Western medical science lacks a solid philosophical and theoretical approach to disease cognition and therapeutics. My first two articles provided a framework for a humane medicine based on Modern Biophysics. Its precepts encompass modern therapeutics and CAM. Modern Biophysics and its concepts are presently missing in medicine, whether orthodox or CAM, albeit they probably provide the long sought explanation that bridges the abyss between East and West. Key points that differentiate Systemic from other systems’ approaches are ‘Intelligence’, ‘Energy’ and the objective ‘to survive’. The General System Theory (GST) took a forward step by proposing a departure from the mechanistic biological concept—of analyzing parts and processes in isolation—and brought us towards an organismic model. GST examines the system’s components and results of their interaction. However, GST still does not go far enough. GST assumes ‘Self-Organization’ as a spontaneous phenomenon, ignoring a causative entity or central controller to all systems: Intelligence. It also neglects ‘Survive’ as the directional motivation common to any living system, and scarcely assigns ‘Energy’ its true inherent value. These three parameters, Intelligence, Energy and Survive, are vital variables to be considered, in our human quest, if we are to achieve a unified theory of life.

Keywords: Systemic Theory – Systemic Medicine – Biological Intelligence – Intelligence Energy and Organization – Synergetics – Adaptogens – Multiple Bidirectionality – Synergic Contribution (SC) – Negentropy

Review of Lectures I and II

Systemic Theory constitutes the philosophical and scientific foundation of Systemic Medicine. It establishes scientific, and ethical, boundaries for a more comprehensive and humane medicine. Its fundamental principles should be known and understood by all health care professionals, independent of their practice, be it orthodox or CAM. In brief, the survival potential or health response of any living system is given by its capacity to generate Energy, Intelligence and Organization. These three parameters—E, I, O—constitute the common denominator of life, and can be represented by a triangle, due to their synergetic interdependency. Enhancing the triangle’s components maximizes health. Reducing them, results in loss of health and eventual death. Moreover, given that chronic degenerative sickness is an outcome of higher systemic entropy, where cancer stems from surpassing a critical entropy level, the way to health requires that we induce negative entropy in patients (Fig. 1).

Figure 1. Life = I + E + O. These three components are life’s common denominator.
Nature’s life fuel, found in many ‘nutraceuticals’ is composed of survival energy and information, necessary to enliven system’s intelligence and organization. Energy (1–9) and information (10) are thus the active principles of life, while negative entropy—healing—is the action mechanism that results. This lays foundations for the Golden Rules of Therapeutics (11,12). This new way of thinking, in biophysics (13), explains active principles and action mechanisms behind, millenary non-iatrogenic, energoinformational therapeutics. Examples include spiritual healing, kampo; traditional Chinese medicine, ayurveda, unani, etc. and more recently homeopathy and Western energy medicine. It also summons for a new understanding of placebo effect, since the common denominator to all healing is negative entropy. This requires a change of paradigm. As Ernst (14) points out ‘...the placebo effect is an important contributor to the overall therapeutic effect, which should be cultivated rather than eliminated...’ and also questions the ‘unethical use of placebo’ as described in the Declaration of Helsinki. The Systemic Theory is inclusive. It encompasses all medical practice since its laws and axioms are inherent to life. It paves the way to future therapeutics (Fig. 2).

Introduction : The Need for a Biological Systems Theory

The function of the whole is tantamount to the individual action of its parts, due to synergy and emergence, inherent characteristics of all living systems (15). Thus, to simplify an organic failure to just one organ—or isolated biofeedback mechanism—is an incomplete approach. Modern pharmacological therapeutics, based on reductionism, is non-organismic. It deviates from treating body, and spirit, as an integrated system; maybe this is why it has become increasingly dehumanized. Some regard traditional forms of healing as unscientific; however, in many ways some of these practices, based on a philosophical system’s approach, are less primitive more scientific (13) and humane than orthodox therapeutics. I do not challenge the precision of modern Western diagnoses which is nonpareil; however, I do question the use, in Western therapeutics, of many harmful drugs—replete in side effects—which are also mostly inefficient in the treatment of chronic degenerative diseases. Observing the extensive use of traditional healing systems in China, India, Indonesia and Japan, to mention a few instances, an impartial observer must acknowledge that there is more to these medicines than wishful thinking. Three billion people treated with holistic systems, with as much success as their Western counterparts compels respect even in the most incredulous (Fig. 3).

