

## THE EPISTEMOLOGICAL QUESTION

The emergence of scientific thought and its use in the development of a consistent socio-scientific outlook depends upon an epistemology. There can be no science without a fundamental inquiry into the roots of knowledge. The search for the roots of knowledge leads to a divergence of views in the ‘preception’ of knowledge itself according to different vintages of cultures and norms. The problem to address then is whether a body of scientific beliefs for all of life and thought can be established that can lead knowledge into a unified whole. This precept of the unification of knowledge through a universally acceptable, axiomatic and systemically pervasive comprehension of the entire scientific order, be that of the natural or the social sciences, is what we will refer to here as the socio-scientific worldview.<sup>1</sup>

The principal characteristic of the worldview is conscious negation of the pluralistic episteme that have been inherited by the academic disciplines through norms alien to a systemic conception of the universe and its parts. On positivistic grounds, the domain of the worldview is one of unifying all systems of thought, institutional behaviour and individual preferences on the basis of a unique foundation, axiom and methodology, notwithstanding the differences of issues and problems that differentiated systems may address. It is thus the formulation of this unique axiom and methodology, its application to various socio-scientific systems, and the analytics of its unshakeable worldview that constitute the main objectives of this chapter.

### **Epistemology and Ontology Perceived in Occidental Thought**

Occidental culture and its norms started by its conscious lineage to Greek philosophy. This is the perception of life that upholds atomism, whereby the world of material and non-material forms is seen as a realization of rationalism and

individualism. Plato and Aristotle explained reason itself as being derived from the ethical and moral worth of the political perception of life by perfect individuals.<sup>2</sup>

In his *Republic*, Plato signified the good society in terms of the Good State formed by individual membership of this good society and imbued by the traits of the ultimate Good in the sense of the Socratic conception of goodness. Thus, Plato emphasized the transformation of the individual into a *perfect* moral being in the midst of the Good State.

In Aristotle's *Politics*, one finds a unifying approach to the study of ethics and politics. Man is again seen as the embryo of the Good Society formed out of the inculcation of traits of goodness and justice. But it is the State in the midst of the individual that is seen to realize these moralizing precepts. With the process of advance in the moral transformation of mankind in the midst of the State, Aristotle's great transformation sees growing interconnectedness in the realm of thought inducing moral self-actualisation.

What then are the epistemological questions in Plato and Aristotle, as in most other Greek thinkers that colour the distinctness of occidental culture and norm? The individual self-motivated and socially transformed being is realized by continuous recourse to individualism and rationalism, for the State has no other means of deriving its moral Laws. Either the cultural norms or the Laws of the sovereign king or the will of the individuated self formulates the Laws of ethics under which the state and society must carry on their affairs. What one finds then in such a derivation of a rationalistic doctrine of the democratic order is the epistemological search for the individuated roots of rationalism. Thereafter, this is collectivised into an organized form. But the realm of rationalism so extended by individualistic patterns of search or social collectivism, is a pluralistic *norm* by the very essence of individualism founding rationalism in this domain. Hence, all such searches result in differentiated new *thought* rather than knowledge.

Knowledge on the other hand, is the stuff of the most irreducible precincts of thought. It forms the limit of search that can accept no further atomism. On the other hand, such an irreducible deconstruction is neither microscopic nor macroscopic in

essence. It comprehends both. Thus the essence of knowledge is unification across all systems of thought by the very method of interconnecting the micro and macro in one all-embracing form within the embryonic whole. The result is the discovery by search of a methodology that addresses the study and application of the most irreducible element of a deconstructed but holistic world-system. The actualised methodology remains undifferentiated across all systems. In the perspective of Greek philosophy of morality, individual and the state such an epistemological issue means the merging of the individual and the state, a unique derivation of the moral Laws and self-actualisation within the moral domain of self in the primal order. All virtues are realized by the elements and the whole that is the state, according to the plane of the abiding, never changing, evanescent Laws enacted by the most enlightened individuals. The Greek concept of rationalism thus relegates its staying power to this ever-reducible deconstruction of reality. In this way, the meaning of unification between ethics and politics, between the individual and the state, becomes an undefined link in the never-ending chain of cause and effect relationship. This cause and effect relationship, which extends from its metaphysical primordial essence to the state of finds manifestations in the realm of reality is never realized in the epistemologically incomplete premise of Greek and occidental thought *ad infinitum*. Hence, knowledge is not possible in such open-ended and ever evolving systems. With this non-convergent attribute it is equally not possible to discover unification either of knowledge or thought as these two get intertwined with the growing interconnectedness between cause and effect of the relational world-system.

This occidental culture and norm as derived and perpetuated from its roots in Greek thought, has configured both its material and non-material perceptions according to the non-convergent and open-ended nature of a dialectical evolution. Perceptions rule supreme in this case. Perceptions are mentalist sensations of the lower order of mind. Russell writes on Bergsonian idea of perception as follows:<sup>3</sup> “ ‘Pure perception’, he says, ‘which is the lowest degree of mind -- mind without memory -- is really part of matter, as we understand it.’ ” Hence, the physical world

like the social world in occidental perception is structurally embedded in this formal division between perception forming rationalistic individualism and the essential roots of knowledge, which remains evasive.

One can further take Kantian philosophy in respect to the epistemological question to prove the impossibility of unification of knowledge and thought in the occidental culture and norm. Perceptions in Kantian philosophy belong to the *a posteriori* world of empirical entities. Such entities do not form essential reality. Kant sees essence to be embedded in what he refers to as the critical imperative. This is Kant's transcendental order of the *a priori* experience. But here too, Kant does not refer to the transcendental as the Transcendent. Consequently, all *a priori* experiences are determined in the realm of rationalism. The entire argument regarding the impossibility of acquisition of the epistemological roots in such an incomplete and random search for knowledge, as presented above, now causes the Kantian *problematique* of rationalism.<sup>4</sup>

This Kantian problem is further deepened in reference to the ontological or ontic aspects of reality, as developed by Descartes, Hume and Heidegger.<sup>5</sup> The ontological method of philosophical analysis is based upon the bestowing of explanation to the cause of the *act of be-ing*. Like Kant, who placed all substantive predominance on the *a priori* Laws for forming perceptions of the empirical Laws, but relegated the empirical essence of matter as non-substantive, so also the ontological approach explains the empirical facts *post-hoc* by constructing the premise that describes perceptions. The ontological method is thus a reprieve of Kant's *a priorism* by the deductive method of reconstructing the explanatory basis of the ontic form. The ontic investigation, in the words of Sherover,<sup>6</sup> "would be one concerning particular facts, actual specific occurrences, and empirical generalizations from them. An ontological investigation, on the other hand, as a Kantian transcendental investigation, would be directed toward the general, universal, and necessary grounds upon which, or limits within which, any ontic, or empirical, experience can occur. The transcendental or ontological is thus logically prior to, and renders possible, empirical or ontic objects or events."

**Epistemological Problem in Occidental Philosophy of Science**

By a similar reference, we will call the purely Kantian-type and ontological-type metaphysical entities as the epistemic verities. Just as the ontic is claimed by the occidental philosophers to be confined to the evidential world, so also the epistemic will be treated as being confined to the *a priori* realm of primordial forms. The epistemic and the ontic are thus separated independently from each other by these two parts of reality that are dichotomised in occidental culture and norm. Reality according to transcendental metaphysics is to be found exclusively in the epistemic; and according to reductionism philosophy of science, it is to be found in the ontic.<sup>7</sup> The philosophy of science of all vintages in occidental culture and norm has proceeded in the midst of such a pronounced dichotomy. It presents itself in the division of religion from the sciences during the Age of Enlightenment; it continues to prevail on the dichotomy between rationalism and the Transcendent Laws, and in its methodological manifestation of the micro and macro perspectives of reality.

