

Subscription to Digital Libraries and Corresponding Journal Impact: A Value-Based Approach to Demand for Digital Research Data—Confucian Integration of Curricula and “Market String” Digital Education Systems

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Abstract

This paper develops a functional relation between Digital Libraries and Confucian Integrated Curriculum Learning systems. We show that under certain properties of Learning Systems which can implement laissez-faire markets under uncertainty, the systems integration is possible in entropy space.

Keywords

Confucian Dao and Li, String Classification and Integration of Curricula, Digital Libraries

1. Introduction

In discussing “Confucianism and Education”, Charlene Tan [1] of Nanyang Technological University analyses the topic in four sections. I quote as follows:

1) Aim of Education

The central place of education in Confucianism is stated in the opening passage of Xueji:

If a ruler desires to transform the people [and] perfect [their] customs, [the ruler] can only do so through education! (Xueji I).

The context of the passage is about good political governance. Rather than merely relying on laws, able officials, or virtuous advisors—all good measures in themselves—the ruler should devote attention to educating the people. The goal is to radically change the people by refining their conventional ways of thinking

and doing. The reference to transformation and perfection in the above verse signifies that the scope is extensive, going beyond skills training and cognitive advancement to paradigm shift and character development. The actualization of this aim of education naturally requires a normative standard to guide the ruler in knowing whether and when the people have been transformed and their customs perfected. This standard is revealed in Xueji II to be dao (Way), which is the object of learning: “People who do not learn will not realize dao.” Dao is the Way of Heaven (tian) or “guiding discourse” (Hansen, 1989 in Tan [1]) that is passed down from antiquity.

2) Curriculum

“Curriculum,” as used in this article, refers to the totality of learning experiences provided to students. This means that the curriculum includes not just the contents to be studied but also all planned activities, programs, events, and functions that take place in a variety of learning sites. Following the aim of education to realize and broaden dao through embracing ren-centered li, a Confucian curriculum should be holistic, broad-based, and integrated. First, the curriculum is holistic, as the spotlight is not just on the students’ cognitive progress but also on their affective and behavioral developments. Cognitively, the curriculum is designed to enrich the learner’s intellect (“broaden their learning”) and content mastery (“know their various subjects and acquire a general understanding”) (Xueji V). As for the affective and behavioral dimensions of the curriculum, the same passage stresses the need for students to “revere their studies,” “esteem their fellow students,” “cherish their teachers,” “be firmly set and not likely to regress” in their learning, and engage in “discourses on their studies” with their teacher and peers. Other passages also highlight a commitment to learning (Xueji V), self-discipline (Xueji VI), enjoyment and diligence in studying (Xueji VI, IX), and respect for and trust in dao (Xueji VI, IX).

A rounded education affirms a Confucian mandate for students to transcend theoretical knowledge of dao by appreciating and abiding in it.

3) Teaching Approaches

A learner-centered education is privileged in Confucianism so that human beings can be equipped and empowered to realize and broaden dao. The pedagogies, resources, activities, and learning environments are customized to produce junzi who are filled with ren and conduct themselves in accordance with li. Xueji X disapproves of didacticism where teachers “chant the [texts on the] bamboos” and “advance [the teaching] rapidly without regard for [the students’ abilities to] accomplish [the learning].” The same passage concludes that these teachers “are not sincere in making others [learn], and do not give [their] utmost to [consider the students’] talents when teaching them.” Such teaching is essentially rote-learning that places the teaching content and the teacher rather than the student at the heart of teaching and learning.

Underpinned by a learner-focused education, Xueji XIV urges teachers to be sensitive to the individual needs of students by “knowing [the students’]

heart-minds” (Xueji XIV). The word “heart-mind” (xin) in Confucian parlance refers to the harmonization of one’s thinking and feelings. It is the same word used by Confucius when he urges all to “set your heart-mind on dao” (Analects 7.6). He also testifies that he has followed his “heart-mind’s desires without overstepping the line” (Analects 2.4), *i.e.*, without transgressing li.