Systemic Theory complements the core concepts of ‘far from equilibrium’, ‘self-organization’, autopoiesis, homeokinesis
adaptogenic herbs. Bidirectional adaptation (18), is triggered by tonic and there can be no synergy. One form of this synergy, known as a complex manifestation of Intelligence. Without Intelligence exchange and survival decisions within the living system. It is necessary for Biological Intelligence, (BI), to achieve dynamic equilibrium. A very clear instance that, by and large, goes unnoticed is the ‘ceuticals’ plethora in a balanced diet. This produces immense therapeutic benefits without adverse effects. Such a diet is based on the synergy of ingested components, processed by the BI according to its needs. Mowrey (18) refers to this action as ‘specific hunger’.

Synergetics: Multiple Bidirectional Potential of Tonics and Adaptogens

Before undertaking the concept of Synergetics, and multiple bidirectional potential, the terms tonics and adaptogens must be described. According to Mowrey (18) a tonic is defined as ‘any substance that balances the biochemical and physiological events that comprise body systems’. Whereas the term ‘adaptogen’ introduced by Lasarev in 1947 defines ‘a substance of plant origin that is able to increase a non-specific resistance of the organism to stress factors and thereby promote its adaptation to stressful external conditions’ (19). But what is synergetics? Synergetics, is the result of information exchange and survival decisions within the living system. It is a complex manifestation of Intelligence. Without Intelligence there can be no synergy. One form of this synergy, known as bidirectional adaptation (18), is triggered by tonic and adaptogenic herbs. Bidirectional adaptation can only be explained in terms of Intelligence. The informational entity perceives, differentiates, selects and utilizes active principles necessary for Biological Intelligence, (BI), to achieve dynamic equilibrium. A very clear instance that, by and large, goes unnoticed is the ‘ceuticals’ plethora in a balanced diet. This produces immense therapeutic benefits without adverse effects. Such a diet is based on the synergy of ingested components, processed by the BI according to its needs. Mowrey (18) refers to this action as ‘specific hunger’.

Panax ginseng is a clear example of multiple bidirectional-ity, whose Rg1 ginsenosides (protopanaxatriol) can stimulate angiogenesis, while its Rb1 ginsenosides (protopanaxadiol) stimulate the exact opposite (21). Also, Rg1 promotes mitosis while Rb1 inhibits it in stimulated human lymphocytes (22). Rg1 stimulates the nervous system, while Rb1 calms (soothes) it (23,18). Finally, ginseng has hypertensive and hypotensive properties (24,25). The former illustrates Panax ginseng’s potential to induce multiple bidirectional phenomena, i.e. bi-directionality along different metabolic pathways. I have denominated this property ‘multiple-bidirectionality’. It is a phenomenon that resembles several pendulums oscillating harmoniously within the same system. The decision of whether to push or pull, the criteria for selecting directions, the pendulum’s ‘velocity’ and other choices are control functions of an intelligence, thus, decision making can only be attributed to system’s intelligence. Herein lies unveiled the ‘mystery’ of homeokinesis.

Many other tonic herbs besides ginseng provide ‘infoceuticals’, ‘nutraceuticals’, ‘orgaceuticals’ and ‘energoceuticals’ necessary for Biological Intelligence, (BI), to achieve dynamic equilibrium. A very clear instance that, by and large, goes unnoticed is the ‘ceuticals’ plethora in a balanced diet. This produces immense therapeutic benefits without adverse effects. Such a diet is based on the synergy of ingested components, processed by the BI according to its needs. Mowrey (18) refers to this action as ‘specific hunger’.

Figure 4. Multiple bidirectionality. The synergy in plants allow for bidirectional adaptation, whether in adjusting direction(s) in multiple or manifold action(s), and/or in modifying the boost or reduction of these action(s).
Thus BI, among other things, processes ‘ceuticals’, and then, computes indispensable solutions for homeokinesis. I would like to point out that the big difference between orthodox and systemic therapeutics is the former does not methodically support BI, while the latter systematically assists its healing mechanisms.

