

NOTE ON BEG'S PHYSICOCHEMICAL SOCIOLOGY

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Abstract. An interjection on Indian-born Pakistani organometallic chemist Mirza Beg's 1974 'notes relating physicochemical terminologies to those of human behavior', in regards to humanities scholars unknowingly using physico-chemical terms, 'perhaps metaphorically', such as: polarization, activation, potential energy, complexes, compounds, etc., applied to human behaviour in lecture discourse, and resulting magnum opus *New Dimensions in Sociology: a Physico-Chemical Approach to Human Behaviour* (1987), is given.

Keywords: *Mirza Beg, physicochemical, sociology, physicochemical sociology*

1. INTRODUCTION

The relatively unknown physicochemical sociology theory work, developed and published between 1974 to 1987, of Indian-born Pakistani organometallic chemist Mirza Beg, on 'relating physico-chemical terminologies to those of human behavior', has recently been discovered (13 May 2014), by the author, which of the some 1,000+ biographies written at Hmolpedia, since its 24 Dec 2007 launching, is one of the more impressive finds, comparable in some ways to Goethe, and his 1809 affinity-based human chemical theory; though, to note, not as discerning as Goethe in regards to religion, which is in great conflict with the physicochemical purview of human existence.

The author finished reading and dissecting Beg's 224-page 1987 *New Dimensions in Sociology: a Physico-Chemical Approach to Human Behaviour* on 14 Jun 2014 during which time he has done 91 edits to Beg's *Hmolpedia* article, cited Beg in 35+ *Hmolpedia* articles, and presently ranks him as the #1 existivive (alive) "social Newton", of the known 54 social Newtons (36 non-existivive + 18 existivive). [1] The author, after finishing Beg's book, then let it sit (digest) for 10 days, in the mean time reading Francis Crick's 1995 *Astonishing Hypothesis: the Scientific Search for the Soul*, which, to note, is nearly valueless, as compared to his 1966 *Of Molecules and Men*, wherein he debunks the "theory of life", with his seemingly innocuous passing remark "let us abandon the word alive", and herein will attempt a short summary "note" on Beg's work, which covers a large amount of theoretical ground, to say the least.

2. HIDDENNESS

In regards to why Beg's work is so impressive yet, paradoxically, so unknown, say as compared to other sociochemists, e.g. Thomas Huxley (1871), Vilfredo Pareto (1897), William Fairburn (1914), etc., or sociophysicists, e.g. Roy Henderson (1971), Elliott Montroll (1974), Serge Galam (1975), etc., of the same era or before, the issue seems to be firstly that Beg published his work in two obscure journals that in no way would be able recognize what he was saying, namely: *Pakistan Management Review* and *Pakistan Marketing Review*, having it reviewed seemingly by one scientist, namely M.A. Kazi, and one sociologist, namely Jameel Jalibi; and,

secondly, that he threads all of his work, similar to Mehdi Bazargan (*Thermodynamics of Humans*, 1956), with all sorts of digression about passages and statements from the Quran and about the so-called life and times of Muhammad. While the advent of Academia.edu, wherein Beg recently (c.2014) began to upload abstracts and reviews of his 1987 physicochemical sociology book, thus allowing researchers to find his work, via the search keys "physico-chemical sociology", seems to have resolved the first of these issues, the second issue still remains, but is one inherent in any and all attempts of physicochemical formulations of the humanities, an issue that dates back at least to the time of Goethe and his so-called enemies deriding his work as immoral – which, naturally enough, leads into the question of what exactly is a "moral", something religion-based or physicochemical-based?

3. THEORY ORIGIN

In 1974, Beg, a chemist by training – his PhD was an organometallic chemistry dissertation on "The Chemistry of Some Trifluoromethylphosphines", completed in 1961 at the University of British Columbia, Vancouver – was nominated to attend a public administration training course, in which, as he says:

"A peculiar feature of the course was that the lecturers were using terms, like polarization, activation, potential energy, complexes, compounds, perhaps metaphorically and in an unrelated context."