In mathematics and physics, for example, this dichotomous methodological rendering was earlier proven by the impossibility of the Kantian-type *a priori* thought to comprehend non-Euclidean geometry and its subsequent developments. That is *a priori* reality could not be correctly perceived in the realm of the cognitive experiential order of the mind as found in Euclidean geometry. Quantum Physics and the latter days generalized unified field theory questioned the dichotomous nature of analysis of physical reality. For instance, the Principle of Complementarities in Atomic Physics negates mutual independence between wave, particles, position and momentum. Instead, it claims that there are complementarities between these to form a complete physical reality.<sup>8</sup>

Yet the explanation of physical reality by failing to invoke the fundamental epistemological question, remains too distant away from the integrative principle of the epistemic and the ontic in the light of a unified precept of reality. Relativity Physics, for example, understood this unification problem,<sup>9</sup> but could not

disentangle itself from the axiom of universal constants, in which is the assumption of the constancy of the velocity of light. The subsequent development of Relativistic Simultaneity Principle explaining convertibility between time and events in any fixed geometrical frame of reference was ridden by the problems of specifying an isotropic space-time structure. Einstein had to axiomatically create this assumption in order to endow symmetric properties to the constructed universe.<sup>10</sup> In spite of this assumption, Infeld has shown that variations in the universal constant of the equation of the geodesic of space-time curvature in Einstein-Minkowski-Friedman type universal equation can lead to an indeterminacy problem of the curvature itself. These are fundamental problems of modern physics in respect to cosmology, cosmogony and unification of physical fields.<sup>11</sup>

The consequential problems arising from these multiple views of the universe and the questioning of the axiomatic foundations of physics, lead to two deep problems of occidental epistemology. These problems are first, the question of appropriateness of the axiomatic premise, which involves the Kantian-type *problematique* with the *a priori* nature of universal constants. Secondly, the problem of unification theory in physics, which remains still distant away because of its un-unified understanding of the epistemic and ontic interrelationship.<sup>12</sup>

The dichotomy between the epistemic and the ontic causes dissociation between cause and effect. Yet the understanding of this interconnection is the most crucial part of a unified socio-scientific reality. In Husserl's phenomenology, one discovers this deepening methodological cleavage.<sup>13</sup> The problem of phenomenology is essentially one of discerning a description of physical reality by combining perceptions with experiences. According to Husserl like Kant, the all-embracing Transcendent belies cognisable possibility. Hence, such an experience is taken out of scientific relevance. The consequential perception of thought but not of knowledge now falls victim to the dichotomous nature of socio-scientific relations, inferences and rules. Hammond et al write in this regard as follows:<sup>14</sup>

Husserl objects to this division between a world which can be known and a world which cannot be known. Like Kant, Husserl rejects the idea of what

transcends *all* experience as a possible object of knowledge, because it is impossible to experience; but, unlike Kant, he wants to eliminate such a concept from having any role to play in knowledge.

In the end, scientific inquiry in Occidentalism resides in a system of logical relationship as perceived by the temporal dimension of rationalism. What is comprehended in the perceived world is what has been the object of rationalistic cognition; what can be comprehended in the perceived world is subjected to a set of logical relationships. The precincts of knowledge are the undefined, random and competing domains formed by individualistic reasoning. This kind of reasoning can be certified by power (as in Hellenic State); it can be won by popular support of a hegemonic scientific community (institutional democracy); it can be promoted by the strength of resources (pedagogy in occidental science). According to Russell as explained by Sainsbury,<sup>15</sup> “numbers, classes, the self, the physical world, space, time and events are not ‘genuine entities’ but rather ‘logical constructions’ or ‘logical fictions’.”

### **Epistemological Problems in Occidental Philosophy of Economics**

The sheer recourse to a rationalistic foray in the construction of logical types while delimiting the potential of the Transcendent in such a logical construction is at the root of the moral neutrality in occidental socio-scientific thought. Such a moral neutrality or ethical exogeneity is most pronounced in received economic doctrines.

What makes the moral neutrality so pronounced in economics is the severance of social justice from the economic question of efficiency; or treating the two as competing values while the same attitude to values is also transmitted to the institutional framework. The two most important agents of the economic system are consumers and producers. The role of government in the economy is to establish harmony between the wellbeing of the consumers and producers. Thus, the connection between these agents is brought about by the formalization of a social wellbeing objective, endowed by its appropriate socio-economic variables and

policy variables. The role of the government and development institutions is to formulate and implement policies and programmes, regulate the production and pricing mechanism, undertake joint ventures and constructively transform the preferences of consumers, technological choices and production menus of the producers in the light of social policies. Social justice represented by distributive equity becomes an important target of governments to promote. Yet in the midst of all these virtues the social goals and market efficiency remain competing opposites, tradeoffs. This is the permanent perspective of received economic theory.

### ***1. Microeconomic Problem***

In the context of such a tradeoff, therefore, we find the economic agents independently playing their competing roles in the principal functions of any economic activity, namely, consumption, production and distribution. The economic formalism in this regard works as follows:

The product market determines its supply of goods by supply prices and outputs that are determined not by the demand side, but by the marginal cost conditions of the firms in either perfect or imperfect conditions.<sup>16</sup> Consumer demand (hence, market demand) in the product market is determined by conditions of the demand side of price formation as given by the marginal utilities of the goods. Supply price equates demand price to establish equilibrium price and output in the context of these two independent sides of price determination. Subsequently, costs are minimized, profits are optimised, and individual utilities are maximized simultaneously. This is the nature both of the partial and general economic equilibriums in markets.

When imperfect competition prevails, economic theory still assumes the same kinds of market clearance dynamics, profit-maximization conditions, with the exception of differences in demand and supplies elasticity and regulated pricing conditions. Consequently, in orthodox neoclassical economic theory, the market is a system of exchange between competing agents, within and across buyers and sellers,

who act in their independent focus of objectives. Methodological individualism and the axiom of economic rationality are upheld in such a perfect or imperfect market order.

The first methodological problem to arise from the above kind of market exchange is the incompatibility of the underlying perspectives on prices in the two cases. For if exchange is demand driven, then demand prices predominate. Now, all possible supply prices,  $p_s$ , must be determined by all possible demand prices,  $p_d$ . Thus,  $p_s = p_s(p_d)$ , with  $\partial p_s / \partial p_d > 0$ . Furthermore, the supply function,  $S(\cdot)$  is such that  $q_s = S(p_s) = S(p_s(p_d))$ , where,  $q_s$  denotes the quantity supplied at price  $p_s$ . Likewise, it can be argued that for the demand side,  $q_d = D(p_d(p_s))$ .

