of the puzzle of communal evolution into evermore unified homeostatic systems.

Penrose's original Orch OR theory, not only saw the transformation of quantum superposition states of potential physical states into actual/measurable ones, but postulated a structure in the brain where such took place, becoming the phenomenon of consciousness. Stuart Hameroff later recognized the microtubule as the structure that Penrose was seeking, and their collaboration went on to successfully demonstrate 6 hypotheses without contradiction of 10 others – although some modifications were required (Hameroff & Penrose, 2014). Their research cleared up certain long-standing questions concerning the working of the nervous system and oddities functionality of anesthesia. There was also further unexpected, outside evidence for their theory (Kerskens & Pérez, 2019). One particularly interesting corollary of the original theory is the existence of “proto-consciousness” in very simple (benzene-ring) quantum resonance structures that may have been key players in bringing about successful evolutionary transitions into homeostatic states – particularly given the importance of these in the formation of membranes, to sensation, decision-making, and motor response.

Still deeper into the information perspective, was the research in recent years by Donald Hoffman more purely from a psychobiological perspective (Hoffman, 2010). Earlier research indicated a tendency toward evolutionary development towards hallucination in perception, and a skewing in that towards focus on egoistic desires – most fundamentally on survival needs: “Does it eat me or do I eat it?” Hoffman probed in this direction still deeper – just how important to evolution was such simplification and skew. “Shouldn't survival track the precision of sensation in describing one's surroundings accurately?” The shocking answer out of a great many genetic algorithm simulations was not only “No,” but in fact, that any other direction led to complete extinction! In short, evolutionary pressure was on pushing to the simplest sufficiently representative illusion possible. Anything of concern would be clearly represented in a bare-bones fashion, as it were, a simplified, minimal branch language rooted in a higher, vastly more complex reality. From this, he formulated Multimodal User Interface theory, placing perception in allegory to a computer desktop screen. Such screens represent the vast and complex static and dynamic electrical charges that are the actual storage of data files and programs in the hard drive, RAM, and Internet cyberspace, by file folder icons that can be dragged to a recycle bin icon to delete or otherwise manipulate. Such is designed for simplicity to allow the most rapid actions with sufficient precision, even while being very remote from actual reality. Hoffman follows this principle through to what appears to be its ultimate implication – one, per Hoffman in lectures, considered seriously by even a leader in evolutionary biology with as strong a materialist perspective as Richard Dawkins. The idea is that consciousness

is not a form brought about by the material that we perceive, but rather it is conscious agency in itself that is the source of the perceived material – as well as the spacetime in which it appears to be perceived. Not only in this perspective does Penrose-Hameroff proto-consciousness go down to the quantum-resonance of certain simple molecular formations, but even to the supposed quantum mechanics of particles themselves. In short, all still, vegetative, animal, and human life are different gradations of consciousness, that can in fact, separate into parts, or combine into larger, integrated wholes. This is, in an informational sense, not really different – save in the envelope perceived/imagined – from quantum (linear) superposition breakdown into specific realities. From here, things go to larger materialized decomposition (“death”) from larger systems, and the buildup of these through communal evolution via nonlinear (chaotic) multiscale communication.

Much comes together from this and the discussion earlier – as well as what we may take from Mark Silverman’s observation on evolved homochirality, that will help us in our practical application of the middle line. However, there is still the question of why is the existence of asymmetry even a problem? This will be the lynchpin to complete our true introduction to the middle line.

Let’s begin at Milo’s argument of the earlier section, but let’s follow a different root, by identifying a particular interesting A and B a little lower down the line, so to speak, though not really – but at least a little less than absolutely general. A is symmetry, B is asymmetry. We note that symmetry itself is asymmetric with asymmetry, and asymmetry is asymmetric with symmetry. However, in this shared asymmetry, they are of course, symmetric.

More finite examples of this sort of thing led to Gödel’s Theorem in 1931, and Algorithm Information Theory later in the 20th century. In-between these, Alan Turing, besides finite uses of Cantor’s Diagonal Method and Gödel’s Theorem, dabbled in the infinite. Specifically, following Cantor’s (what was not yet recognized as) intuitive transfinite path, he extended Gödel’s incompleteness through the entire transfinite set to absolute Infinity - as would have been the case sublimating the transfinite set into absolute Infinity in the first place. At this Infinity, he did find completeness, what he termed “an oracle” – for everything was in it, in particular, both sides of the paradox (Turing, 1939). Of course, in particular, symmetry and asymmetry.

Understanding the Big Picture

Let’s now try to get a handle on the big picture.

Know that the philosophical approach to now be embarked upon is used only to get some initial bearings, and provide a framework to support a practical model for integral system science and education. The intent is to try to establish something

of great practical value, not to support or attack anyone's beliefs, views, values, or culture. Please try to evaluate what follows on its own merits as a working hypothesis, not a fully established scientific fact.

What we claim is the early idealist philosophers' concept of Prime Cause, but bypassing their avoidance of the Infinite, and taking that Prime Cause as Infinity itself. We do not follow the implicit (and frankly arrogant) assumption of those philosophers – despite their higher level of abstraction in outlook than their materialist colleagues, that only what is immediately attainable by the senses or mind, and for which – of course – we can give a name, exists. If nothing else, certainly the past two centuries of scientific progress has proven how wrong that assumption is. However, until some broadening of our mind and senses, for all intents and purposes – not taking it as a final truth *per se*, we may proceed on their assumption.

As such, we find in the human lexicon only three general terms for any concept of change: Causality, Chance, and Will – that is, change sourced by a unified entity, completely of itself, “conscious volition.” It is the last that is implied in the concept of “Prime Cause” – in particular when this is taken as Infinity itself. Further, in its breakdown of finite (constructive) logic, Infinity renders inductive reasoning, arithmetic reasoning, the central limit theorem of probability and statistics, and the very concept of a probability distribution function, nonsense. Respectively, this disallows Causality and Chance, leaving us, in any case, to represent Infinity in our language as “Will.”

It must be noted here, that there are two concepts of will – freewill & free choice – that is, a higher continuum/analog and lower discrete/digital varieties of conscious focus. At Infinity, in particular, without the existence of symmetry or asymmetry – categorization altogether – only the idea of freewill can be applied. On the other hand, any notion of will in the finite can only be a choice between finite options.