4) Contemporary Relevance

Confucian educational thought and practices have had far-reaching and lasting impact on China and other East Asian countries such as South Korea, Japan, and Singapore. Common in these countries are the creation and flourishing of “Confucian pedagogic cultures” (Kim, 2009). Despite variations among them, these cultures share the following primary pedagogic patterns: a premium placed on education, high social status of and respect for teachers, student attention and discipline in class, a firm grasp of foundational knowledge, and repeated practice (Tan [1]). The Confucian accent on memorization with understanding, reflection, inferential thinking, theory-practice nexus, and peer learning support deep learning, higher-order thinking, lifelong learning, and collaboration—competencies needed by knowledge workers in the 21st century (Tan [1]). The seriousness with which East Asians view education, coupled with the high standards of teaching and learning in Confucian Heritage Cultures, has arguably contributed to the impressive performance of these students in international large-scale assessments. For example, Shanghai/China, Hong Kong, Taipei, Korea, Japan, and Singapore were consistently the top performers in the Programme for International Student Assessment (PISA) and Trends in International Mathematics and Science Study (TIMSS) (Tan [1]).

Against a backdrop of contemporary education being increasingly determined by neoliberal agendas, Confucian beliefs in values inculcation and social interdependence are particularly salient for policymakers and educators.

The “laissez-faire market Economy model with learning” and the Confucian concept of Integration of curricula:

In a research paper based primarily on my PhD thesis at New York University’s Dept. of Economics but containing the newly developing area of Econophysics and Insurance Medicine, Mallick, Hamburger & Mallick [2] derive as follows in the new application of Insurance Medicine. The specific sub-field being developed is of Implementing Insurance equilibrium for Medical Physics Field Theory of Mathematical Finance and the Econophysics insurance field “Genetic Quality” (stationary utility experimental case evidence Dutta & Mallick [3], Mallick [4], “Learning Field” (properties 3 and experimental case evidence in Mallick, Krichel & Novarese [5], Mallick [6] [7] and stationary probability ensemble (see experimental case evidence in Mallick [4] and “Arrow of Time” (Time Subdifferentiable by Anderson & Takayama [8] and String Matching Genetic Algorithm Field Theory Mallick [9] with experimental evidence in line with Faye [10] Bypass for Millenium Problem #1 (Mallick *et al.* [2])). This technology which leads to “market strings” the market systems classification and

market integration (Mallick [9]) is developed later.

Theorem:

If $l_i^*(p(s)) < K$, for all i in Mallick [6] [7] then the Grossman & Stiglitz [11] type of separating equilibrium, in information and financial markets, can be implemented in this economy, generically.

Proof:

To restore the Grossman & Stiglitz [11] type separating equilibrium we show that suppose without loss of generality there are two agents who are not equal *i.e.* suppose, $N=2$ and $\alpha_1 \neq \alpha_2$, $w_1^s \neq w_2^s$ for any s .

Suppose as in Mallick [7] we restate the equilibrium condition (definition 1) to include $\sum_i c_i^{s*}(1; (p(s))) = \sum_i w_i^s$ for all $s > \min_i l_i^*(p(s))$, then it easily follows, generically (as before) that we can have separating equilibrium with two agents investing in possibly different quantities of learning at equilibrium, there will be an aggregate value of the information learnt for the market as a whole which will follow the Shannon measure, there will be a single price system clearing markets, but the “insurance” for states which lie outside the above separating requirement, will impose a restriction on the method of insurance for the agent with a higher value of $l_i^*(p(s))$ which he will not obtain from the contingent commodity market, but following a policy induced consumption rule. In other words the insurance requirement will separate the market clearing conditions into two parts and therefore the market into two parts, however, the market will not be incomplete and there will be equilibrium, generically. Q.E.D.

There are certainly other ways of obtaining separating equilibrium all of which requires changing the market rules in some way by the policy maker, which are not warranted by the definition 1 or by the Rational Expectations equilibrium which Grossman & Stiglitz [11] were trying to achieve. Also, it would be trivial to show that given the restriction above, the equilibrium obtained would be Pareto Optimal. This provides the quantitative and algorithmic theory behind the implementation of financial and information markets, which are structurally viable according to the program trading norms of matching of demand orders and supply orders as above and information channels which are equivalent to a signal driven source of communication satisfying the requirements of Shannon's measurement, with pretrading learning using IT enabled backoffices as laid out in the EU-India Business Summit as above or the Repec application of research back offices as contained in www.repec.org in emerging market economies like India and others.