From these relations we obtain the excess demand function,  $E = E(p_d, p_s)$ . Subsequently,  $dE/dp_d = (\partial E / \partial p_s) \cdot (dp_s / dp_d) + (\partial E / \partial p_d)$ . Now since  $(\partial E / \partial p_s) > 0$ ,  $(\partial E / \partial p_d) > 0$ , and  $dp_s / dp_d > 0$ . All these conditions attain because of market equilibrating condition, yet it is impossible for  $dE/dp_d < 0$ , the condition required for market equilibrium to exist. Likewise, it can be shown that it is impossible for  $dE/dp_s < 0$ .<sup>17</sup> Therefore, the only way that a market equilibrium can exist in either the Walrasian or the Marshallian sense is to *assume* that market equilibrium price exists, without explaining the underlying process of price adjustment, even though this may negate the existence of market equilibrium.<sup>18</sup> The existence of market equilibrium and the underlying behaviours of pricing and objective functions thus become axiomatic premises of economic theory. This rules out the possibility of integrating the demand and supply pricing mechanisms, and hence explaining the underlying behavioural relationships in anything other than the competitive nature of markets -- the methodological individualism of maximizing behaviour.<sup>19</sup>

The above kind of indeterminacy of market equilibrium in the ontological (relational process explanation of the existence of equilibrium) sense is found to occur in the factor market and the monetary sector as well. In the factor market, a Pareto optimal general equilibrium result necessitates that the consumers' rate of commodity substitution between the supply of factors and the demand for commodities must equal the corresponding factor marginal products. That is, factor

prices will be determined proportionately to the consumers' rate of commodity substitution. Hence, factor prices become indeterminate corresponding to the indeterminacy between demand and supply prices of goods as explained earlier.<sup>20</sup> This point also implies that the marginal productivities of factors remain unobservable quantities. Hence, factor prices cannot be determined in terms of marginal product as suggested by the general equilibrium result.

In the monetary sector, the price of money is taken to be the interest rate, which measures a speculative value of uncertainty, whereas money is used to transact goods/services that attain actual prices. Thus, the return on money must be the return on the good/service, which is a function of the price of the latter. How can interest rate be then taken as a price of money replacing the objective value in terms of the prices of goods/services? There is a problem of inconsistency here, which is not resolved in the ontological meaning of the quantity theory of money or in the Keynesian liquidity preferences and the LM-curve.<sup>21</sup>

Indeed, with such an axiomatic assumption, market prices like consumer prices cannot be observed. We thus encounter the problem of observing an *a priori* axiomatic rationalism.<sup>22</sup> Contrarily, given the different moulds of pricing and exchange behaviour in the market system, such as pure co-operation, competitive-co-operation, 'satisfying' behaviour of consumers and firms and polity-market interactive decision-making, it then becomes impossible to associate any realism with the theoretical and institutional experiences of neoclassical economy according to competitive behaviour. Here the ontological premise of neoclassicism does not convey economic reality. Thus, both the epistemic and the ontic experiences of market economy as perceived in mainstream economics are foreign to the essentially co-evolutionary interactive and integrative functions of agents in alternative forms of market systems.<sup>23</sup>

## **2. Macroeconomic Problem**

What we have shown in terms of the microeconomic problem is equally true of macroeconomics. But here a second compounded nature of the problem arises. Behaviour in microeconomics does not reflect itself at the macroeconomic level. Aggregation in consumption, production and distributional functions of a market economy do not form the price level of aggregate demand for goods and services at the macroeconomic level. In other words, the macroeconomic level is totally independent of, insulated from, and neutral to any ethical perceptions of the microeconomic level.<sup>24</sup>

Consequently, we find that by working in this form of an insulated system, all efforts to reorganize the economic system towards social justice have failed. In this class of failures are included the Marxist notions of exchange value and use value of labour: The classical economic school equates all exchange value to the notion of normal prices and the neoclassical school equates both exchange value and use value to the common objective equilibrium price.<sup>25</sup> We know from the literature that the Hegelian influence in Marxist economism and the latter days neoclassical reformulation of Marxist economics by Oscar Lange have shown that Marx had no new contribution by way of an epistemological economic methodology.<sup>26</sup>

The micro- and macroeconomics of Austrian and Keynesian origins are developed in Marxism as under Wicksell, von Mises, Hayek and Keynes, in either of the following aggregation scenarios: Firstly, individual and firm-specific aggregations of preferences are used to yield consumption, production and distributional menus. This is the case explained by the Austrian school and the new institutionalism of the social choice vintage.<sup>27</sup> It is also shown in the Marxist problem of transformation of values into prices. Secondly, no such aggregation is assumed and the individualistic micro-orientation is replaced by the analysis of perceived relations among the activities of consumption, production and distribution without assuming behavioural preferences. Here we have the Keynesian economic epistemology and its reformulation in the social welfare framework.<sup>28</sup>

In all cases of the economic methodology, we find the legacy of the Kantian type dichotomy and irresolution between the epistemic and the ontic verities prevailing. Equally we find that the sub-setting of the rationalistic nature of economic reasoning leads to perpetual instability and incoherence between reality, economic behaviour and social institutions.<sup>29</sup> This is the legacy of the Hegelian dialectics. It assumes an accentuated form in Karl Popper's refutation and conjecture methodology imported into economics. Perception as opposed to knowledge evolves in the midst of this kind of incongruence between essence and form. The distinctness between microeconomic and macroeconomic reasoning dichotomises economic reality, which otherwise, should be unified in order to address the questions of both economic efficiency and distributive justice simultaneously, rather than in a substituting tradeoff perspective of either microeconomic or macroeconomic analysis.

### **Summary of Methodological Orientation in the Social and Natural Sciences**

#### ***The Impossibility of Realizing Knowledge***

The nature of irreconcilability between various epistemological questions of economics and its irresolution at the level of microeconomics and macroeconomics creates fundamental methodological problems in economics. One such predominant methodology is that given by Popper.<sup>30</sup>

Boland points out that Popper's refutation and conjecture hypothesis in the philosophy of science is not applicable to tautological facts that establish themselves by self-reference.<sup>31</sup> If this is the case, it is difficult to see either through the natural science or social science doctrines how a worldview can be established on the basis of the Transcendental Truth in occidental thought. The self-referential nature of the Transcendent Truth makes this truth pervade *all* systems as cause and effect, epistemic-ontic circular causation and continuity of unified reality, but which need not lend it to direct cognitive verification. Its verification and logical nature comes

from the descriptions and interrelationships that it generates, explains and perpetuates across varied systems. Hence, the same kind of temporality emerges in Popper's refutation hypothesis as in Hegelian and Darwinian forms of dialectics and organisms, respectively.<sup>32</sup>

It is equally devoid of universality although it pronounces the derivation of specific theories from more universal categories of theories. Yet it leaves out the possibility of the Transcendental Truth from its purview, lapsing thus into the Kantian *problematique* and Husserl's problem in phenomenology on the impossibility of attaining knowledge. In such a contradiction between completeness, continuity, universality and unification on the one hand, and epistemic-ontic duality, methodological individualism and systemic independence on the other hand, evolutionary economics degenerates simply into mutative processes without convergence. Knowledge remains impossible; only perceptions prevail.

### ***Islamization of the Socio-Scientific Order***

We have now come to discern that the epistemological question must address the simultaneity issue of the epistemic and the ontic parts of unified reality in respect to establishing a circular causation and continuity between cause and effect of socio-scientific relations. We have shown that the possibility of attaining knowledge depends upon the unified reality in the epistemic-ontic complementary mould. This perspective carries with it two singularly universal precepts. These are first, the uniqueness of the axiomatic premise that encompasses without differentiation all systems of thought. Secondly, the unique methodology of the epistemic-ontic circular causation and continuity model of unified reality prevails across all systems. The socio-scientific order is thus seen as interactive, integrative and co-evolutionary in reference to this unique methodology of unity of knowledge, although different systems may deal with different verities of problems.