Beg, being curious about this unusually use of physicochemical sounding language, being used in a course on public administration, queried the lectures: 'this compelled me to ask some of them if there were aware of the real sense of the terminologies which have actually been borrowed from chemistry or material sciences?' 'As expected', as he found, 'they had no clue to them and this prompted me to write a few notes, relating physicochemical terminologies to those of human behavior'.

This resulted in the 1976 booklet *Human Behavior in Scientific Terminology*, which led to the publication of four papers in local trade journals, two being 'Human Behaviour in Scientific Terminology Assimilation' (1980) and 'Human Behaviour in Scientific Terminology: Affinity, Free Energy Changes, Equilibria, and Human Behaviour' (1981) both published in the *Pakistan Management Review*. Reader response and commentary from these articles, according to Beg, made it become apparent that the 'pertinent data had to be put in urgently to provide a quantitative basis to the hypothesis'.

Beg's hypothesis, here, in short, being the proposal that human behaviour can be explained scientifically by the terms: affinity, free energy change, and equilibria, among about a dozen or so other physical chemistry theories that he examines.

In more detail, he likens society to a chemical solution and explains human behavior in terms of physicochemical laws, using terms such as fugacity, lattice energy, activation energy, affinity (or chemical affinity), free energy, drive (internal force and external force) and driving force, both interpreted in terms of Abraham Maslow's hierarch of needs, enthalpy (or heat of reaction), entropy, phase rule (phases, degrees of freedom, intensive variables, state), polarity, Coulomb forces, pressure (i.e. social pressure) and partial pressure (i.e. pressure at interface of social boundary), temperature (i.e. social temperature), equilibrium constants, etc., advanced concepts and principles, such as: Le Chatelier's principle, law of mass action (compare: Julius Davidson), human chemical reaction theory, activated complex, miscibility (compare: Jurgen Mimkes), etc., likening migration to evaporation of solution molecules at higher temperatures, social conflict to the generation of heat in solution, slums to the formation of coarse-grained solids, war to rapid boiling, etc., and seems to grasp at very-advanced concepts such as human chemical bonding theory (in a loose verbal sense) and human molecular orbital theory (e.g. via molecular orbital diagrams and transition states applied sociologically), all done with in-text citation to just four physical scientists: Willard Gibbs, Robert Boyle, Isaac Newton, and Robert Mayer, respectively.

Among these, Beg's use of fugacity, a complex concept developed by Gilbert Lewis, the main founder of modern chemical thermodynamics, is very original and quite impressive – something never before seen done by the author. In other words, while authors that cite, e.g., Heisenberg's uncertain principle, Newton's law of gravity, Clausius' entropy, or quantum mechanics, etc., in support of their new grand pet sociology, economics, philosophy, and or psychology theory, are a dime-a-dozen, the use of fugacity is very unique.

To continue, in 1987, following a period of forced convalescence, Beg was finally able to solidify his hypothesis, previously existing the form of a collection of terminology notes, four articles, and booklet, into his magnum opus *New Dimensions in Sociology: a Physico-Chemical Approach to Human Behaviour*.

4. DIGRESSION

While it will not be possible, at this juncture, to address all of the many points of Beg's hypothesis, herein we will take note of a few of the more impressive and interesting aspects of Beg's physico-chemical sociology theory.

Of first note, is the relative independence and originality of his work. In the physicochemical humanities, there tend to be two types of scholars: those that go straight from the textbook, physical science textbook that is, to theoretical humanities theory development, without citation or knowledge of any such similar scholar prior, and those that first cite and discuss thinkers to have attempted similar work prior to their own attempt. The latter far outnumber the former.

Beg is of the former time. A comparative example would be the rather impressive jump of American physicist and computer scientist Wayne Angel going straight from Herbert Callen's 1960 *Thermodynamics* textbook to an equation-rich theory he calls "relation thermodynamics", a thermodynamic formalism

of human relationships and interactions. Beg does something similar, via further reading citation to about sixteen chemistry, physical chemistry, and material science books and textbooks, such as: *Physical Chemistry* (W.J. Moore, 1955), *General Chemistry* (J.A. Timm, 1950), *Introduction to Materials Science* (B.R. Shlenker, 1969), *Inorganic Chemistry* (T. Moeller, 1952), and *On the Nature of the Chemical Bond* (Linus Pauling, 1960), to name a few.