From this, one begins to conclude, as it were from above philosophically, what Hoffman concludes from below scientifically, at least to the extent that simulation via genetic algorithms can be considered experiment. Consciousness is not an after-effect of the material world that we perceive, but rather it is the reverse. Further, even though Penrose-Hameroff portray their theory and particularly impressive results as “physical,” nonetheless, one partner in that physicality is a quantum superposition of a very unphysical nature in the classical sense, and the other partner that supposedly collapses the first to cause consciousness, itself has to be created by that collapse. What we have here then can be likened to the 19th century poem by Eugene Field, *The Duel*. Only here it is rather in reverse time of the battle of the calico cat and gingham dog. Rather than, “But the truth about the cat and pup – is this: they ate each other up.” And it is that Schrödinger's cat and the curvature of spacetime dog spit each other out at the Creation Event, and have

even been revealing each other ever since. However, they are not figments of each other's imagination, but rather figments of the imagination of consciousness. As per realizations like the Amplituhedron theory, spacetime, along with its relativistic curvature and quantum mechanics, can't actually exist (Arkani-Hamed & Trnka, 2013).

Of course, this seems to lead to a new paradox. "Whose consciousness is doing the imagining, mine or yours?" This is the principal problem of the philosophy of Solipsism. It is something that Robert Lanza struggled with for years in his Biocentrism theory which maps this exact issue. To restate his answer more neutrally as his does seems to perhaps hold religious overtones, we just need to come back to Donald Hoffman's model of separate consciousnesses that are at once, unified.

The sensation of your right hand can take up the focus of your consciousness, or that of your left hand, or both together. You are one, and the other, and both. This is not a new paradox – there is only one true paradox, and that is Infinity itself as seen from the illusion of the finite. Beyond this there are false finite paradoxes, such contradictions only fooling us until there comes a higher finite dimension to solve them. One does not require some sort of recourse to Infinity for such, because there really is no problem save having one eye shut so as not to see the complete picture. As regards Infinity, consciousness would have to sublimate into Infinity itself as, so to speak, only Infinity itself can open an infinity of eyes. In more classic philosophical terminology rooting consciousness into Infinity, it becomes "the Knower, the Knowledge, and the Known."

Almost all of the many paradoxical drawings and woodcuts by M. C. Escher are understood in perspective – the world looked at has an illusory 3rd dimension. Typical of this genre is the (Penrose-)Escher staircase. Each section in isolation appears rational, but the whole is not. This is solved by conscious realization that these are but lines and curves on a 2-D sheet.

[Aside: Now, such can be produced in actual 3-D space as well, but the trick there is perspective. Per a book on detecting lies, the author wisely notes, "the truth works from all angles, a lie only works head-on." In 3-D there is a severe discontinuity that is hidden from the "head on" observer, whose mind, focusing on pieces, not the whole, presumes continuation of a pattern with that hidden from view.]

However, there are two exceptional works by Escher. One, *Devils and Angels*, the fourth and final woodcut in his Circle Limit series, is not even an illusionary perceptual paradox. Yet it inspires a sense of hyperbolic visualization, giving a mind's-eye view to an actual version of the Infinity paradox, the Banach-Tarski paradox. Essentially, this paradox allows one to deconstruct a sphere into a finite number of pieces, and reconstruct those into a sphere of any size. Per the

“visualization,” one understands that the pieces are fractal – finite in number and description [“algorithmic information” (Chaitin, 1982)], but infinite in expanded detail (repetitive) process. It's kind of like turning a ratchet that pulls up Infinity into “twice that” or “down by half.” More direct is Escher’s, *The Gallery*, where an observer at the gallery is viewing a painting where the scene wraps around to include the very gallery and himself in it. Were it that simple, the matter wouldn’t be more than that in the earlier staircase. Only here there is something different. Escher’s signature and date are written onto a white cloud that is set dead center in the piece. We've met such clouds earlier in the geometry of physical spacetime protecting our finite reality from Infinity paradoxes such as those of Penrose censorship and Heisenberg indeterminacy. Here, Escher does the same in an artistic geometry – for the matter is not an illusory loop, but of an actual infinite spiral into a singularity per the “Droste Effect (Surrealism Today, 2022).”

No matter how deep one goes, what becomes this middle point at Infinity? Zero, or actually, nothing becomes the Middle Point. The Middle Point is that which sources everything. Just how much is “everything” sourced?

It must be remembered, as discussed earlier, that intuitive mathematics of Infinity cannot be trusted. However – we perceive as far as we perceive, and from the axioms thereby, we may work logically – and derive our sciences. However, as intuitive mathematics certainly cannot contradict anything known in our finite reality if it is to be even of value as an intellectual exercise, sometimes the exercise itself in its purity of projected abstraction can bring to the forefront some realizations present in our actual reality that might be hidden from our cluttered minds.

In this regard, let us begin with a classical intuitive approach. It isn’t even mathematical, and it is barely philosophical – basically it is a general theology. What is referred to is the method of negative attributes, the idea that we may know the Infinite through those finite qualities that are not represented in the finite. Know that only a finite set can be so understood, yet let us continue – for a great treasure lies before us if we can figure out where to dig for it. We need only know how to intuit the map.

We noted earlier that because causality and chance are non sequiturs regarding the Infinite, the only concept we have for even the abstract process that would seem to apply, is will. Yes, if there was a process – but such process requires the reality of asymmetry and symmetry – that there is something different “gone to,” and there is something like “what was” to compare with. In short, by analogy with *The Gallery*, while we may draw our concentric circles about the Middle Point – our circles can’t actually reach it for a point is not a circle as a circle is a set of points. Note that this is really an analogy with the Zero, Infinity rather is analogous to that which can’t ever be reached by numbers no matter how large, for a point on the

number line is not a set. However, the point at Zero, and the “point at Infinity” are – at least by mathematical intuition – One, with all else lying between them if they are perceived separately. “Perceived separately?” – Zero and Infinity could hardly be perceived any other way but out into clouds from the finite.

Perception is from where we may make free choice decisions and intend actions. Per Multimodal User Interface theory, these are the composition of consciousness, the first and last connection with a world of consciousness, that from the perspective of that connection, is still greater consciousness. Per Orch OR, consciousness is the middle line connecting the quantum world of possibility in the Zero cloud with the curvature of spacetime flowing into the entropy of the black hole singularity world and the inverted one beyond the known universe – the Infinity cloud. These, are as it were, a grand perception and action – themselves, joining at the “Creation Event” or “Big Bang.”

However, how can we model (we can’t actually know) this state of only Infinity with no symmetry or asymmetry, clearly without what we would understand as consciousness any more than what we understand as causality and chance, and the finite reality that our consciousness perceives, considers, and acts upon? Let us consider one more clue – our hands.