### The Axiom and Methodology of the Epistemic-Ontic Circular Causation and Continuity Model of Unified Reality

We now go on to explain the axiom and methodology and hence the worldview of the epistemic-ontic circular causation and continuity model of unified reality. We present this analytically as follows:<sup>33</sup>

Let, the concept of the stock of knowledge be defined as the optimal, uncreated form of the primordial essence of existence. This verity neither can be nor needs to be empirically configured. Yet its verification comprises the logical, comprehensive, testable and inferential relations of reality. However, this stock of knowledge can be explained by taking recourse to the real world relations. The universe in its entirety, and hence in its specificity of systems, is then seen as a topological entity.<sup>34</sup>

Being a topology, its existence is defined by the properties of its subsets. Thus, with  $K$  as the given *stock of knowledge*, it is mapped 'onto' the whole of the topology,<sup>35</sup>  $T$  giving  $T(K)$  maps 'onto' the subsets of  $T$  denoted by  $T_i$  giving  $T_i(K)$ . Hence,  $\cup_i[T_i(K)] \subset T(K)$ ;  $\cap_i[T_i(K)] \subset T(K)$ . These properties mean that the entire topology,  $T$ , is spanned by the totality of all its subsets of knowledge, and there is integration among these subsets to yield a knowledge-induced consensus, which forms part of the knowledge-topology. Only relations, as they are affected by the knowledge variable, matter in this topology. When the primordial stock (or topologically complete stock)  $K$  is so mapped into the temporal order to give well-definition to forms and their relations, then  $T_i(K)$  becomes a *flow of knowledge*. We will henceforth denote this flow by  $K_i = T_i(K)$ .

The implication is then clear. The primordial stock contains the sum of its flows across systems  $i = 1, 2, \dots$ , whereas,  $K_i \in \mathbf{R}$  meaning flows of knowledge across the real continuous space and across all dimensions of such spaces such as, Euclidean, non-Euclidean, supermanifolds ( $\mathbf{R}^\infty$ ).<sup>36</sup> But  $K$  being the primordial and thereby uncreated *stock of knowledge* with topologically explainable functions, is such that  $K \in \text{Supermanifold}$  having supercardinality.<sup>37</sup> Consequently, the

Cardinality of  $[\cup_i K_i] \ll$  Supercardinality of  $[K]$ . In the topological meaning of these systems of knowledge-flows, the relations governed by them form mathematical measurable and continuous functions. Hence, knowledge-flows and the functions induced by them in  $\mathbf{R}^\infty$  are all mathematically integrable and analytic.<sup>38</sup> This enables the process of relating  $K$  to  $K_i$  and vice-a-versa.

The complementation part of  $K$  in  $T$  is  $K\sim$ , which we will call as ‘de-knowledge’ (falsehood or ignorance), such that over all possible evolution of knowledge,  $K$  in  $\mathbf{R}^\infty$ ,  $K \cap K\sim = \Phi$ .  $K\sim$  is characterized by its own subsets and flows of ‘de-knowledge’, as for the case of  $K$ .

Besides, in between  $K$  and  $K\sim$  is the region of irresolution, denoted by  $P$ , which is neither  $K$  nor  $K\sim$  clearly, until a clear specification has been made between these categories for the socio-scientific issues in question.  $P$  is legion in human experience but is well-determined between  $K$  and  $K\sim$  by the progress of knowledge.  $P$  is referred to in Islamic terminology as *Mubah* (indeterminacy of a rule, *Ahkam*). Such a progress of evolutionary knowledge is activated by interactions,  $j = 1, 2, \dots, \infty$ , in the universal and embryonic sense among agents, systems and their variables. Thus,  $P_{ij} = P_{ij}(K_{ij} \cup K\sim_{ij})$  denotes the class of perceptions that depend upon the temporary state of knowledge-flows or ‘de-knowledge-flows’ in the agent/system/entity denoted by  $i$  at the  $j$ th interaction. As interactions proceed, integration between systems sets in with the convergence of  $P$  to either one or the other of  $K$  or  $K\sim$  through its well determination.

Thus,

$$\lim_{(j \rightarrow \infty)} [P_{ij}] = \tag{2.1}$$

$K_{iN}$ , when  $P_{iN} \cap K\sim_{iN} = \Phi$ ; or

$\{K\sim_{iN}$ , when  $P_{iN} \cap K_{iN} = \Phi$ .

$N \in \mathfrak{N}$  (the natural number system).

The attainment of  $K_i$  either directly or through the above-mentioned convergence process of  $P$ , points to a critical juncture of knowledge formation. This

explains the simultaneity between interactions and integration. Simultaneity taken across all systems and interactions means the unification of knowledge  $K$  across systems. This primordial stock of knowledge that so unifies reality uniquely in all systems and causes evolutionary knowledge to appear is the system of the Divine Laws. In Islam the Divine Laws is derived from the *Qur'an* and the authentic Traditions of the Prophet Muhammad (*Sunnah*). These sources form the definitive premise for establishing the unity of knowledge in terms of the Divine Laws and is explained and applied for all varieties of the socio-scientific order. The essence of irreducibility and the unifying premise of this complete, uncreated, primordial stock of knowledge, which explains and is in turn explainable (although not measurable except functional in the supercardinal topological sense) is referred to in the *Qur'an* as *Tawhid*, Oneness of Allah.<sup>39</sup>

The axiom of the *Tawhidi* precept is thus the Oneness of Allah in the context of its comprehension and application of the Divine Laws. The methodology of the *Tawhidi* precept is based on the possibility and unification of knowledge,  $K$ , through the plane of evolutionary knowledge values,  $K_i$ , as interaction and integration proceed. This simultaneity between interaction and integration across agents and systems of thought occurring through systemic interrelations is known in Islamic literature as *Ijtihad*. It forms the third pillar of the Islamic epistemology.

The pervasiveness and dynamic evolution of  $K_{ij}$  through sequences of *Ijtihad* by invoking the Divine Laws in all details of life by circular interaction and responses between agents, entities and systems, form the interactive, integrative and co-evolutionary cause and effect interrelationships of the most embryonic form. They encompass society, political economy, politics, markets and the scientific order. Hence, the methodology of the epistemic-ontic circular causation and continuity model of unified reality comes into life by the cause-effect *inter-*relationships between the evolutionary knowledge domains, their cognitive transformations of the socio-scientific order and the regeneration of this knowledge-systems circularly causal *inter-*relationship through further *Ijtihad*.

The epistemic nature of knowledge premise is brought about by the primacy of the Islamic Laws (*Shari'ah*) in acquiring knowledge as the realization of relational phenomena within the context of the universal topology of such systemic relations. The epistemic nature of such knowledge leads to the ontological flows of  $K_i$  and the ontic realization of cognitive forms. The circular causation between these epistemic and ontic parts is established by the regeneration of further increases in the epistemological rendering through evolutionary knowledge arising from the ontic reality endowed by the knowledge-induced cognitive power. The circular causation is made continuous by the dynamics of *Ijtihad* in terms of interaction between and integration across agents, entities and systems. At each of these points of re-launching the *Ijtihadi* process there are strings of rules, which we call the *Qur'anic Ahkam*. They bestow fresh life to the flows of knowledge on the understanding, interpretations and application of the *Shari'ah*. Thus, the epistemic-ontic circular causation and continuity model of unified reality is established as a distinct departure and antidote to the occidental field of rationalist perceptions in thought.

