The Evolution of the Educational Paradigm

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Abstract

There have always been theoretical frameworks or paradigmatic changes in education over the centuries. Some have been advantageous, others detrimental and some merely served their temporary social and cultural change, limiting their evolution to a specific era or developmental goal or educational cult. However, this transformation is evident. This article shows that the creation of a new paradigm in education is merely a part of an on-going development factor of change which can lead to good or bad. The potential results are forthcoming, only due to future meta-theory constructs based on their foundations, methods, form, utility and their eventual sociological development and benefit to mankind.

Educational Change - 1800 through the 1900's

The educational social paradigm of the recent past, encompassing the 1700's leads us to the threshold of the 1800's and the mental and social aspect of student-teacher change.

This provided a view of the continuing influence, particularly in Europe, of Jean-Jacques Rousseau (1712-1778), as expounded in his educational and social work *Emile*[1] and the creative thought of the Swiss educational reformer and pedagogue Johann Heinrich Pestalozzi (1746–1827).[2]

Many of the teachers of the period imported this new paradigm to introduce the humanism[3] of Rousseau and his interest in social reform. Within the development of his *Emile*, Rousseau became a companion of people of literary and social prominence, such as ordinarius professors and docents. As his social prominence developed, so did his theoretical framework of education. Rousseau believed that educational reforms would be a return to nature for the full development of the natural man.

This author, as many other educators and educationists, believes that Rousseau's ideas had merit in that he allowed the student to grow through independent learning and evolution of thought. However, the philosopher had too much enthusiasm in his total lack of restraints and directions that needed to be set by the mentor or teacher. The issue of the "changing from a manipulator of the child's environment into the adult's trusted advisor,"[4] although potentially well founded as a paradigm of educational and social direction had the potential flaw in that the child, adolescent and adult student, must be mature, and ethical and morally directed from within as well as without (i.e. not a religious concept but rather one based on cultural and individual civilizational growth). This same concept is needed by students of the 21st century if the new educational paradigm is to be advantageous.

Toward Better Trained Teachers

Through the work of Rousseau with his book *Emile*, Pestalozzi became interested in educational reform and thus wrote books on scientific methodology and general science. Pestalozzi, in his philosophical concept of "learning by head, hand and heart"[5] aided education in becoming a scientific discipline. It also strove to make learning more student oriented in all aspects including: self-activity, individuality and sense perception.

In his work *How Gertrude Teaches Her Children: An Attempt to Help Mothers to Teach Their Children ...* moral and religious education was emphasized.[6] As an affectionate individual and passionate educator, he felt that educational studies must be analyzed into various components. Student development; ethically, socially and educationally led to the formation of personality and individual reasoning. These are concepts that must be encouraged and maintained in the 21st century, yet adapted into an evolving pattern of advanced technological transformation. It is important that the "technoman" of the future, retain much of his humanity while using this compassion to advance civilization's technological goals.

Pestalozzi also stressed a concept that is nearly lost in most American universities. This is necessary for root languages such as Latin, Greek and Hebrew and their utilization and formation in understanding and speaking the modern languages. With English as a major social language and Japanese and Chinese becoming the economic means of communication there seems in today's society little need for learning language rootology and linguistic form edification. Such forms aid in developing cognitive speed and brain function. This does not seem to be true in mere computer activities.[7] Although an old paradigm, certain methods of earlier training can fortify brain function and aid new paradigm development.

Pestalozzi is also known for his emphasis on physical activities.[8] Again, this is another methodology that could fit into the new paradigm as more and more higher education students are focused on distance learning, computer activities and mental skills. Devoting an hour each day to hiking, nature activities, exercise, *Tai Chi Chuan* or Yoga may sound non beneficial and tiring to today's active society, such activities actually stimulate brain wave activity, cognitive skills and social awareness. Although drugs exist that stimulate brain function[9] and are used by some to aid mental awareness, physical activities for the on-line scholar, distant educationist and brick and mortar student still serves as the best safe and effective "Mental-Performance-Enhancing Drug." It is, however, the writer's belief that there should be a balance between exercise and the utilization of neuroenhancers that have been proven safe and effective. Although the FDA has not yet approved a specific drug for a explicit condition, does not mean it is dangerous or ineffective. It is generally taken for granted that in the future, numerous non-tropic agents will be taken to enhance educational, social and cultural performance. Alas, some individuals still believe that any change in the norm is unnatural and non-ethical.