In addition to illusion paradoxes resolved in the realization of mere representation of a singular matter once viewed from a higher dimension, Escher enjoys using a Möbius strip theme. This well-known construct from the mathematical discipline of Topology, in its devilish simplicity, is even a great arts and crafts project for kindergarten. Yet it bears wondrous surprises for young and old alike due to its surreal nature. A simple strip of paper, given a half-twist and then having its ends taped together into a band, is actually an object with only one side and one edge. One can prove this to oneself by cutting along the center across the circumference to reveal not two separate bands, but rather an unraveling into a single one. The cut provided an extra surface and side to finally create a complete actual band. Now, let’s make a Möbius strip out of clear plastic and draw the outline of a right hand on it. Traveling along the surface one rotation, we return to the hand outline, only now it has become a left hand! From a higher dimensional perspective, we discover right and left are identical.

Here is another way to look at this. Imagine that we made radio contact – but not video – with an alien civilization on a distant planet for which we have no astronomical references. We wish to show them pictures of our world and our written language. How should we instruct them to build a video receiver that will guarantee actual images and not mirror ones? – There is no way to do it, for we would have to distinguish right and left by a flow of information in time – verbal transmission – with no perceptual spatial reference or memory of one to call upon. In short, when there is no asymmetry to present, there exists no way to distinguish right and left.

This actually should not surprise us if we grasp the earlier point of a lower-level specific branch asymmetry becoming a higher-level root generality. However, let's explore this dichotomy in the finite, more deeply.

If I flip two coins, one to my right, and one to the left, calling H and T for heads and tails, respectively, there are 4 states of a flip – in terms of a right and left coin (R-L): H-H, H-T, T-H, T-T. There has to be some difference between H and T so that I can even determine these states, which tends to lead to some variation in odds. In the case of pennies for example, the chance of H tends to be about 2% to 4% higher than T, due primarily to air resistance effects. One could do a lot better than that, close enough to identical to be considered an ideally fair coin – even using special identifying equipment, and if necessary, even using statistical measurement to eliminate remaining uncalibrated random noise. So basically, we will be able to get an even probability distribution of 25% for each of the 4 states between the two coins.

However, for “quantum (coupled) pennies” (there are such analogous cases, e.g. involving electron spin or photon polarization), there are only three states: both H, mixed, and both T. I would expect a $33\frac{1}{3}\%$ probability for each of these. This is measurably real. If I did one billion penny-pair flips, I'd find 250 million in each state with a standard deviation of about 16 thousand, in that classical case, and $333\frac{1}{3}$ million in each state with a standard deviation of about 18 thousand, in the quantum case. Such quantum behavior makes it clear that there is no difference between right and left. In fact, this has to be the case to show that the “Gibbs paradox” is no real paradox. This is good, because it is required not just to make the laws of chemistry of our universe possible, but to make the existence of any laws of chemistry in any possible universe possible. However, then how do we explain the classical coin statistics? – This is through the curvature of spacetime – our consciousness has imposed a perceptual asymmetry on right and left that was not really there.

We might think of that perceptual asymmetry, perhaps, as the view of a fish-eye camera, or one of those maps that distortedly blows up the city that we live in and shrinks the rest of the world around it. Whatever is near us appears large, far from us, appears small. We are in the “now,” wherever in the chain of cause and consequence we are. Thinking into the future or past tends to be logarithmic, not linear, going out from our present. Going from a linear quantum world to a nonlinear spacetime automatically takes symmetry into asymmetry.

This brings us back to the observation of Mark Silverman and what we can learn out of it: The creation of a specific “space” (differentiation in form) and “time” (separation of cause and consequence) allow for asymmetry, because they ARE asymmetry. In honor of our living dextrorotatory dominance, let us say that the mechanism of asymmetry is for Left to diminish relative to Right, not only laterally,

but also defining the lower asymmetry as diminished Left versus the higher symmetric Right. This similarity of form is crucial to the entire possibility of a global conjunction of Middle Line, improvement in concert with “the grain of Nature.”

Now this is all in process from greater (more general/less limited) finite to lesser finite, but how do we model the “initial” “jump from Infinity?” We might think of Zero/Infinity (again just intuitively, not by construction of course). That is, Nothing/Everything – the “Initial Transition” – the true “Creation Instant,” is the “universal set” of all symmetry/asymmetry dichotomies. As there is no axiom or logic, there is no “impossible.” It would seem that every reality we can imagine and even that we can’t, has roots there. From an endlessly deep subconscious comes, so to speak, infinite rays – fractal chains of specialized, more focused consciousness down to our present perception. This idea resonates with both Multimodal User Interface Theory, and at least a speculation suggested by Stuart Hameroff regarding the implications of Orch OR. Such a reality even seems to have been somewhat intuited by Sigmund Freud regarding “the oceanic sense” (Freud 1930).

So, where are we going with all this intuiting?

Entering Into the Practical

Per the above, it would seem that our “middle line” in all its mathematical description, in all its external functional description, is in essence, consciousness – a consciousness that connects to all lateral consciousness, through elevating into a higher consciousness, like branches to roots, perhaps buried deep within our subconscious. In our perception of Left and Right – if it is toward a separation of right and left in space analogy, before and after in time analogy, or just separation of two events in (relativistic) spacetime analogy – then through it, we separate from the higher and lateral. Consciousness as an overlap of dissimilar forms, losing their higher connection – fades out of existence into an ever feebler “fractal dust.” However, could this process be reversed, in uniting the dissimilar Right and Left, with Middle Line, Consciousness, beginning to take on the role of growing union of these sets, rather than their intersection?

It’s time to return to our brain, our mind, and “expand” it. We re-enter our own finite reality and combine the worlds of psychophysics, neuroscience, individual psychology, and social psychology. In our tangible reality, these are what we can explore *per* normative science. This is where our intuitive approach to the infinite can touch base with constructive reality to see if there is real application – an empirical/experimental that we can taste. For the remainder of this section, we will set up the “real world” framework. In the next, we will apply it to education – social-emotional learning evaluation.

Earlier we looked at the brain's Right-Left interaction as a fractal/scale-free network connecting to consciousness – the mind – as a mediator.

Let us begin by recalling Freud's model of ego moderating between the social consciousness of superego and the lower selfish lusts of the id. This worldly psychology emerges from the deeper universe into the maternal womb into the vessel of personality arising within the growing fetus – again, even precisely as per Freud (Freud, 1930).

Now, onto the physical science perspective of Orch OR. This moderation and emergence are identical. Like “between a rock and a hard place” – the greater consciousness is a superego that really joins the ego with that of others, into a higher unity in a surrealistic quantum superposition, while the id are the forces of the specific local curvature of spacetime. From this evolves through time, and arises through the individual, a proto consciousness emerging upwards into the state of what we recognize as full consciousness.