### Formalizing the Epistemic-Ontic Knowledge Model

We will now formalize the cause-effect relations of the epistemic-ontic circular causation model of unified reality in the following way:

Let,  $\mathbf{x}(\mathbf{K}_{ij})$  denote the vector of socio-scientific variables induced by the vector of flows of knowledge,  $\mathbf{K}_{ij}$  across agents/entities/systems  $i = 1, 2, \dots, \infty$ , and interaction  $j = 1, 2, \dots, \infty$ . We then convert these socio-scientific variables into their objective functions,  $f_{ij} = f(\mathbf{x}(\mathbf{K}_{ij}))$ . Such functionals are the social wellbeing functions of the Islamic political economy;<sup>40</sup> the polity-market processes of an Islamic approach to sustainable development.<sup>41</sup>; and matter-energy relations in physics.<sup>42</sup>

The chain of cause-effect interrelationships between the derived evolutionary knowledge and the cognitive forms of the socio-scientific order is described in Figure 2.1.

$$\dots K_{11} \rightarrow_{f_{11}} x_{11} \rightarrow_{g_{11}} K_{12} \rightarrow_{f_{12}} x_{13} \rightarrow \dots \rightarrow_{f_{1N}} K_{1N} \rightarrow \dots$$



both derived from and mapped back ‘onto’ the *stock* of knowledge, both temporally and primordially in the topological sense of deriving logical relationships and proving their existence in the socio-scientific order.

The primordial *stock* of knowledge we have shown here is the uncreated and complete knowledge stock. The implications of the flows of knowledge forming a subspace of the *Tawhidi* topology are several.<sup>46</sup> Firstly, in the *Tawhidi* socio-scientific order the objective functionals shown above do not follow an optimisation criterion. Rather, a better method for such systems is the simulative methodology over  $K_{ij}$ . Secondly, the integration of  $K_{ij}$  over a subspace of  $K$  suggests that  $K$  is explainable by topological analysis, but not directly. This proves the possibility of attaining knowledge in the epistemic-ontic circular causation and continuity model of unified reality and not merely leaving knowledge to perception as in the case of ‘de-knowledge’. Thirdly, since primordial knowledge equals full and complete knowledge *stock*, which according to the *Qur'an* will be manifest in the Hereafter (*Akhira*), therefore, this precept holds a fundamental meaning for knowledge-flows and the constructed world-system according to the *Tawhidi* worldview.<sup>47</sup>

The central place of knowledge-flows as both the input and output of this circularly and continuously regenerated socio-scientific order with functionals for the knowledge-induced material and relational forms (ontic) of the relational transformations underlying such forms (ontology), means that morals and ethics become the endogenous elements of the *Tawhidi* worldview. The meaning of endogeneity is conveyed by the cause-effect linkage, epistemic-ontic circularity and continuity, and regeneration of knowledge through the discursive *Ijtihadi* process based on continuously evolved *Qur'anic Ahkam* as knowledge evolution rises from lesser to higher degrees of realization followed by its corresponding cognitive forms.

Thus, unlike the occidental philosophy of the sciences that we have investigated above the *Tawhidi* worldview presents a totally polar approach to questions of social justice, economic efficiency and the scientific concept of complementarities and unified field theory. We shall examine these concepts now.

### **The Epistemic-Ontic Circular Causation and Continuity Model of Unified Reality Applied to Islamic Political Economy**

Social choice in the Islamic political economy in the framework of the knowledge model is developed by means of interactive preferences between polity and the market system. The concept of polity is taken here in its most embryonic and pervasive meaning, commencing from the grassroots and proceeding upwards to higher echelons of decision-making and participation. The polity of this kind is formed of representatives from all interest groups in society having the sound knowledge of the *Shari'ah* and endowed by attributes of integrity (*Fitra*), Allah-consciousness (*Taqwa*). Minority representation (*Dhimmi*) can be included.<sup>48</sup> Such a representation forms an extensive linkage with the research, scientific, educational and other necessary groups in society at large. They collectively deliberate upon and come up with consensual rules for the problems at hand. Such rules are derived by a combination of analytical methods and facts and are formulated on the basis of specific *Qur'anic Ahkam* that can be formulated by reference to the *Qur'an*, the *Sunnah* and the *Ijtihadi* process. The result is the collective and socially representative set of preferences of this embryonic and pervasive polity (*Shura*) in concert with human experiences on the specific issues at hand.

The delivery of the rules (*Ahkam*) through the medium of institutions, implementation of policies and programmes (e.g. institutions supportive of the *Shura*, policies of elimination of interest rates, institution of profit-sharing with economic co-operation, the institution of *Zakat* or wealth taxation, and policies on the control of waste called *Israf* in the *Qur'an*) are then received by the market system (ecological order).<sup>49</sup> The impact of such rules through appropriate institutions are expected to transform the consumer preferences, production menus, and bring about co-operative mechanisms in the economic relations between households and owners of capital that generate distribution and ownership among all in a market venue. This is the idea of moral rationality, wherein economic efficiency is gained by complementarities between the choice of technology, the types of goods

produced and the evolution of human capital in accordance with the co-operative industrial democracy of the workplace and the changing ethically induced preferences of consumers on the one hand and profitability motives of the producers on the other hand.<sup>50</sup>

In this way, the input of knowledge through rules rendered by polity finds its response from the market venue where individuals, households, labour and enterprises big, medium and small, react to the preferences of polity and respond. Such responses form an integrative knowledge formation and perpetuate the dynamics of the embryonic and pervasive *Shuratic* process. Responses could be of various kinds: They could pronounce acceptance and reinforcement of earlier policies and their further development. They could call forth revision and changes or abandonment of the adopted rules. In every case, a fresh round of interactive preferences between polity and the market system regenerates the process and leads it into an *Ijtihadi* consensus followed by repetitive evolution on the same scale of processes. In the broadest sense of the word, such is the nature of social consensus representing an *Ijma* (which may be majority consensus, not necessarily unanimity). *Ijma* represents the integrative process generated by interactions, *Ijtihad*. The two are followed by co-evolution according to the complementary order of pairing between entities in the world-system.

In this *Shuratic* process, the joint preferences of the agents of change are defined by  $(\{p \cap \{m\})(K_{ij})$ , where  $(\{p)$  denotes the preferences of polity (as specifically defined here in terms of its universal decision-making nature in the Islamic socio-scientific order);  $(\{m)$  denotes the preferences of the market system (ecological order). But only the joint preferences can be induced by the knowledge variables,  $K_{ij}$ , for reasons that  $K_{ij}$  is the realization of the interaction-integration-co-evolution principle of complementarities. The existence of interactive preferences is an extensive mathematical exercise that can be referred to elsewhere.<sup>51</sup>

Now since the complementarities must work across evolutionary fields of knowledge-flows and knowledge-induced forms inter- and intra-systemically, therefore, there logically comes about complementarities between economic

efficiency and distributive equity in this framework. The entire neoclassical idea of substitution, tradeoff, the incongruence of pricing and preference formation in the milieu of methodological individualism, independence and atomistic competition, are replaced by the principle of complementarities in the interactive- integrative world-system.