**Energy Deficiency and Disease**

A common ‘buzz’ word used today in many popular health magazines is ‘body energy’. But how many of those writers or their readers truly grasp the significance and complexity of this expression? An uncomplicated scientific explanation is provided by Antoshechkin (19) who states: ‘The source of energy in the body is oxidative reactions in cellular tissue. Energy supply determining viability and functioning. Energy generation is achieved by: glycolysis, conversion of glucose in lactic acid with ATP formation in cytoplasm; and more importantly, oxidative phosphorylation—ATP synthesis from ADP in mitochondria. ATP, universal energy accumulator and carrier inside cells, used in energy-dependent reactions, is contained in small amounts requiring continuous replenishment. All processes originate from the autonomic energy generation Krebs cycle in each cell. Intensity of energy metabolism is regulated by neuroendocrine integrating systems affected by stressors’ (Fig. 5).

Failure in cellular energy metabolism is a common denominator in chronic degenerative diseases. This is where energy plants and energoceuticals (26) acquire importance. Adaptogens support BI in activating and synchronizing both neuroendocrine system and cellular energy metabolism, previously reduced by conditions of illness, physical–mental fatigue and aging. Scientific literature abounds with descriptions of specific biochemical mechanisms of adaptogenic action (19, 27–47). Moreover, failure of cellular energy metabolism influences the surge of numerous diseases such as Huntington’s (1); Alzheimer’s (2,3); as well as premature aging and age-related diseases in general (4–9) (Fig. 6).

**Energy Adaptogens: Key to Chronic Degenerative Disease Management**

According to the Golden Rule of Therapeutics (12), at least one of the energy adaptogens listed in Table 1 should integrate chronic degenerative disease protocols.

Each of the former, incidentally, are emblematic ‘National Herbs’ that exude a legendary halo of healing benefits, in keeping with the history and ethnic traditions of the regions where they originate. For instance, the Maral root (*Rhaponticum carthamoides*) from the Siberian Altai region is given to the elderly for revitalization. Traditionally, Maral root was used to treat hunters’ exhaustion in long expeditions. It is also a time favorite of the Russian Olympic team. This herb’s benefits were unveiled by Altai’s indigenous inhabitants while observing the local male deer’s behavior. During the mating season, the male unearths the root and feeds on it while contesting other males for preeminence over the females. The result of this eating habit is increased strength and spermatogenesis (19).

The use of energy adaptogens in all systemic protocols converges with traditional Chinese medicine in its philosophic approach of including a suitable superior herb, as the spearhead, in each of its formulations, for diverse pathologies.

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**Figure 5.** Krebs cycle. The importance of this process cannot be overemphasized. Energy is vital in all life processes be it in complex or in simple systems.

**Figure 6.** Degenerative diseases linked with energy deficiencies. Examples of energy shortages that bring about chronic degenerative illnesses: Huntington, Alzheimer, Parkinson and multiple sclerosis.
In this sense, there is genuine coincidence between both therapeutic systems. To sum up, the basic purpose for including suitable energy adaptogens in all age-related diseases is to activate or improve deteriorated neuroendocrine and cellular energy metabolism. Table 2 lists the same energy adaptogens’ complementary benefits, through the supply of these plants’ negative entropy properties, which they provide to the living system’s organism.

### Multiple Bidirectionality of Complex Tonic–Adaptogenic Formulations

If one superior herb is good, more than one is better. If one synthetic is bad, more are worse. This is an empirical maxim. The reason being that beneficial effects add up just as negative actions do too. BI synchronizes activity and entry point of each natural ‘ceutical’ to achieve stasis, dynamic stability, through the necessary regulatory push–pull of the chemical cascade. Additionally, BI cannot adequately compute—recognize, metabolize and excrete—many lab manufactured synthetics since these are alien to the ontogenetic and phylogenetic evolution of the human species. BI co-evolved and interacted with many genera of the plant kingdom (73,74) and was able to adequately process most of its ‘ceuticals’ (Fig. 7).