Finally, the cognitive science perspective of Multimodal User Interface Theory: From a higher, superego reality of a more unified pure consciousness, the separating individual pushes away that reality in favor of a simpler one with a one-to-one correspondence of perceived objects of structure and dynamics made independent through arrangement in a separating framework of space and time. This happens in conjunction with the egoistic need for individual survival, and likely in a further, less fundamental but more refined, nuanced psychic dissonance regarding a variety of id desires. These extend from mere survival like a rock tends toward keeping form, up through the very human (society comparative) vegetative-growth-like desire for wealth, animal- mobility/domain/dominance-hierarchy/effectance-like desire for power, and the particularly human love of wisdom/understanding/knowledge.

There is a massively complex and impressive mechanism, physically measurable in our perceived reality, to accomplish this feat. This consists of the neural-network physiology of our brain and general nervous system, with cellular microtubules tentacles out into our sensory, motor, and all other systems of our general physiology. That physiology is by-and-large an amazing conjunction of fractal phase space (6-D, 3-D structure times, 3-D dynamics) systems – the “strange attractor” of deterministic chaos, serving as an information superhighway for the holarchy in terms of lateral and multi-tier homeostatic feedback communication, rising up into a holism of the entire body.

In this regard, the role of the brain and nervous system may be particularly noteworthy. There are indications that a lowering of the level of individual human consciousness seems to reflect in the appearance of greater entropy in the brain. This is possibly seen in terms of a more microlevel of chaotic communication within

the scale-free network/fractal structuring and dynamic (Aram *et al.*, 2017; Aubert *et al.*, 2009; Lee *et al.*, 2005; Lee *et al.*, 2007; Lee & Koo, 2012; Solhjoo *et al.*, 2005; Varley *et al.*, 2020).

[Aside: This is just what Nature “wants” if we would only continue to develop it into full homeostatic interconnection between the entire human community and then so, back into Nature as a whole. We do not require direct biological connection. Communal groups perceive, communicate, make unified decisions, and act through the use of touch, headbutting, fungus, chemicals, electricity ultra/midrange/infrasound, ultraviolet/visible/infrared light, and quantum magnetism. Particularly involving sound, light, and electricity, humans have speed, precision, nuance, and complexity vastly beyond what any other form of life has available. We simply don’t use it as they do – at least not yet.]

Neural networks, beyond physiology, have been intensely studied for use in artificial intelligence, their most particular success being in “deep learning.” Such a network basically consists of “nodes,” and connections between them. One basic application is character recognition. A very large volume of handwritten samples is fed to a video sensor connected to input nodes. With each learning datum, the network alters the strength – “weight” of its internal connections, until converging to a desired output – the binary code representing the character in question. While the memory in the network of N nodes would seem capable of representing on the order of 2^N different characters, in reality, it can only store depending upon analytical perspective, on the order of N to N^2 characters (Abu-Mostafa & St. Jacques, 1985; McEliece *et al.*, 1987). The reason is that it is not a generic input that is being recognized for each character, but rather what is the most likely character being seen in a whole range of variations around the ideal look of that character. Sufficient leeway to allow reasonable certainty in character recognition, requires a large number of possible patterns to be recognized as a given character, and so this limits the number of actually different characters that can be recognized in practice, before the probability of false interpretation is unacceptably high, although it is never zero once there are two or more characters.

The distributed, interweaved nature of the stored character recognition information, as well as the decision path to a convergence on a character output based upon a given input, is complex and can be represented as a multidimensional fractal basin. The simplest model of this is in 2-D (Wolfram Mathematica Users, 2017). If two opposing poles of force act upon an object, there is a curve of balance between them (a line centered between if the poles are exactly equal). As it were, to the right of the curve, the object will be pulled to the Right pole, to the left, the Left pole. However, if a third pole of force is placed somewhere in the plane, even weaker in strength and/or further from that curve, its pull will take advantage of the balance or near balance of influence of the first two poles, and dominate an object on the curve and over a varying width territory to either side.

However, in certain areas within this boundary of third pole dominance, there is a “counter revolution” where the first pole similarly dominates when locally, the second pole approaches balance against the third, and vice versa by the second pole where the first pole nearly balances the third. Further, within each of these there are subareas of other poles recapturing dominance, *ad infinitum* – forming a fractal patchwork. Add more poles, and this fractal phenomenon grows in complexity. In three dimensions, these fractal areas become fractal volumes, in four dimensions, fractal hypervolumes, and so forth. If a different color were allotted to each poles’ regions and subregions of dominance, the 2-D result becomes quite a beautiful fractal “stained glass window.” We can but imagine the glorious vision in higher dimensions with near-transparent light colors – and the growing intricacy of this multidimensional spiderweb with each new pole, if one but had eyes to see it! The set of all regions of a given color represents cyberspace territory of a given character or whatever the element learned was, relative to everything else that has been learned.

Depending upon just what was learned, and how it was learned, this can lead to dangerous illusions – as illustrated by recent artificial intelligence research history. For example, a system that was to be used with robots that would hunt an excess of predatory wolves in Alaska were shown various scenes of wolves versus husky dogs, etc., so that it would differentiate between them and only go after the wolves. However, early in review, the system proved too often to identify huskies as wolves. It was finally discovered that the differentiation between wolves and huskies was not as strong as the connections through wilderness scenes versus other scenes. Thus, a husky in a wilderness scene would be identified by the neural network as a “wolf.” Such mistaken learning actually led an AI test vehicle to kill a woman crossing the street. It did not identify her as a pedestrian because she was not using the crosswalk.

We must understand such first and higher orders of differentiation in neural network knowledge attainment. We must also perceive the pre-existing bias toward ego/id needs of the forces maintaining established wells in fractal basins in the human brain and nervous system, and how these translate into interpretations of pleasure and pain, including the sense of release, yet guilt/shame, in departing from the superego of higher consciousness. This lays the middle line along the fractal borders of the basin. Then there is psychic dissonance and its rationalizations when new learning comes in contradiction to old knowledge, and – especially if originally assisted in its development by pre-existing bias – old wells pull back hard and maybe grow deeper.

Now, witness a typical heated social media debate between two ideological antagonists. Virtually without fail the debating points of the opposition have only succeeded in each digging deeper trenches into their original views.

Another issue to observe is the presence of such things as the “non transitivity” paradox – in form, reminiscent of the (Penrose-)Escher staircase in its piecewise reasonability and apparent full-circuit irrationality. The simplest form, though it can have many stages and forms, is $A > B$, $B > C$, and $C > A$! However, like that staircase, the answer is in a higher dimensional look. In this case, the higher dimensional look is the higher dimensionality of the comparison – a measure based on more than one dimension. Say that A, B, and C each have three categories of comparison, a, b, and c. Further $a\{A\} > a\{B\}$, $b\{A\} > b\{B\}$, though $c\{A\} < c\{B\}$. Similarly, $b\{B\} > b\{C\}$, $c\{B\} > c\{C\}$, though $a\{B\} < a\{C\}$. Finally, $c\{C\} > c\{A\}$, $a\{C\} > a\{A\}$, though $b\{C\} < b\{A\}$. Thus, in each comparison, there is a 2/3 majority of elements of comparison that really do justify the entire circle of non-transitivity. Such is a major contributor to problems in general decision making such as the (a little more complicated) case of the “voting paradox.”