This of course does not mean the absence of some alternative form of competition between producers in the Islamic political economy. But by the nature of the interaction prevalent, such competition is naturally governed by the response of the market to moral rationality. For example, it would be illogical to substitute unskilled labour for skilled labour, when unskilled labour as participants in an enterprise can form a co-operative agreeing to treat wages forgone as investment in their human capital formation at the workplace. The augmentation by *Zakat* expenditure of such marginal start-up ventures for the needy, points to the financial feasibility of such marginal enterprises. In all such ventures resource allocation among alternatives is costly to the extent that it improves the social wellbeing of the participants, brings about linkages between enterprises and economic sectors, universalises ownership through workplace democracy, and establishes a *dynamically evolved* basic needs regime of development.<sup>52</sup>

Hence, the a social wellbeing evaluation model of such ventures is based on co-operative-competitive behaviour of profitability and diversification rather than on substitution and expensive inputs. The issue of distributive justice is thus taken up in view of the principle of complementarities in the interactive-integrative mould within the overall politico-economic order.

### **The Concept of Moral Rationality in the Epistemic-Ontic Model**

A brief note of the concept of moral rationality is now presented.<sup>53</sup> Profitability of an Islamic enterprise rests on profit sharing under economic co-operation. This in turn is a function of several factors: owner-worker incentive to launch joint ventures; co-operative decision-making in the enterprise; common preferences toward mutual

benefit to own assets in the firm and thus to generate profits; linkages between various firms and sectors for marketing the goods. In all of these, the principles of *Ahkam* formation on specific matters and their simulation in a universally simulative way form the discursive basis of knowledge evolution in the interactive-integrative milieu. Now rationality becomes a realization of mutual preferences to establish complementarities for the benefit of profitability. This in turn transmits the mutually interactive preferences among agents/entities/systems across the political economy.

It is thus seen that in the principle of moral rationality, market order, self-interest and targets of profitability as grounds for economic efficiency are not ruled out. But such individualistic motivation is activated through a co-operative medium based on the knowledge simulation that must in a natural way (not through policy imposition) cause social benefits of production to occur. Hence, distribution is treated simultaneously in the complementary process with economic efficiency.<sup>54</sup>

### **Formalization of Social Wellbeing Function by the Epistemic-Ontic Model**

The social choice menu of the Islamic political economy is based on the same essence of the epistemic-ontic circular causation model. This is now seen to actualise through the embryonic and pervasive medium of the *Shuratic* process.<sup>55</sup> We have seen above, that functionals of the n-tuples,  $(\mathbf{K}_{ij}, \mathbf{x}_{ij}(\mathbf{K}_{ij}))$ , being continuous and measurable functions with non-zero Jacobians, are well-defined. They are mathematically integrable and differentiable functions.<sup>56</sup> A special case of these functionals is the social wellbeing function. Let this be expressed by,  $W = W(\mathbf{K}_{ij}, \mathbf{x}_{ij}(\mathbf{K}_{ij}))$ , with the interactive preference set being,  $\text{Pr.} = \{(\mathcal{I}_p \cap \mathcal{I}_m)\}(\mathbf{K}_{ij})$ , that is  $\mathbf{K}_{ij}$  qualifies all the bracketed preference maps. Let the recursively interactive relations between the socio-scientific variables,  $\mathbf{x}_{ij}(\mathbf{K}_{ij})$  and  $\mathbf{K}_{ij}$ , be given by  $G = G(\mathbf{K}_{ij}, \mathbf{x}_{ij}(\mathbf{K}_{ij}))$ ,  $i = 1, 2, \dots, j = 1, 2, \dots$

$W(\cdot)$  is the cardinally measure of an objective level of social wellbeing attained from any process of interaction and integration, hence by knowledge-flows from the *Shuratic* process. The moments of integration among the agents in the

embryonic and extensive *Shuratic* process (which includes the market order) are temporary points of social consensus (*Ijma*). These are temporary in the sense that they give rise to fresh levels of new social consensus resulting from continuous knowledge simulation on the basis of *Ijtihad* and *Ijma* on both specifics and a range of issues as they arise. This property of  $W(\cdot)$ , which is the consequence of the simulation rather than optimising nature of the social wellbeing function, subject to the constraints of  $G(\cdot)$  and  $Pr.$ , points out that there are at best locally temporary equilibrium attained by social consensus. But no globally stable equilibriums can exist as knowledge evolution proceeds.<sup>57</sup>

The epistemic aspect of the social choice model involves the simulation of the *Shari'ah* rules (*Ahkam*) by the polity (*Shura*). The epistemic aspect is denoted by  $(\mathbf{K}_{ij}; \uparrow_p)$ . This generates ontic effect on the market system (ecological order) as is signified by  $\{\mathbf{x}_{ij}(\mathbf{K}_{ij}); \uparrow_m\}$ . The epistemic and the ontic are now circularly interlinked in endless continuity by polity-market interactions explained by  $\{\mathbf{K}_{ij}, \mathbf{x}_{ij}(\mathbf{K}_{ij}); \uparrow_p \cap \uparrow_m\}$ , with  $G = G(\mathbf{K}_{ij}, \mathbf{x}_{ij}(\mathbf{K}_{ij}))$ . Integration between the interactions is explained by the simulation of  $W(\mathbf{K}_{ij}, \mathbf{x}_{ij}(\mathbf{K}_{ij}))$  over  $\{\mathbf{K}_{ij}, \mathbf{x}_{ij}(\mathbf{K}_{ij}); \uparrow_p \cap \uparrow_m\}$  with  $G(\mathbf{K}_{ij}, \mathbf{x}_{ij}(\mathbf{K}_{ij}))=G$ . It can finally be noted that the interactive preferences  $Pr.$  are subject to evolution with the evolution of knowledge-flows, signifying thus, that opportunities and choices open up endlessly in this evolutionary epistemic-ontic knowledge-induced socio-economic order.

### **The Epistemic-Ontic Circular Causation and Continuity Model in Natural Sciences**

The E-O model is a universal one in terms of its axiom of *Tawhid* and its methodology of unification of knowledge across all systems. This knowledge model can explain the example of energy creation in space-time.

According to the entropy theory of the Second Laws of Thermodynamics and the theory of Dark Matter in the universe there is an irreversible process of energy dissipation and disorder arising from this non-conservation of energy. This phenomenon cannot be explained by Einstein's fundamental equation of

conservation of energy and mass.<sup>58</sup> The energy that is dissipated is either lost in the splitting of particles reaching the proximity of the event horizon around an ergosphere of the black hole, of which one part of the split particles falls into the black hole and escapes conservation and forms negative energy.<sup>59</sup> Likewise, the energy that is released by increasing entropy as claimed by the Second Laws of Thermodynamics, is converted into heat and is lost. There is growing magnitude of such entropy losses of energy as heat with changes in the universe over time.

In both of the above explanation of non-conservation of energy with inherent physical interactive processes continuously taking place in the universe, the concept is one of uselessness of the lost energy by its conversion into supergravity or heat. Non-conservation here does not mean that the total stock of particle/wave equivalent of energy is dissipated. The magnitude of non-conservation is thus equal to the universal physical disutility of matter.