Thus the combination of TRUE tonics and adaptogens in one formula, if ingested in normal doses for a given pathology, will not generate side effects or negative reactions. The synergetic constituents induce a multiplicity of syntropic, i.e. bidirectional properties prohomeokinesis. True individual tonic and adaptogenic herbs do not induce side effects in therapeutic dosages, thus their combinations should not either. The empirical proof of this can be found in thousands of herbal formulations found in ancient kampo (75–77), traditional Chinese or ayurveda medicine. These are usually composed of at least 15 different phytomedicines. It can also be confirmed in man’s harmless but therapeutic (78) consumption of many mixed vegetables, herbs and fruits as part of a balanced nutrition. The empirical maxim can also be said to state that any mixture of innocuous herbs and/or food is harmless. Hard core pharmacologists find this hard to accept since they are trained to think in terms of after effect producing medicines. To them a medicine is not a medicine if it has no entropic side effects. This may well be true for some synthetics, even more so for their combinations, due to their corresponding negative effects. This is not so for true tonics or their combinations (18,79). The proof is food!
not only do we have an absence of side effects but also the synergistic activation of simultaneous regulatory mechanisms—multiple bidirectionality.

Another striking example is the successful systemic herbal formulation—composed of 21 adaptogens and tonic plants—used in diabetic foot, diagnosed for amputation (12). It increases circulation, lowers hyperglycemia, regulates blood pressure, optimizes cardiac function, enhances immunity and energizes the patient, all in one. The maxim is true of most complex herbal formulations, designed to stimulate E, I and O in the living system. The administration of the needed ’ceutical’ to the hungry metabolic pathway is exerted by the system’s BI, the result is negentropy. In the case of superior herbs, if one is good, more is usually better.

Clinical studies have, for instance, shown that orthodox treatment of chronic cardiac insufficiency with Digoxin—pharmacological of herbal origin—can be synergetically enhanced. The secret is to add superior plants that induce vasodilatation and inotropism. Case in point: ’Crataegus oxyacantha’ (80–83) a cardiac tonic, which does not alter the pharmacokinetic parameters of Digoxin (84), and herbal diuretics like Hydrocotile asiatica and Equisetum arvense (18,85,86).

Synergic Healing Potential: Negentropy, Mathematically Expressed

Any adaptogenic or tonic plant, like Panax ginseng or Ginkgo biloba, has dozens of active principles. Their synergetic combinations (SC) are administered by BI’s regulatory intervention. For instance, if we assume an herb to have 40 different active principles, BI can create 820 SC; however, as in the case of our diabetic foot formula consisting of 21 different herbs each with ~40 active principles, 840 in total, the result is 353, 220 SC. The combinatorial expression for SC is: \[ \sum n = n + (n-1) + (n-2) + (n-3) + \ldots + (n-n-1) + (n-n) = \frac{n^2 + n}{2} - \sum_{i=1}^{n} n = \frac{n^2 + n}{2} \].