It should be noted that the market structure on the basis of which equilibrium exists in this system can be altered by say changing the rule of consuming endowments in the 0-probability states given by the learning functions of all agents. Such an alteration would result in equilibrium with Finance Pretrading learning not existing in internet driven digital systems economies.

This separating equilibrium has also been solved by Quantum Mechanical Electro-String integrated circuits Econophysics field in Mallick, Hamburger &

Mallick [2] and Mallick & Mallick [12].

2. The Confucian Integration of Curriculum

2.1. Aim of Education

The central place of education in Confucianism is stated in the opening passage of Xueji:

If a ruler desires to transform the people [and] perfect [their] customs, [the ruler] can only do so through education! (Xueji I).

Proposition 1:

If $l_i^*(p(s)) < K$ for all $i \neq j$ and if $l_i^*(p(s)) > K$, then the rationing condition $\sum_i c_i^*(1; (p(s))) = \sum_i w_i^s$ for all $s > \min_i l_i^*(p(s))$, will not be able to enforce equilibrium for $l_i^*(p(s)) > K$ because j will not be able to be matched with any other player.

Proof:

Hence, only a “command rationing system” which is “benevolent and participative” by all players including the outsider j such that $L_i^*(p(s)) < K$, can implement the Grossman & Stiglitz [11] type decentralized competitive market equilibrium in information and financial markets.

Thus in terms of the adapted Mallick [6] [7] definition of Equilibrium, is in line with the Confucian view of governance with the balancing of materials and aspirations of people, across all classes and masses, achieves the Aims of Education with the highlighted constitutional requirements of “universal participation” and the Quantum Mechanism (Bohr, based on what we all know) of legal prohibition of outsiders. This is also in consonance with Radner’s (1972) Econometric Society Presidential lecture on “Aspiration, Bounded Rationality & Control” (Mallick [6]).

However, if this process is repeated over time the String of Command and Control is created over space and time with periodic review *i.e.* every K periods and over history develops into laissez-faire customs because the method of solution is learnt universally. Q.E.D.

2.2. Curriculum

Following the aim of education to realize and broaden Dao through embracing Ren-centered li, a Confucian curriculum should be holistic, broad-based, and integrated.

Proposition 2:

If $l_i(p(s)) = 0$ for all i , then the states of the world (learning) will extend to the entire states of Nature, and laissez-faire contingent commodity markets will satisfy the Confucian concept of curriculum being inclusive of all unknown contingencies and hence fields of knowledge.

Proof:

In the entropy formula of Theorem 2 in chp. 2.4. of Mallick [6] if $l_i \rightarrow 0 \Rightarrow L_i \rightarrow \infty$ then the value function $V(L_i)$ will converge by Cauchy’s crite-

rion and L'Hospital's rule, if limit $w_i/L_i \rightarrow 0$ for all i , which has to be implemented by the Confucian curriculum covering the Field of all unknown states of Nature. This program which exists generically (Mallick [7]) will broaden Dao through embracing ren-centered li and hence make the curriculum holistic, broad-based and integrated to fulfill the criterion of controlled entropy for value based societies and laissez-faire contingent commodity market form of social organization. But if $w_i/L_i \rightarrow \infty$, then the Third Law of Thermodynamics falls in place in Natural environments, the Einsteinian "God does not play dice with the world" maxim. Q.E.D.

This satisfies the scientific judgment on Learning contained in my thesis Mallick [6] [7] and subsequently, being able to identify the Eastern styles of knowledge in the form of Vedas (Hinduism of scripted knowledge) and the Yanas of Buddhism (Mahayana and Hinayana) the tenets of religion fostered by the phenomenology of knowledge. This is in congruence with the achievability of Dao through embracing ren-centered li or Confucian holistic, broad-based and integrated curriculum.

2.3. Confucian Achievability of the Heart-Mind "Systems Integration"

Corollary:

The systems integration of the heart and mind of the learner is achievable as Confucian policy.