In the E-O knowledge model no such concept of disutility holds except in the case of de-knowledge. But by way of mathematical disjointness between the knowledge and de-knowledge subspaces of *Tawhidi* topology, it is strictly necessary that every quantum of knowledge be measurable, and hence, be continuous. Consequently, every quantum of de-knowledge must also be measurable and continuous. However, there will exist functional transformations of such situations, such as the significance of increasing and decreasing returns, respectively. Thus, the subspaces of knowledge and de-knowledge are dense and bounded by supercardinalities of their own independent types, respectively.

The energy dissipation concept of physical science is now replaced in the knowledge model by the process of continuous sifting between knowledge and de-knowledge as interaction, integration and co-evolution proceed. Along with this, the well determination of temporarily indeterminate perceptions between knowledge and de-knowledge subspaces is realized. Thus, the concept of dissipation of energy is now replaced by adding points to the de-knowledge subspace. In this way, the universally systemic whole proceeds towards two perfectly independent and disjoint nexus of topological relations. The universe evolves through *inter*-relationships

within the two disjoint nexus along paths that form trajectories of the same or differentiated dimensions. Such families of trajectories may be termed as the *Tawhidi* nexus of trajectories.<sup>60</sup> The disjointness of the nexus categorizing independence between the relations of truth and the relations of falsehood forms the universal principle of conservation as utility or disutility of physical forms, waves, particles, energy and matter. The unification of knowledge (hence, de-knowledge) within its independent nexus of trajectories, formed through inter- and intra-systemic interaction (removal of perceptions) and integration (forming independence between knowledge and de-knowledge), is the grand principle of complementarities in the E-O knowledge model.

In the formal form, one of the  $g^{\circ}f(\mathbf{K}_{ij})$  compound ( $^{\circ}$ ) functions in the chain of relations shown earlier, becomes the topological relation(s) of energy as interpreted by the E-O knowledge model. The underlying interaction and integration can be explained likewise. The simulation objective criterion of the social wellbeing function mentioned earlier, now applies in its own right to the knowledge-induced energy model. This at once proves the uniqueness and universality of the *Tawhidi* axiomatic foundation and the E-O methodology as derived from *Qur'anic Ahkam*, to all systems.

### **The Epistemic-Ontic Model Compared to Theories of Knowledge in the Islamic Literature**

The epistemic-ontic circular causation and continuity model of unified reality is derived from the *Qur'anic Ahkam*. Some of the profuse number of verses of *Qur'an* that point to the building blocks of this model are referred to in the appendix to this paper. It may simply be summarized here, that the epistemological question rose in this chapter and in the volumes of this work is derived from the *Tawhidi* foundation of the *Qur'an*. The unique system of unification as oneness and its systemic integration is derived from the *Qur'anic* message of balance, purpose and felicity centred on the realization of *Allah* from end to end of the universe, across all systems, in primordial state and in the Hereafter. The possibility of ontic

regeneration of knowledge premised in the flow form is derived from the understanding of the Signs of *Allah* in the universe. The concept of the *stock of knowledge* is derived from the uncreated nature of the *Qur'an* and the manifestation of the full Truth and Supreme Felicity attainable in the Hereafter, which the *Qur'an* emphasizes unequivocally. The evolutionary knowledge precept of thought and life is derived from the *Qur'anic* principle of consultation in its most embryonic and pervasive form as a medium to unravel, comprehend and apply the tenets of the Divine Laws. This medium is the *Shura* acting as a process of knowledge formation and its circular causal *inter-relations* of unified reality in the evidential world-system.

Thus, to derive the E-O model directly and independently from the *Qur'an*, only the *Qur'anic Ahkam* are relied upon. This approach endows the E-O model *prima facie* to be based on the roots of the revealed Laws alone, not on rationalism. No Islamic syllogism can thus be developed with an Islamic claim that depends upon any other independent epistemological premise. Thus, no such enunciation as either the predominance of reason or the notion of complementarities between revelation and reason is invoked in the development of the E-O model. All formative rules of thought and life are initially and continuously generated from the *Qur'anic Ahkam*. Reason as essence called *Fitra* is the medium for exciting, comprehending and applying the *Qur'anic Ahkam*. The E-O model unequivocally maintains that the only basis of knowledge in Islam is the revealed Laws, with reason being simply an excited signal and product of the revealed Laws. Within the revealed Laws is also subsumed the non-conflicting unison between the *Qur'an* and the authentic *Sunnah*. However, it is revealing to note here that the E-O model shows profound conformity with the ideas of some of the great Islamic philosophers and scientists. But because of its singular root in the *Qur'anic Ahkam* the E-O model contradicts the rationalist philosophers -- not in the idea of knowledge evolution as a dialectical process but in the sense of the rationalistic dialectics relating to form and spirit in their dualistic role found in the rationalist philosophers.<sup>61</sup>

On this subject matter, first we note the theory of knowledge given by Ibn al-Arabi. He says that knowledge can be derived from two sources and there is no third. Chittick explaining this idea presented by Al-Arabi in his *Futuhat*, writes:<sup>62</sup>

The first way is by way of unveiling. It is an incontrovertible knowledge which is actualized through unveiling and which man finds in himself. He receives no obfuscation along with it and is not able to repel it.....The second way is the way of reflection and reasoning (*istidlal*) through rational demonstration (*burhan `aqli*). This way is lower than the first way, since he who bases his consideration upon proof can be visited by obfuscations which detract from his proof, and only with difficulty can he remove them.

Ibn al-Arabi's unveiling of knowledge is indeed a forerunner of the idea of evolutionary flow of knowledge that occurs in the human soul and then represents itself in the mind. In regards to the inseparable centrality of *Tawhid* in all such flows, which means the derivation of flows from the stock, K, Al-Arabi explained in Chittick's words, "Useless knowledge is that which is disconnected from its source and origin, i.e. from the Divine Reality. Any knowledge outside of *Tawhid* leads away from Allah, not toward Him. But knowledge within the context of *Tawhid* allows its possessor to grasp the interconnectedness of all things through a vast web whose Centre is the Divine. All existent things come from Allah and go back to Him." This concept of knowledge also establishes the circularity and continuity of the E-O model of unified reality with *Tawhid* as its axiomatic foundation.

Imam Shatibi's theory of the public purpose (*Maslaha*) as derived from Imam Malik's idea of preferences (*Istihsan*) is found to underlie the formalization of the social wellbeing objective criterion of the Islamic political economy in the E-O model.<sup>63</sup> The non-utilitarian theory of the public purpose by Shatibi and Malik implies two properties of the social wellbeing objective. Firstly, *Al-Maslaha-wa-Istihsan* cannot be limited by tangible hedonic preferences derived from consumer satisfaction levels. The absence of self-interested preferences cannot therefore introduce methodological individualism and independence in the consumers (decision-makers) of *Al-Maslaha-wal-Istihsan* social wellbeing function.