Similar difficulties arise due to Simpson’s paradox. This occurs when a result or trend emerges in a large statistically significant sample population due to one or more “lurking” variables. When the population is broken up along the lines of such a variable into groups that are still statistically significant, it is discovered that the result or trend has disappeared or even reversed in each of these subgroups. The most famous example of this was 1973 University of California at Berkeley graduate school admissions data, implying that female applicants were discriminated against. Fearing the potential for a lawsuit, the individual departments were investigated to find the culprit or culprits. However, when this was done, it turned out that two of the departments showed no statistically significant bias, and the other four actually showed such bias in favor of rather than against women. Closer scrutiny indicated the lurking variable; the ratio of female to male applicants tended to be higher in departments that had lower overall admission rates. What should be noted in this example, assuming that the graduate school was hoping to offer equal opportunities for both sexes, is that both the parts and the whole were necessary to examine to get at the true answer. Had just the whole school been looked at, the result would have been to work to end supposed admission bias against women. Had just the individual departments been looked at, the result would have been the opposite. Given both, what would perhaps need to be done is to, indeed, eliminate the bias in favor of women in those four departments, while enlarging the more selective departments to allow for more admissions. However, it is not necessarily so easy to recognize a lurking variable and isolate it, nor clearly understand its implications. Further when there are multiple lurking variables, the situation can get far more complex. Further, the effects are unlikely to be linearly independent, and there is the possibility of nontransitivity loops.

We return to one more observation about the Middle Line concept, and then we will be ready to make an application to the case of social-learning evaluation. This reflects back to the most abstract levels that we discussed intuitively and to our observation from Mark Silverman’s study. We might call this circle and line, or group and pyramid.

The symmetric ideal may be thought of as a circle. [It is worthwhile to note in this regard, that the expansion of π towards infinite places past the decimal point, already accomplished to a barely imaginable number of places, proves a sequence of perfectly random (equiprobable) digits in any base – perhaps the only true random number generator in existence.] Then there is the asymmetry of a line, a ray of light from the sun. But such rays expand like a top-down pyramid – a “trickle down” economics, if you will, into chlorophyll-filled agriculture and roof-top solar energy panels. Of course, all the pyramids taken together are naught but an ever-widening continuum of solar-concentric circles. We may focus-in on the ray of light through a window, glistening to our sight through impact with airborne dust, or take in the whole yellow warmth for a split second at risk of blindness. Our consciousness chooses the focus, the symmetry or asymmetry.

Time and space provide a theater to separate out and manifest specifics from a unified conceptual whole. Per Shakespeare, “All the world’s a stage ...” Here we have the view of local asymmetry within a grander symmetry. As the Earth spins on its axis, some must work in daylight, while others receive rest under moonlight. Is this a continuum of varying injustices or, in fact, one longer playout of justice? Some are on vacation, while some work – a not so obvious, but similar idea. However, different socio-economic status, problems, sufferings, joys, needs, talents, limitations, and tendencies – do these all balance? Is this perceived asymmetry even possible to balance?

Let’s look at the question of political justice.

Ideally – not really (or maybe, we’ll see...), we could imagine an omniscient ruler whose intrinsic concern is humanity and fairness, with no concerns whatsoever beyond their well-being. However, based upon real history, it might be fair to claim that liberal democracy has proven our closest approach so far. Still, the simple fact is that wealth has an inordinate amount of influence on elections and elected officials. Further, there is social and general media that have placed control of information flow and the influencing of public opinion in the hands of a few. Further, there is our dependence upon the aggressive entrepreneurs and technology innovators that by necessity have greater say beyond elections. Finally, and by necessity, decisions are not made by the public, but by the individual decision-makers that they elect. Even were all these influencers altruistic in intent and wise (and they certainly aren’t), their presence wreaks havoc on the collective intelligence that effective democracy really depends upon.

Additionally, among other issues, is the sticky problem of majority rule versus the tyranny of the majority. Each individual should have one vote. Yet if so, and if of two choices on a regularly voted issue, and the same majority always wants choice A, and a minority always wants choice B, then the individuals in the majority will always get what they want, and those of the minority never will. While some

compromise might seem the best path, there are different types of minorities, crisscrossing different issues, multitier situations with minorities within minorities, and a whole host of other complications making true justice here unattainable.

Now let's look at two very simplified questions of social justice with a rather interesting internal and mutual symmetry and asymmetry to focus us in on a broader problem.

First case: Two people, A and B, are completely equal in life situation (at least for all intents and purposes). They share the same nature and nurture, were raised in the same socio-economic situation (considered average), have the same race, gender, and ethnicity – they even live in the same neighborhood and attended the same schools. No particular differentiating fortune or misfortune took place in their lives. The only real difference was their decisions. A made the tough early choices, worked hard and long, and in socio-economic terms, ended up in a greatly improved situation over that of childhood. B's particular choices and general path were just the opposite, with as could be expected, the opposite result. They wed similar types with similar histories to themselves, and have children: 'a' and 'b', respectively. 'a' and 'b' start out in life the same as their parents did, save for the socio-economic shifts that occurred only through the decisions of those parents. Obviously, there are great differences regarding 'a' and 'b' concerning opportunities and closed doors in life – by no merit or fault of their own. So, the question is, viewing the families of A and B as a micro-society, should A be required to subsidize 'b' (at the cost of 'a') in part, or fully to the point of equal opportunity for 'a' and 'b'? In short, is it justice or injustice to force A (and 'a') to support 'b', in part or up to parity with 'a'? Regarding the second generation in isolation, with an individual entering the world at an unfair disadvantage, certainly this is social justice. However, regarding the first generation in isolation, certainly this is social injustice, for B has thereby exploited A.

Second case: This time A and B do not start off exactly equal, but differ in one area – race (or ethnicity). Again, A makes good decisions, B bad ones, but in the end, this just allows A to be able to overcome the additional hurdles in school, career, and life in general that A faced due to racism (or bigotry), but B didn't. Thus, in the end, A and B do have the same socio-economic status. Only in his generation, A had to work a lot harder for it. In 'a' and 'b's generation, thankfully, that kind of discrimination is – we will assume for argument's sake (and wish for our future), at least – completely eliminated from society or at least, there are sufficient legal protections in place as to nullify any practical future socio-economic effects due to it. Now the question becomes: Is it justice or injustice to force 'b' (B) to partially support 'a', in part or up to parity (through finance and/or special opportunities of financial value) with the further socio-economic status that by rights of efforts in a fair playing field, A would have himself provided for 'a'?