Again, although Pestalozzi's educational philosophy seems antiquated and certainly not the part of a potentially new paradigm, there are certain points that should be placed into this new technological and computeristic developmental prototype. Pestalozzi's educational philosophy was centered on a sphere concept of existence including "home and family, vocational and individual self-determination and state and nation."[10] These are social and cultural concepts that must be strengthened as we enter the "brave new world" of scientific and technological social improvement. He felt that this sphere concept "recognized the family, the utility of individuality, and the applicability of the parent-child relationship to society as a whole in the development of a child's character, attitude toward learning, and sense of duty."[11] This development of unity and oneness mixed with these ethical and social constructs can lead to a better future mankind.

Potential Concepts in the New Paradigm of Education

In the concept of educational development, face to face contacts are important, yet, in the future, there must be a method through which groups can learn through one-on-one and block teacher strategies under advance technology.

Today, some professors have several hundred students per class and often scholarly learning does not work as professors are more interested in publications and research than teaching. In these classes, teachers do not know and could care less about interaction between their students and delegate much of their teaching to graduate assistants. Student in turn are often scared to

approach faculty after class and only 1-2 hours a week is delegated to office hours. Even then, faculty can be short-tempered, condescending and "demigodary" toward students who take up their valuable time. Hyper-connectivity can and will take place under advanced technology.

The question is asked, will all future learning be on-line or through more advanced techniques? The answer is probably yes in that there must be an archetypical pattern, consisting of traditional philosophy, dedication, teacher-student enlightenment, social development, technological advances, and body-mind enhancement through mind drugs, organic computer chips and mega-storage of data. However, in this new paradigm, students of ALL ages MUST embrace maturity.

Mature students of today are from age 30-60 while the future mature students MUST be no older than 18 and even younger. In the 1960's we had cultural change based on the Vietnam War, music, racial experimentation and "free love." Although often misguided, there was a drive by youth to create social change. "By the mid-1970s, Tom Wolfe and Christopher Lasch were speaking out critically against the culture of narcissism.[12] These criticisms were widely repeated throughout American popular media. The development of a youth culture focusing so heavily on self-fulfillment was also perhaps a reaction against the traits that characterized the older generation...."[13] Today, some 40 years later, we live in a "fogmatic" society where physical life has faded and we are now becoming human constructs, formed by combining or arranging parts or elements of a technological society made up of IPods©, IPhones©, computer games, streaming videos, Cloud Camera 2300, PERS-4200, PowerLite Home Cinema 5020UBe, Shading Solutions, SmartView Video Tiling, Theater Art System Multi-Vu, Touchscreen Deadbolt, Underscore Bath with VibrAcoustic Technology, Vera3 and The Cloud. However, when it comes to education, we are still in the past, looking for a bright new future. None seem to have it worse than women. Women must be given more responsibility and administrative goals in the class and university. There must also be more women in the technological and scientific fields and classroom courses. Women taking science courses to many seem to be a unfeminine quality. This will change in the new paradigmic structure.

Another idea for the future is to appoint, based on education and intellectual ability, not politics, 12-20 noted academicians to observe, evaluate and structure the design of teaching among lesser scholars (PhDs) who act as mere technologists and sub-teachers is a regional teaching environment (several universities or regions). These academicians (some being Nobel Prize Winners) would utilize hyper-connectivity between the teachers, students, administrators and knowledge based technology and computer training.