Aggregation of Benthamite-type utility indices of independent consumers cannot construct the *Maslaha* function. The *Al-Maslaha-wal-Istihsan* goods being non-utilitarian goods must be augmented with social felicity. In the E-O model such felicities are direct functions of flows of knowledge values. Consequently, a simulated type of the social wellbeing function of the E-O model is a logical corollary of the *Al-Maslaha-wal-Istihsan* model.<sup>64</sup>

Syed Qutb's idea of systems knowledge agrees partially with the E-O knowledge model. In his definition of knowledge,<sup>65</sup> "Knowledge is complete comprehension and interaction with this comprehension, in the depths of the soul and conscience, which is then followed by action in harmony with them." The departure of the E-O model from Syed Qutb's model appears when the former is found not to aim at a philosophy of metaphysics, rather it pertains to the philosophy of science and its theoretical-empirical wholeness (the epistemic-ontic). The implication of Qutb's theory in this relation is one-directional, from knowledge to cognition and world. At face value this agrees with the E-O model, for both the input and output of this system is knowledge-flow. Hence, knowledge breeds knowledge. But the important difference is in relation to the medium of knowledge-induced felicity that forms the ontic premise to regenerate further knowledge. This dynamics is not seen in Qutb's theory.<sup>66</sup>

The E-O model is not completely in accord with Imam Ghazzali's views on epistemology. The difference occurs due to the overly psychological and individuated level of knowledge possibility in Ghazzali's *Ihya*, which would then lead to the comprehension and application of the *Shari'ah* in social life. This is also the view held by the lateral aggregation principle of social utilitarianism. In recent times it is shared by the neoclassical theory of social choice.<sup>67</sup> In the E-O knowledge model instead, the simple aggregative nature of social choices is replaced by interactive preferences. The individual is introduced as an agent in this interactive preference milieu to which he contributes and from which he learns.

Other contemporary writers who have written on Islamic epistemology and the philosophy of science, such as Nasr, al-Attas, Manzoor, and Sardar, have either

leaned on Hellenic philosophising to characterize a *Tawhidi* idea of Islamic science<sup>68</sup> or have written on the need for investigating Islamic epistemology, but not on its constructive and developmental framework for the Islamic socio-scientific order keeping in view the analytics gained from the *Qur'anic* worldview.<sup>69</sup>

### **Parting away with Pluralism in the Epistemic-Ontic Model of Unified Reality**

The cleavages and total dissimilarity of the E-O knowledge model from *all* occidental epistemological questions and philosophy of science, is similarly carried over to the oriental epistemological question as well. In occidental scientific/philosophical norm and culture we saw dualism as the sole difficulty with unification of knowledge and reality. In the oriental norm and culture, dualism takes the form of pluralism. The problem of One-Many either as an association of similar things or as the unity of all things in the light of the Absolute, are not compatible with the mapping of the Oneness Precept 'onto' the world-systems.

The mapping of the Absolute 'onto' everything is a once-for-all complete and predestined relationship. Thus, its static relation to another thing is endowed in each entity and system of the universe. Now  $K_i$  can map 'onto' two systems say  $A_1$  and  $A_2$  in two possible ways. But in either of these cases the functional relation so determined remains unchanging:

$$K \rightarrow K_i, A_1 \cap A_2 = \Phi; \text{ thus } K_i \rightarrow A_1 \text{ and/or } K_i \rightarrow A_2 \text{ independently; or,}$$

$$\{A_i \cap A_j\} = \Phi; i, j = 1, 2.$$

In either of these cases, the mapping once realized, completes its function and no further dynamics of the  $A_i$ -sets is possible with the advance of  $K_i$ . If  $A_i$  are similar things, then  $K_i \rightarrow A_1 \cap A_2 = A_1 = A_2$ , with simply a scalar difference between the  $A_i$ -sets. This is a tautology in the temporal world. In neither of these cases the principal idea of evolutionary knowledge through which the universe unifies, is apparent. In the case of multiplicity of disjointness among systems into which  $K_i$  maps itself, the

effect would be to make this disjoint relationship rigid and unchangeable. For this reason, Lovejoy refers to this form of the One-Many problem as "monistic or pantheistic pathos".<sup>70</sup>

The pluralism caused by dualism and multiplicity, as reflected in the entire system of norms and cultures of occidental and oriental perceptions of science and philosophy is thus eliminated in the *Tawhidi* worldview in the midst of its pervasive principle of unity of knowledge. In this chapter this principle was explained by formalizing the E-O model. The dynamics of unity of knowledge *a la* the *Tawhidi* worldview is found to be a process of organic unification through circular causation *inter*-relationships, which carry with them the unique axiomatic *Tawhidi* premise and its E-O methodology. Both of these are derivations directly from the *Qur'anic Ahkam*.

## **Conclusion**

The epistemological question remains an unresolved one in the comprehension of the occidental socio-scientific order. As for the occidental norm and culture of science, this has deepened in the fold of dualism, which has uniformly influenced the epistemological *problematique* in the natural and social sciences. Even if physics were to unify the four forces of nature in the near future<sup>71</sup> the deeper and central meaning of epistemology, that is, how to endogenously mould the ethical values with the ontic domains of thought and life, remains an evasive issue from the sciences. This is what we referred to as the nature of ethical neutrality or ethical exogeneity of the entire system of the occidental social and natural sciences.

Equally, the epistemological question suffers from a deepening sense of pluralism in the oriental norms and culture. The perspectives here are simply a repetition of the occidental epistemological view in a pantheistic form. Hence, attempts to discover the epistemology of science are replaced in the oriental framework by the epistemology of metaphysics, wherein the individual, society and science cannot present their interactive and integrative relational manifolds. One

thus comes up with the conclusion, that such pluralistic systems represent repetitive social Darwinism, Kantianism and Popperian legacy in the philosophy of science across multiple segmented systems.

The epistemic-ontic circular causation and continuity model of unified reality makes unification intra- and inter-systems as the governing methodology of its axiomatic premise of unity of knowledge. This is that of *Tawhid*. *Tawhid* by itself is not configured materially in systems. Rather the Laws inherent in *Tawhid* make the systems develop flows of derived knowledge through systemic discourse from the fullness of the *Tawhidi* stock. These manifestations of knowledge-flows and their circularly continuous interactive and integrative *inter*-relationships between agents, entities and relations in systems regenerate knowledge-flows and evolve them to the point of their cumulative manifestation. This terminally cumulative reality is a topological one, not an observed one. It thus establishes the meaning of the epistemological premise of unified reality and makes this possible in world-systems. Hence, the answer to the epistemological question in the *Tawhidi* worldview is an affirmative one -- knowledge is possible and realizable but dynamic by virtue of circular causation and continuity.

Such a conclusion is the inevitable analytical result of the E-O knowledge as derived from the *Qur'anic Ahkam*. It is shown here to hold the high water mark of epistemological possibility in the socio-scientific order. All past and present Islamic epistemologists do not necessarily share such a derivation and universal characterization of the E-O model. We have referred to a few of them in this chapter. Furthermore, the assertion of the impossibility of knowledge in the Islamic framework has continued on in contemporary times with Idris and Rahman.<sup>72</sup>

The possibility of knowledge in the Islamic epistemological context always means that it can never be optimal either in the sense of comparison with the fullness of knowledge that is of God's alone and is used as the epistemological premise in our study and also in the sense of the inherent incompleteness of knowledge as it advances from lesser to higher degrees of cumulative

enhancement. In this simulation sense such knowledge advancement can never be complete, absolute or perfect in the cognitive order of existence.

The consequences of such an incompleteness of knowledge as compared with the indelible completeness of divine knowledge, finds its expression in the paradigm and models that emanate from such an epistemological meaning of incompleteness. Optimal models of science and economics in particular are replaced in such a case with simulation models that acquire the features of process in the context of our interactive, integrative and evolutionary processes (IIE).