### Table 2. Negative entropy, complementary, effects of adaptogens

<table>
<thead>
<tr>
<th>Adaptogen</th>
<th>Disease</th>
<th>Complementary effect</th>
<th>Investigators/reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acanthopanax senticosus</td>
<td>Parkinson</td>
<td>Cytoprotective</td>
<td>Fujikawa al. (48)</td>
</tr>
<tr>
<td></td>
<td>Coronary heart</td>
<td>Protective</td>
<td>Sui et al. (49)</td>
</tr>
<tr>
<td></td>
<td>Cancer metastasis</td>
<td>Immune stimulant</td>
<td>Yoon et al. (50)</td>
</tr>
<tr>
<td>Corna Cervi pantorichum</td>
<td>Arthritis</td>
<td>Suppressed arthritis develop</td>
<td>Kim et al. (29)</td>
</tr>
<tr>
<td></td>
<td>Immune</td>
<td>Immunopotentiating</td>
<td>Zhang et al. (30)</td>
</tr>
<tr>
<td>Ilex paraguariensis</td>
<td>Cardiovascular</td>
<td>Diuretic and hypertensive</td>
<td>Gorgen et al. (31)</td>
</tr>
<tr>
<td></td>
<td>Myocarditis</td>
<td>Cardioprotective</td>
<td>Schinella et al. (51)</td>
</tr>
<tr>
<td></td>
<td>Oral carcinoma</td>
<td>Inhibits cancer cell</td>
<td>Gonzalez et al. (52)</td>
</tr>
<tr>
<td>Lepidium meyenii</td>
<td>Male infertility</td>
<td>Spermatogenesis increase</td>
<td>Gonzalez et al. (53)</td>
</tr>
<tr>
<td></td>
<td>Benign prostate hyperplasia</td>
<td>Proapoptotic and antiproliferative</td>
<td>Gonzalez et al. (54)</td>
</tr>
<tr>
<td>Ocimum Sanctum</td>
<td>Heart</td>
<td>Boosts endogenous antioxidants</td>
<td>Sood et al. (56)</td>
</tr>
<tr>
<td></td>
<td>Diabetes</td>
<td>Hypoglycaemic activity</td>
<td>Gholap and Kar (57)</td>
</tr>
<tr>
<td></td>
<td>Cerebrovascular insufficiency</td>
<td>Neuroprotective</td>
<td>Yampellawar et al. (58)</td>
</tr>
<tr>
<td>Panax ginseng</td>
<td>Diabetes</td>
<td>Improves insulin sensitivity</td>
<td>Liu et al. (59)</td>
</tr>
<tr>
<td></td>
<td>Senility</td>
<td>Neuroprotective</td>
<td>Bao et al. (60)</td>
</tr>
<tr>
<td></td>
<td>Cancer</td>
<td>Chemopreventive and antimutagenic</td>
<td>Panwar et al. (61)</td>
</tr>
<tr>
<td>Panax quinquefolius</td>
<td>Diabetes mellitus II</td>
<td>Attenuates post-prandial glycermia</td>
<td>Vuksan et al. (62)</td>
</tr>
<tr>
<td></td>
<td>Breast cancer</td>
<td>Inhibits MCF-7 cancer cell growth</td>
<td>Duda et al. (63)</td>
</tr>
<tr>
<td>Pherfia paniculata</td>
<td>Cancer</td>
<td>Anti-inflammatory</td>
<td>Matsuzaki et al. (64)</td>
</tr>
<tr>
<td>Psychotum olacoides</td>
<td>Leukemia</td>
<td>Suppressive effects</td>
<td>Watanabe et al. (65)</td>
</tr>
<tr>
<td>Rhaponticum carthamoides</td>
<td>Arrhythmia</td>
<td>Eliminates arrhythmia</td>
<td>Kurmukov and Ermishina (67)</td>
</tr>
<tr>
<td></td>
<td>Diabetes</td>
<td>Insulin sensitivity increased</td>
<td>Kosovskii et al. (68)</td>
</tr>
<tr>
<td>Rhodiola rosea</td>
<td>Arrhythmia</td>
<td>Anti-arrhythmic effect</td>
<td>Mainsesukolova et al. (69)</td>
</tr>
<tr>
<td></td>
<td>Fatigue</td>
<td>Reduces fatigue</td>
<td>Darbinyan et al. (45)</td>
</tr>
<tr>
<td>Schizandra chinensis</td>
<td>Ulcer</td>
<td>Anti-Helicobacter pylori action</td>
<td>Li et al. (70)</td>
</tr>
<tr>
<td></td>
<td>Ischemia</td>
<td>Cardioprotection</td>
<td>Chiu and Ko (71)</td>
</tr>
<tr>
<td></td>
<td>Menopause symptoms</td>
<td>Nitric oxide-mediated vasorelaxation</td>
<td>Lee et al. (72)</td>
</tr>
</tbody>
</table>

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This represents the number of potential contributions of an herbal formula to a system’s organization. It is thus a measure of negentropy potential in therapeutic nutraceutical combinations (Fig. 8).

**Ideal Medicine Based on Solid Philosophy**

How can nature’s active principles be specifically designed to aid BI? The answer lies in universal information exchange. Moreover, since a datum, e.g. an herbal informational active principle, only makes sense to the system’s ‘I’, its existence is a self-evident truth. Ergo, ‘I’ impregnates nature and emanates ‘survive’ as the fundamental motivation behind self-organization. Thus Energy, prosurvival Intelligence and Organization are the backbone of living systems, and should constitute the core of any healing philosophy or ideal medicine. From their interaction we can now understand spiritual healing and even placebo effect as negentropy therapeutics that enhances system’s intelligence via information. In synthesis, ideal medicine based on solid philosophy bridges many gaps, including those between ‘China Academy of Traditional Chinese Medicine’ and the consulting rooms of Harley Street.

**Next Topic**

In the next article I shall outline several clinical studies, provide clinical and photographic evidence, and describe the use of ‘ideal remedies’ according to E, I, O. I will also illustrate similarities and differences between Systemic and other holistic systems such as South Asian systems of medicine.

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**References**

Bucci LR. Selected herbals and human exercise performance. doi: 10.1023/B:PLANT.0000015784.71579.00


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