Not only is this not logically resolvable, but those holding even emotional world views that place them on one side or the other of the questions, are likely to find themselves, not only at odds with others on each question, but in logical contradiction with themselves between the two questions. In the present way we view things, the most reasonable approach would be an honest moral relativism. Before any nihilist gives a knowing smile, we best realize that this present way that we view things is a bar room brawl – ideologically, politically, economically, on social media, in education, in families – physically as well – and sometimes even in our own heads. [This last is when psychic dissonance hits, when we are exposed to information that we realize is true but goes against our fractal basin mind map.] This general instability, the continuous fight to install one false, unbalanced narrative to rule in place of another, leads only to waves of chaos until Nature, answering with its own, would take us out of our misery. Yet, it needn't be this way.

Deterministic chaos, or at least its onset, is the natural state of affairs in the post-quantum world, the world of our perception. In its two-way interscale communication, chaos has two forms: a destructive form, and a homeostatic, evolutionary constructive form.

The Mandelbrot set was made famous by YouTube fractal zooms. However, these are only a result of a limited number of recursive cycles. The reason for different colors or gray scaling is because the set is really of all points in the (complex) plane, and remains that way. However, in terms of a finite number of points on a computer screen, the recursion tends to increase or decrease in local densities of points. [In an actual infinity of points, this is a meaningless concept.] That is, some points move closer and closer together: others move further and further apart (so to speak, down into the fractal or up, respectively). Ultimately, if one could see to the pixel level, the screen at any magnification would become a “fractal dust.” That is, all the original points have either chaotically spiraled out of the screen or converged to certain specific pixel locations. It is just a matter of “who by fire and who by ice,” so to speak – flung to infinity or crushed to zero. However, can these two trends in chaos, instead of talking through each other like mindless ideological opponents, instead talk to each other – and listen – like those who are mutually responsible and for the sake of the whole, seek the truth? Yes! This is again, how every still, vegetative, and animate community, and the super community of the ecosystem work – all of Nature – except for the human community.

The only thing that general Nature has that we don't, is connection. Connection is all that holons at any level need to do for homeostatic/evolutionary system emergence from communities in Nature, the rest takes care of itself. Laterally, and vertically (over scale), connection takes things from linear independence to a nonlinear interdependence. This all happens instinctively in lower forms, only stopping at human ego that has sufficient individual intelligence to overcome those instincts to our inevitable harm. The matter of our ego and brain blocking us here is

analogous to Alan Turing's heroic struggle during the WWII German U-boat blockade of Great Britain, to develop the first computer, "the bombe" to break the German secret code, Enigma – and with it, the blockade. Enigma's complex seed and messages changed daily. Where the best human cryptologists wracked their individual heads hopelessly anew each day to try and break it, Turing's namesake of the failed Polish "bomba kryptologiczna," succeeded in a matter of seconds. There was no more knowledge in that machine than in the brains of everyone working there, less in fact, as it – like Turing – didn't even know German. The key was how that knowledge was connected – the rest took care of itself.

What is this connection in Nature, and what should it be in humanity?

Take the case of a bacterial megacolony, typically consisting of more members than there are humans on Earth. They so annul to each other (not in actuality, but just in mutual identification) that they form rapid chemical communication laterally, and chaotic communication up into the organized whole, knowing its need as it knows theirs. The bacteria move in an amazingly coordinated, tight formation of flagella-powered transport without entanglement. They sense food at a distance that would be impossible for individuals, including its precise location – and proceed there by the most intelligent path, surrounding the food in a manner as to internally spread it equitably, apparently scaled by local needs.

All they did was find each other and connect. This is not the exception in Nature, it's the rule.

All we need to do is use specially designed methods of education, collective-intelligence workshops, media and physical environment, and general voluntary psychological immersion – specialized methodology, but in essence not that dissimilar to principles of Alcoholics Anonymous or Overeaters Anonymous. If we can establish such connections over time of mutual concern and desire to benefit, we should find a flow of understanding of true needs, capabilities, and universal fairness. In essence, a utopian form of social justice would emerge beyond simple democracy. There would be no denial of majority rights, nor tyranny of the majority. There would be no bias-distortion of collective wisdom, no misrepresentation, and no irreconcilable paradoxes of social justice. Rather there would be something completely new to the human community, "unanimity."

Consider a group of people who truly care and focus on each other more than themselves, like in a well-functioning, loving family. Each family member gets more pleasure from giving than taking, and understands that all others feel the same. This indicates complete and mutual trust and care, which is a necessary element. If someone has more of a need and would receive more pleasure from something than others, up to a true balance point, the greatest total pleasure for each individual in the group lies in satisfying that need – even for the person him or herself in the

bestowal of satisfying the need of others to bestow, in addition to the lesser pleasure in the receiving itself. As this maximizes the pleasure of every person in this society (e.g., family), clearly it optimizes the pleasure for the society as a whole. Further, if one is better able to accomplish something more than others, then this too will prove optimal for each individual as well as the system as a whole – and so forth. Each member of the society (e.g., family) contributing their strengths, while depending on others' contributions, leads to a stronger society where everyone benefits.

It is like an ideal host and guest. The host knows the guest is hungry and would enjoy the food. The guest knows that this perfect host would gain pleasure in his or her acceptance of the hospitality. The host knows that more than the guest enjoys the food, they enjoy providing pleasure to the host by honoring him or her through the eating. The guest realizes this level – *ad infinitum* as his/her/their sensitivity and mind are sharpened in this relationship.

The Three-Tier Emoji Evaluation

Sometimes in complex mathematical sciences, it is advantageous to start out in the middle, with a comprehensible item in itself, and complete a higher derivation only so far. At a later time, if desired, one may explore back further from whence the “initial given” came, and to where the “final result” will be continuing on to. Much is happily understood in biochemistry and molecular biology without immediately (if at all), understanding the fundamental physics behind it or the physiological consequence due to it. In general, this is how one should deal with items of a fractal or even general holonic nature, and what we are going to discuss is certainly that.

We will now consider a new tool being developed at the Institute for Humanity's Unified Development (IHUD; formerly Integral World Research Institute, IWRI) for social-emotional learning (SEL) evaluation – the three-tier emoji evaluation. Part and parcel of IHUD's mission of study and application of integral science and culture, is to seek total immersion in the fractal geometry of Nature, to quote the title of Benoit Mandelbrot's classic book. Naturally in terms of education, we seek an immersive integral approach to the learners and the learning, as well as to what is learned. In that regard, we study the natural balance in a holarchy of the individual student regarding self and subject assessment concerning SEL activities.