The students, in turn would be responsible to become more mature individuals interacting on the basic technological and academic data, advancing each point into a Bloom's type taxonomy with emphasis on analysis, synthesis and evaluation. This would be opposed to current application of learning starting with mere knowledge, comprehension, application of the lower level taxonomy base knowledge scale. This concept does NOT mean that the three lower levels would be unexploited but rather that these subordinate levels will be integrated on a constant basis with higher learning. These include a constant utilization of cognitive mental skills, affective learning relating to growth in feelings or emotional areas and psychomotor physical and manual skills.[14] To achieve such an endeavor, a super-computer program would be written for the workstation to develop such concepts and then integrated into the regional or national course syllabus.

In the near future, the most significant paradigm shift[15] to global society will be what the technology of the computer has done to our concept of time and our concept of space and the implications of distance learning.

We know that it has been predicted by economist Dunn[16] that by the year 2025 the institutional middlemen will no longer exist and that colleges and universities will become certifying agencies with students taking some courses in one institution and others in another. To expand on Dunn's

idea the writer believes that institutions will become more than certifying institutions. They will be competency centers through government overview. Educationists need to delete the ideas of colleges and universities as only being a bricks and mortar structure. We are beginning to do that with our distance learning but we still have the nagging images in our minds of the bricks and mortar structures being the best and most academic in content. With the advent of the social and educational change, it is believed by some educationalists that the American use of DETC, regional accreditation and smaller agencies will pass into oblivion. In their place will be a standardizing agency ran by the government such as similar to the British and Commonwealth, which bases their learning objectives and teacher performance on a higher education quality assessment program. The points of this program are:

- To consolidate and unify standard qualifications by a single government board. A board, that one hopes will not in the future be sub-contracted out to independent agencies;
- To potentially provide a unified program that can be used worldwide to create a structured oneness of teaching and educational design;
- To save money and resources utilized by single universities and college facilities;
- To devise a single agenda that is uniformed, and after initial costs by the government is free of higher funds, unless graft is introduced into the equation;
- To understand that there must be a direct and ongoing affect by students, teachers and administration to be a part of this program;
- To form a co-operative scheme whereby each student is responsible to produce a strict code of hard work, diligence and group (study group) and single study;
- To understand this will be under a code of ethics and under student peer-review;
- To move constantly toward advanced technology, based on electronic equipment, technological innovation, the development of organic/electronic computer processors and worldwide open market systems design;
- To design a process whereby faculty will be required to meet the same requirement of students relating to work, ongoing academic advancement,[17] ethics, morality, unity and social interaction plus maintaining records, tests and evaluation forms. HOWEVER with the utilization of new techniques in computer technology, it will not be required for teachers (professors) to spend more time in their workload. In fact, it is potential possible that less time can be utilized and teachers will have more time for research, HOWEVER, faculty are required to show more consideration, time (in a way yet to be devised), interest (talking with students one-on-one) and better behavior;
- To require faculty to work on creating new constructs, designs and future paradigms and not merely write papers and books of little importance for tenure and pay increases;
- To require that administrators, from the president on down to the dean and chair should have sessions with faculty via the Internet and when in a close vicinity provide get together and socials as well as helping the faculty with all of their educational needs.

Students should have a more freedom in decision making, if so conducted in a mature and academic manner. However, students should NOT be allowed to break the chain of command between faculty, chairs, deans, vice-chancellors and the president to discuss a personal or educational issue. As in traditional schools of stone, the future schools made of wires, processors and CPU's must have ethical codes and students and faculty should be encouraged to discuss ethical protocol and report moral injudiciousness. Therefore, there should be a grievance committee made up of the professor, chair and three student members of the grievance board to hear and evaluate the situation.

It is hoped that in the future educational prototype that all mature students (mature with it new meaning) will build up self-interest credits and will self educate on-line to gain the credits that are necessary to complete a degree or diploma and in some cases pursue the education of a subject as

self instructional with additional textbooks. This will assist the student in solving a nexus of interconnected problems of unparalleled complexity.[18]

Students should be encouraged (especially American students) to take less "sop-courses." Even as far back as 1926, university administrators such as Matthew Lyle Spencer, were advocating that "admission requirements be stiffened and that elective and so-called 'sop-courses' be dropped. He felt that arts and sciences should be the heart of higher education thereby greatly diminishing the role of technological and vocational higher education training."[19] Computer degrees, advanced technology robotics, cybernetics, etc did not exist at this time and would have been included in his science programs.