Throughout this jump, to be clear, Beg is completely unaware of the physicochemical humanities scholars to come before him, such as: Johann Goethe, Henry Adams, and Lawrence Henderson, to name a few. This is further evidenced by the following 2012 retrospect statement by Beg: [2]

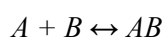
"Writing to introduce *New Dimensions in Sociology through Physicochemical Approach to Human Behavior*, I had wondered as to why the degree of universality of occurrence and correlation of physical phenomena and physicochemical laws with social interactions has not been identified, although the identicalness of a large number of such natural phenomena is and has been well known."

In any event, one of the first interesting aspects of Beg's work is that he is the first, following Johann Goethe (1809), independently, Lawrence Henderson (1935), per extension of Vilfredo Pareto's grand corpus of work, and Jeremy Adler (1977), per dissertation work on Goethe's human chemical theory, to develop human chemical reaction theory, i.e. to define humans as fluid or chemical like points or molecules and to apply chemical equations, e.g. $A + B \rightarrow AB$ (product formation) or $C + D \leftrightarrow CD$ (two way equilibrium reaction), to the modelling of human interactions, conceptualized as chemical reactions. [3] In all, Beg goes through about 26 types of human chemical reaction types, using chemical equations, even applying activated complex theory and transition state theory, along the way.

To cite one example, Beg, in chapter four "Human Interaction and the Socialization Process", begins to treat human molecules individually, e.g. how past psychological states (e.g. birth order or sibling group size), say of two potential friends, A and B, may affect later (adult) human chemical reactions processes (e.g. friendship bonding), such as the formation of "close friends denoted by AB formed according to reaction 4.1", which Beg denotes as follows:



or



Beg then goes on to calculate equilibrium constants (relative values) for the reaction scenario between three human molecular species: A, B, and C, and their possible products, e.g. AB, AC, BC, ABC, and secondary reaction mechanism products, which becomes rather involved.

5. FREE ENERGY

In his chapter seven "Decline of Societies and Entropy Changes", Beg states, as what seems to be a matter of fact, in

his mind, that Gibbs free energy change, defined by the following equation:

$$\Delta G = \Delta H - T\Delta S$$

is the equation for the driving force behind and underlying social change in and between societies and amid the rise and fall of civilizations (compare: Thomas Wallace, 2009).

6. QUOTES

The bulk of Beg's theory is in need of further digression and dissection. As this, however, will require an extensive amount of discussion, and as the author, presently, having just absorbed Beg's treatise 10-days ago, is oversaturated with the amount of theoretical ground that Beg covers, meaning his theory is in need of mental processing, we will forego further digression and discussion at this point, and leave the reader off with a few of the more interesting, of which there are many, quotes and statements by Beg:

"There are scores of evidences which suggest that human beings interact with one another because of the affinities they may or may not have for one another just like chemical substances."

— Mirza Beg (1987), "Preface" to *New Dimensions*

"The driving force of a reaction is another observation that could be related to the speed with which human interactions nucleate and either result in a revolution or in the domination of one faith over the other."

— Mirza Beg (1987), "Preface" to *New Dimensions*

"Physicochemical laws can be extended to a variety of human relations and interactions."

— Mirza Beg (1987), *New Dimensions in Sociology* (pg. 22)

"Mass migration can be viewed similar to boiling when the input of heat creates such intensive molecular motion that the molecules leave the system after changing to the vapor state."

— Mirza Beg (1987), *New Dimensions in Sociology* (pg. 35)

"Affinities and fugacities characterize the behavior of individuals in a society."

— Mirza Beg (1987), *New Dimensions in Sociology* (pg. 95)

"It is very difficult to have an ordered state in a heated atmosphere which results in separation of species."

— Mirza Beg (1987), *New Dimensions in Sociology* (pg. 135)

"Driving force of a [social] system is analogous to the energy which drives a chemical reaction to completion. It is, in chemistry, composed of two terms: the heat of reaction and entropy or disorderliness or randomness of the system."

— Mirza Beg (1999), *Social Pollution and Global Poor Governance*

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