The method developed is based upon a Likert scale of feelings using emoji representations, and is still under study and development (Joshi *et al.*, 2015). [It is a convenient coincidence that “emoji” sounds like a mnemonic for the English word “emotion.” However, it is actually a transliteration of the Japanese words 絵, “eh” (picture), 文, “mō” (write), and 字, “ji” (character).] While our method may potentially prove of value even with adult students through expansion into greater

sophistication, its present target population are students aged 6 and 7. The emojis planned for use with such a young group are basic emoji faces, varying from full smiley to full frowny.

Since emojis were first created by Shigetaka Kurita in 1999, there has been a great deal of study concerning their application primarily in computer, communication, and behavioral sciences, as well as marketing, linguistics, psychology, medicine, and education (Bai *et al.*, 2019). Perhaps the most important findings have been the limitation of such methods due to bias of a cultural (Takahashi *et al.*, 2017), gender (Butterworth, 2019; Prada, 2018), and/or personal psychological nature (Liu & Sun, 2020; Wall *et al.*, 2016,). The last is uniquely challenging to calibrate due to its real-time, nonlinear feedback/feedforward nature. The mood of the respondent can change due to contemplating the emojis while selecting them. Further, one may, for example, identify a smiley emoji with oneself far more often – wanting to think of oneself as a positive person. In other words, does the emoji really remain a question of honest opinion in the mind of the participant, or has it turned into a challenge to identity and self-worth? Is the student not answering the actual question, but rather showing approval or maybe disapproval about him or herself? Perhaps the matter has even turned into a reflection of general happiness or unhappiness.

This is understood theoretically, as well as by data that was clearly skewed and/or leptokurtic, and by comparisons with written equivalents. In particular, İlhan *et al.* found that even down to 8 years olds – just above the authors' target age range of 6-7 year olds – a written Likert scale proved closer to zero skew and mesokurtic distribution than an emoji-based one (İlhan *et al.*, 2012). This indicates that emoji-based Likert scales may be more biasing than written Likert scales.

As to why, if so, emojis, are still sought after for use in this theater, it is in their ability to reach down into early childhood, welcome participation, cross over language barriers, and access deeper inner feelings and appraisals that can only be reached via symbolic body language as opposed to verbalization expressed in writing which may feel more sterile. [In fact, it is that very depth that also seems to unearth the subtle tangential feelings represented in the bias issue.]

In general, the 21st century technological phenomenon of complete CMC (computer mediated communication) dominance, has pushed emojis to the forefront of communicating emotion in place of the intimation of body language and voice intonation. In particular for those ages 3 through 18, emojis have been proving an important means of expressing emotions that are difficult for them to speak about relative to their respective developmental capacity (Fane, 2017; Fane *et al.*, 2018). Such issues magnify, and thus become all-the-more obvious, in the case of intellectual disability. Here the use of emojis with perhaps, at most, a two-word accompanying description, has been found particularly critical for the use of a

Likert scale with younger clients (Hartley & MacLean, Jr., 2006).

While qualitative measurements as independent matters are vague, seen interdependently it is a very different story. While there has been historic controversy about whether the Likert scale of a sufficient sample size leads to a normal distribution, it appears that where it seemed to fail in this was not an intrinsic problem, but rather due to lurking variables as discussed earlier regarding Simpson's paradox. The method is not wrong (Sullivan & Artino, Jr., 2013). Rather when anomalies are demonstrated in statistically significant data sets – look to properly divide up the sample population, or seek out other issues. In short, use the Likert scale as a diagnostic tool for determining how to look at your population.

The authors have decided to start out with a 5-scale. In doing so, they do make note that İlhan *et al.* (2012) warns of the difficulties with this for even the 8-11 year old students in its study, and recommends the use of a 3-scale. Certainly, this advice would seem to apply to our 6–7 year old target population. Further, the research of Alan and Kabasakal (2020) with 7-8 year-old students implies that while 2-scale results were poor per discrimination index, 3-scale and 4-scale were significantly higher and similar enough to find them acceptable.

However, later research by Kaye *et al.* (2017) implies that there is a disconnect between various platforms of emojis and the same feelings coming out on one's actual face. Further, concerning Alan and Kabasakal, it is possible that the results seen that seem to validate use of a 3-scale were overly optimistic due to the generally noted, apparent superiority of the odd number scales over the even ones. [The reason relates to the presence of an anchoring neutral option between positive feelings and negative ones.] That is, if the 2-scale and 4-scale results are actually local discrimination minima, respectively fore-and-aft of a 3-scale local maximum, then naturally it could appear as though a curve fit to these three points, rose rapidly from 2-scale to 3-scale, and then essentially levelled off. However, the next point at the 5-scale local maximum might tell a very different story – a repeat, if perhaps of smaller magnitude, of the sudden rise from the 2-scale to the 3-scale result. This likely reality is further supported by Adelson and McCoach (2010), who directly verified the superiority of a 5-scale over a 4-scale with a population of 8-12 year olds. Finally we note the more recent research by Massey (2021), with 8-9 year olds that demonstrates very reliable results using a 5-scale by having them draw a circle around an emoji of choice from a pictorial list, then having them draw the selected emoji itself, to ensure their proper engagement and understanding.

We are looking for an emoji completion by students that differentiates only on the curvature of the mouth. Such can be reviewed by the teacher using his/her/their own face with students practicing on their own faces, and actually sensing the meaning directly to make a more accurate selection. [As happy feelings are neurologically connected with a smile, so a smile invokes something of an artificial

sense of happiness, etc.] This should prove even more powerful than Massey's technique or at least as sufficient in overcoming the 3-scale limit of İlhan et al. Given this approach that might lower the usefulness age bar determined by İlhan et al., and the advantage of some definition and emotional nuance beyond mere like/neutral/dislike, the authors have decided to start with a 5-scale, though are prepared to fall back to a 3-scale if that proves necessary.

Palindrome items as "very" "somewhat" ... and their negatives apparently can generally be considered as $+N$, $+(N-1)$, ... $-(N-1)$, $-N$. This seems to reflect the mathematical/psychological study of quantitative inference from patterns of qualitative data that George Pólya published already in 1954, as well as Lotfi Zadeh's fuzzy mathematics – beginning with its set theory published in 1965. Further, in the statistical modeling and characterization of even baseline system components for computer-aided design, the components themselves are often treated as integral subsystems with quasi-isolatable, separately measurable parameters. One can actually garner much more qualitative and quantitative information from the characterization measurements of a limited number of samples with a number of "rubber-banded" (model equation related) parameters, than one might expect from that relative paucity of those samples. One not only has more total information to work with, but the logic of internal consistency to anchor it with as well.