Relating to the hard sciences (chemistry, physics, biology, genetics, etc) students, especially women should be encouraged to take these programs. With more and more opportunities in the 21st century in genetics, cybernetics, computer technology, micro-chemistry, various areas of physics and nano-technology, American students are falling behind in greater and greater numbers.

Women are stigmatized and placed under constant peer-pressure as the courses and work are not considered feminine or worthwhile for a woman. Alas in many cases she is still delegated to the soft sciences. However, this stigma and soft science allocation is not true as some of the most attractive and intelligent scientists in the world are female. A prime example is Dr. Lisa Randall who is professor of theoretical physics and researches particle physics and cosmology at Harvard University. Until women take their rightful place in the sciences, America will continue to lag behind in the 21st century.

Relating to distant education students will check on the Internet or from a closely located competency center the listing of assessment that they must have or the objectives that must be addressed for the students to pass an assessment in a certain subject (ex. physics). When they feel that they are proficient with the materials they will schedule a competency exam at the closest competency center or university. If they pass and are proficient in that course, they then begin their next course, related to their degree program. There is indeed little need for a student to spend 16 weeks of their time, energy and money to retake information they already know. Such a program will reduce, time, energy, money, professor involvement or university overhead. The students, when dealing with subject material outside their criteria or knowledge realm (good enough to sit an examination) can attain what is needed to learn the requirement for another area of study for the Bachelor's level. They can then go on and decide if they need a mentor for this "outside course" and sign up from a listed mentor program either from their on-line university or consortium group. Consortium groups will therefore play a much greater role in future education. The students work with an online mentor, one on one, and gets through course and then sit the examination (similar to home teaching techniques).

It is important that American faculty becomes acquainted with European techniques of sitting examinations and the excellent work of the London College of Teachers.[20] In this way students are able to move at their own speed through a complete degree and may even pile up many courses that they like beyond their degree.

The writer also believes there must be a federal government scholarships program provided for all students in a high school graduating class that want to go to either college or a technical facility. We need more training incentives for the unskilled worker who can be more flexible to incorporate new technology into his skill competency. In many ways, too much funding is being wastefully utilized by the federal and state governments. One example may be the drastic increase of funding in military spending in countries that do not need or desire our interference. In many cases, the more we interject our opinions and "way of life" the more we are hated by that state and neighboring countries.

During the early 1980s quite a number of questions arose amongst certain members of the then Department of History of Education at UNISA regarding the status, field of study and, in particular, the methodologies employed in History of Education. A few years earlier something similar happened at the University of Pretoria (UP) and the University of Port Elizabeth (UPE). In an attempt to "revitalize" the History of Education, UP advocated a "new" type of History of Education called "Wordingsgeskiedenis" (this Afrikaans word can possibly be translated as the "History of Becoming") whereas UPE advocated "Temporaliteitspedagogiek" (possibly to be translated as "Pedagogics of Temporality"). Each regarded their methodology as something different from existing research methodologies and their focus as unique. At the University of South Africa a number of colleagues then started propagating yet another "new" type of History of Education, referred to as Metagogics. According to De Jager, DK, Coetzee, JH & Bisschoff, TC, *Metagogics - Methodology and Application* (Pretoria, HAUM, 1983, the name, Metagogics, indicates the intention that an all-inclusive view is striven for. *Meta* pertains to change always taking place and emphasis will be placed on this aspect in particular. The second half of the name, *agogics*, emphasizes the guidance that one human being offers to another during every phase of life. Therefore one could say the Metagogics refers to the "pedagogics of change" keeping in mind that, according to advocates of Metagogics pedagogics focuses on children only - agogics, according to them, includes all human beings, from the cradle to the elderly.