Proof:

Mallick [6] discusses the properties of the learning function given by the following:

The "learning technology" works as follows. It uses the consumption good as input and produces a forecast of the possible state-space at date 1. In fact it partitions the initial infinite statespace to a finite set which contains the true state and the residual infinite set. Each agent i knows that the first set i in (1) contains the true state but does not know which one it is. They therefore attach probability 1 to the first set and probability zero to the other. These sets are as given in (1). However, the identity of the sets is not known to the agent before the investment. The agent knows the learning technology subject to some random error, *i.e.* the agent knows, subject to a random error with mean 0, how close to the true value the forecast will be consequent to a given level of input for e.g. suppose for some value of i viz. i^* , $L_i^*(l_i^*) = 4$, the agent expects that the technology will churn out 4 integers (for notational simplification we assume this to be 4 consecutive integers starting at 1) and the true state will be one of these but does not know which 4 consecutive set of integers the machine will churn out, nor does he know which one out of these four is the true state. However, given the rational expectations framework of this paper the agents will be optimizing with respect to a set of states which consists of a consecutive set of integers starting at 1 the true state, in making the learning-investment decision which we will narrate in the next section.

The learning technology has the following properties:

$$L_i \in I_+ - \{1\} \quad (1a)$$

$$\text{if } l'_i > l''_i \text{ then } L(l'_i) \leq L(l''_i) \quad (1b)$$

$$\exists, \infty > l'_i > l''_i \text{ such that } L(l'_i) = L(l''_i) - 1 \quad \forall L(l'_i) \geq 3 \quad (1c)$$

$$\pi_i(s) = \frac{1}{L_i} \Rightarrow \sum \frac{1}{L_i} = 1 \quad (1d)$$

I_+ refers to the set of positive integers. Assumption (1a) is made so as to keep the choice model in discrete time and exhibit “Quantum Science” and satisfy the convention of numbering states. It also implies that $s = 1$ being the true state (which we know but the agent does not know) it is never possible to have perfect knowledge priori. Assumption (1b) implies that an increase in learning reduces the size of the state space (see (1)) and (1c) imply that the exogenous learning technology which agent i uses to learn about the possibility of various states occurring is a step function. (1d) implies that the Learning Function is a String Function which results in Group Homology and the “Copenhagen” criterion of probabilistic Quantum Science.

This results by the balancing of “Quantum Forces operating on Laissez Faire Market Group Homology over spacetime of market actions” in the Shannon Entropy of Computer Science (Theorem in Chapter 2 Mallick [6] [7]) and Incomplete Markets (Theorem 2 in Mallick *et al.* [6] [7]) unless the criterion if $l_i \rightarrow 0 \Rightarrow L_i \rightarrow \infty$ and $w_i/L_i \rightarrow \infty$ are satisfied simultaneously as in Proposition 2. Q.E.D.

2.4. Inference in the Confucian Policy Space

Reading, Writing and Arithmetic in Curriculum Groups satisfy the Principles of Laissez-Faire education systems (Beckerian concept of Market Value based education systems as we have String Matching Field Theoretically developed into the Learning Field Theory (Mallick [4] [6], Mallick & Mallick [12], Mallick, Hamburger & Mallick [2] [13]) as well as Eastern Systems of Education contained in the scripted knowledge concept of Hinduism, Yana or vehicles of Knowledge of Buddhism and Confucian holistic curriculum concept contained in Dao and li centered integrated curriculum.

3. The Experimental Evidence by Simulation on www.repec.org, Digital Library, in Mallick, Krichel & Novarese [5]

The estimated basic equation obtains as: $S^a = 524.73 + 9.39 * \text{Factor}$ where, S^a is the number of subscribers after estimation and Factor is the simple impact factor. The t-statistic on the Factor variable is significant at a two-tailed probability of 0.40, $R = 0.10$ and $R^2 = 0.01$ and significance of $F = 0.40$.