With this in mind, we move on to the actual measures. There are, at present, two forms. This is not due to any essential difference in how they are applied, but only a matter of the layout of the measure – each advantageous to different, particular investigations, as shall be explained shortly.

The blank form of the first, the "fractal face," starts out simply as a large circle, with two smaller circles inside – at approximately the place where eyes would be in a face, only these "eyes" are as oversized as reasonably possible without ruining the impression of a face. Within each of those – as though smaller faces, another set of such eyes.

The blank form of the second, the "planetary fractal," has a central circle-and-eyes face. These are large, but not as large as the primary of the fractal face. Evenly distributed around this, as though planets distributed in the same orbit about a sun, are smaller faces – these can be two or more. Similarly, around each of them, still smaller faces – also two or more, and may be different numbers for each set.

In both cases, the form is filled in by the students at each level with a full lower semicircle "smile" (very pleased/strongly agree), a flatter lower semicircle "grin" (pleased/agree), an "expressionless" flat line (neutral/no feeling either way), an upper flatter semicircle "pout" (unhappy/disagree), and full upper semicircle

“frown” (very unhappy/strongly disagree). At the highest level of the fractal face, the child answers regarding feelings towards an entire experience or “the big question.” Then there is the next level of fractal face or orbiting face, subdivisions into what should be the subcomponents of the upper issue explored – and so further to a tertiary level.

There are, though, on the second level, differences in what the forms look at, and exactly how they are looking at them.

The fractal face is designed to be a bifurcation (two-branch division) fractal, and in its simplicity, already has an advantage for working with young children. It also has a psychologically and developmentally appropriate, aesthetically pleasing layout, as well as the practical points of only “so large and so small” on one sheet/screen.

The obvious disadvantage of the fractal face is its limit to bifurcation. This can be used when there are two clear parts in time, aspect or activity to an event or two clear parts of a question, and their sub-questions. For the most part, though, larger and varying numbers are required, and so the planetary fractal.

There might be an additional theoretical advantage to the fractal face form worth exploring. The road to deterministic chaos is paved with a geometric convergence of bifurcations (approaching the “Feigenbaum constant”). Potentially there could be an antiparallel relationship between this bifurcation tree phenomenon in approaching the deterministic chaos of brain action observed in some studies. It depends upon there being a correspondence between the crisis points of a chaotic bifurcation branching, and the resolution points of sub-decisions and the top-level taking place, as it were, in a reverse-time “opposite direction.” As well, in general consideration of the Penrose-Hameroff Orch OR theory, there is the possible sub-decisions/decisions parallel of initial reverse-time bifurcations of superposition wave functions of the many-histories interpretation of quantum mechanics. Alternatively or additionally, there are the forward-time bifurcations *per* the many-worlds interpretation, with alternative decision options founding each world.

There might be an additional theoretical advantage to the planetary fractal form worth exploring as well, in its ability to map trifurcation and still larger branching. This is specifically in its potential to unearth a parallel with modular decision making demonstrated by animal groups (Kao & Couzin, 2014), making the model effective for mapping complex processes.

[Aside: It seems that modular structure within a group helps (Kao & Couzin, 2019). Though this eliminates some information, much of that is “noise” due to random local variations and small local gradients of long-range biases (including legitimate, unique environmental information that is, however, irrelevant to the decision at hand). The result is a potential rise in accuracy proportional to subgroup number (when equal to the square root of the total group number).]

Unlike single tier Likert testing, we may study internal dynamics of a student's choice by asking them to answer at all levels where all sublevels have been completed in real time, or after the fact, forward in time along the activities or reverse, or bottom-up/top-down in the holarchy. Does there appear to be consistency in the equality or importance variation given by students to different elements in voting for the next level emoji? Is there bias in emoji assignments in absolute terms? What about if emojis from happy to frown must be distributed across all elements – that is, if they can't all be (relatively) happy or unhappy?

There may be a different weighting on a lower level than a higher one due to deep information hidden in the entropy within the more external “matter” of the upper decision, analogous with the minus one law of thermodynamics mentioned earlier. This could appear in the form of seeming emoji voting paradoxes or capriciousness. This, in addition to the actual bias connected directly to generic personal/gender/cultural interaction with smiley/frowny images in and of themselves.

The literature suggests eliminating bias by calibration using an array of psychophysiological instrumentation and measurements (Bai *et al.*, 2019). Alternatively, this could be by specialized neural network deep-learning (Akter *et al.*, 2020; Chandra & Prasad, 2021; Kollipara *et al.*, 2012). It is felt that what is suggested here offers the best of both an in-depth approach and practical simplicity as a starting point. However, as the use of the present authors' method develops, or in whatever manner SEL evaluation will generally evolve, inevitably there will have to be a full incorporation of the interactive influence between students. At that point, the complexity will certainly call for all the sensory precision that can be practically mustered, and certainly, the most advanced systems modeling computational and analysis tools available for use.

A start in this direction for educational research organizations with limited financial and human resources, would be to datamine the ever-growing Internet libraries of precision psychometric data sets – big data sets in general, and seek out the right methods of analysis to work with them. If we cannot obtain exactly the category of results that we want, hopefully, we can come close enough to still draw needed conclusions. As to what methodologies to look at, a good starting point is the various dynamic matrix approaches that have already been used in other educational evaluation contexts. These include neural networks (Cader, 2020), tensors (Cooper III, 2008), Markov chains (Hoernle *et al.*, 2018), and fuzzy logic systems (Troussas *et al.*, 2020).

Summary and Conclusion

We have explored Milo's discovery – and in our quest for the Middle Line, climbed the infinite heights to determine a holarchy into the finite along a path of

consciousness. The takeaway here is that Nature has a plan for humanity to reach, one that can be seen in still, vegetative, and animate levels. Rather than being separate, binary poles that contradict each other, the individual parts are necessary pieces of the whole, and vice versa, all working together in balance and harmony through connection and cooperation where everyone benefits as part of a system. Each brings their own unique viewpoints, personalities, etc., in service to a unified system that is greater than the sum of its parts.

We entered with this, and a related methodology under development by the authors, into the inner depths of the individual students' SEL self and process evaluation. As they approach readiness for a trial run, the authors hope that this methodology will become a valuable part of IHUD's efforts to establish an everyday integral education of a totally immersive nature. Through a fractal Likert emoji assessment method we hope to better understand learners, their learning processes, and what is learned on various, and oftentimes embedded, levels. We hope that this new way of studying and assessing individual students, as part of a larger whole in the classroom community, regarding their self and subject assessments in SEL activities, will provide a more accurate picture of the holistic processes of learning and being in learning contexts and communities.

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