This shows that a broad-based curriculum contained in the Repec digital li-

brary consisting of scientific fields of interest to researchers in Economic Sciences spread across 63 countries in 82 fields and 3926 subscribers contained in statistically complete hence naturally complete curriculum reflecting the States of the world satisfies the concept of Dao and Confucian integrated curriculum and also satisfies the notion of laissez-faire market based holistic participation based economic value based demand for scientific fields as simple impact factor satisfies both the cardinal concept of quality of fields and the ordinal criterion for ranking of fields and hence is the integration of forces which drives the subscriber data.

This also verifies the fundamental theorem of RHMHM Functor Algebra Calculus implicitly developed in Mallick, Hamburger, Mallick [2] by introducing the Econophysical assumption of “jump quantum conductance” with vector diffeotopy of embeddings in the Learning Networks and the original theoretical Econophysics dissertation in Mallick [6]. This also verifies the correlation implications of particle sizes in String condensation as in Polchinski and Susskind [14] thereby establishing the “Learning Field” “jump quantum transitivity” in hidden <http://www.repec.org/> network particles, which has spacetime systems classification and integration properties along with Chinese Confucian Dao and Li.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

References

- [1] Tan, C. (2017) Confucianism and Education in Subject: Curriculum and Pedagogy, Educational Theories and Philosophies. Oxford Research Encyclopedia of Education. <http://education.oxfordre.com/view/10.1093/acrefore/9780190264093.001.0001/acrefore-9780190264093-e-226>
<https://doi.org/10.1093/acrefore/9780190264093.013.226>
- [2] Mallick, S.K., Hamburger, N. and Mallick, S. (2016) Design of Gated Switches Using HAAG Theorem Bypass Technology. Nick Hamburger Website.
- [3] Dutta, J. and Mallick, S. (1988) On Land & Life: Life Expectancy, Population Policy and the Land-Labour Ratio. *Population Index*, **55**.
- [4] Mallick, S.K. (2010) Asset Based Economy and Management in Emerging Capital Markets, Invited Editorial. *Journal of Asset Management*, **11**, 309-313. (Abstracted in Nature.com) <https://doi.org/10.1057/jam.2010.17>
- [5] Mallick, S.K., Krichel, T. and Novarese, M. (2010) Subscription to Digital Libraries

- and Corresponding Journal Impact: A Value Based Approach to Demand for Digital Research Data. *Journal of Digital Asset Management*, **6**, 336-343. (Also Abstracted in Nature.com) <https://doi.org/10.1057/dam.2010.38>
- [6] Mallick, S.K. (1993) Bounded Rationality and Arrow-Debreu Economies. Ph.D. Dissertation, Dept. of Economics, Graduate School of Arts & Sciences, New York University.
- [7] Mallick, S.K. (2011) Incomplete Markets, Exogenous Participation and Policy Control. *Mathematical Finance*, Archived.
- [8] Anderson, R.K. and Takayama, A. (1979) Comparative Statics with Discrete Jumps in Shift Parameters, or, How to Do Economics on the Saddle(-Point). *Journal of Economic Theory*, **21**, 491-509. [https://doi.org/10.1016/0022-0531\(79\)90055-3](https://doi.org/10.1016/0022-0531(79)90055-3)
- [9] Mallick, S.K. (2012) Political Environment and Financial Markets. *3rd World Finance Conference*, Rio De Janeiro, Brazil.
- [10] Faye, J. (2008-01-24) Copenhagen Interpretation of Quantum Mechanics. Stanford Encyclopedia of Philosophy. The Metaphysics Research Lab Center for the Study of Language and Information, Stanford University.
- [11] Grossman, S.J. and Stiglitz, J.E. (1990) Information & Competitive Price Systems. *American Economic Review*, **66**, 246-253.
- [12] Mallick, S.K. and Mallick, S. (2016) Materials Nano-Science Chemical Physical Analysis Simulation Experiment Using String Theory, First Results. https://www.researchgate.net/profile/Soumitra_Mallick
- [13] Mallick, S.K., Hamburger, N. and Mallick, S. Proof of the P vs. NP Problem. https://www.researchgate.net/profile/Soumitra_Mallick
- [14] Polchinski, J. and Susskind, L. (2001) String Theory and the Size of Hadrons. arXiv:hep-th/0112204v2