Advocates of Metagogics preferred to refer to "historical educationists" as "metagogicians. It is the contention of the researcher that this ongoing change or Theory of Educational Becoming, provided direct and indirect assistance to the scholar or scientist in that there is an ever changing modality or paradigm from the original nexus or center of the study. This revolutionize development of the nexus (educational change from the center) creates a matrix[21] (a situation or surrounding substance within which something else originates). By helping the researcher and educationalist, the teacher/professor is able to modify and shape the evolutional development of the student in lower and higher education. By so doing, certain students will be elevated to cultural and social diversity and even more importantly to ethical thinkers and "seekers of vital problems of humankind independent of political boundaries or limits, whether spiritual or physical -- a forum where these problems can be discussed objectively, scientifically, globally, and free from vested interests or regional attachments, to arrive at solutions that affirm universal human rights and serve the interests of all humanity."[22]

The author is utilizing this concept of individual and mankind striving with hundreds of his students in creating a mindset for the utilization of sociological, philosophical and psychological constructs which encouraged his students to continue their journey of BECOMING and through this process has formulated ways where these future educationists, educators, scholars and scientists have helped individuals in Third World countries and especially Africa through grants, scholarships and especially hand-on activities (water development medias, HIV, soil preservation and birth control. The concept is not merely an educational philosophy but a new paradigm in social awareness.

Noted anthropologist Helen Fisher is of the contention that in anthropological theory there are two fundamental aspects of human persona. The first involves the traits emergent from childhood and the progress of cultural experiences and the second, traits based on biologically oriented temperament. She believes that this understanding of cultural and biological temperament can provide insight into relationships including interaction between lovers, parents, friends and colleagues.[23] By utilizing this anthropological concept, there is a potential perception that there could be a cultural and biological relationship between the rapport between certain professors and students. These relationships may be advantageous or detrimental to the learning of the student. It would be possible through a technological data factoring system to determine which students and professors fit best relating to the two mentioned trait factors. Although the concept is a novel

idea, it is possible that by computer technology that data collectors and evaluators could determine which large collective groups of students could fit with a particular faculty member, providing the best, most comprehensive and fastest learning environment.

New technological advances are beneficial in the way in which data will be utilized in the next 20-30 years. This is especially true regarding student achievement in higher education and instructional planning. As we move forward in learning dichotomy, i.e. attempting to retain and utilize outdated formats, teaching programs and inadequate teacher plans and the new infrastructure of computer technology, cognitive awareness schemes and diverse erudition. It is evident that there exists the potential for new profession educational specialists who are trained in the integration of student information systems, central processing workstation curriculum designs, computerized e-book technology and social and cultural diversity based toward forming a "oneness" and hyper-connectivity (collaborative work environments) as opposed to mere educational independence and diversity. Professors and educators must advance their skills in identifying and data basing student learning weaknesses and strengths. This can no longer be done in a haphazard subjective manner but rather on a technological scheme whereby the teacher has immediate access to behavioral traits based on social, cultural and biological persona without profiling. Much of this will be done through workstation skills by the student which is updated by mega-mainframes and DNA testing (at the permission of the parent). Although some of these techniques may be considered invasive by some parents, to achieve the best and brightest students, all data must be collected, correlated and documented. It is impossible for textbooks to be updated daily with new and relevant data.

In the not too distant future, it will be necessary for the book librarians of the traditional brick and mortar school to be replaced by the a new breed of educationalist whose sole job is to up- date on a regular basis new informational and innovative ideas via e-book technology. The idea in part has been approached by Thomas Frey who is the executive director of the DaVinci Institute and noted futurist. According to Frey, future data stream technologists, known as *Terabyters*, through the use of über-geek data-capturing tools will have the ability of producing a terabyte of new information daily.[24] When, and if, this technology becomes available and affordable it will provide a high grade of reliability and accuracy. The next step would be for universities to hire these *Terabyters* to produce the information and store it on mega super computers on which data is immediately available to all individuals who can afford such information.

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[1] In Christopher Bertram, "Jean Jacques Rousseau," *Stanford Encyclopedia of Philosophy* (27 September 2010), [http://plato.stanford.edu/entries/rousseau/#Edu accessed 22 August 2013].

[Rousseau] *advances the idea of "negative education," which is a form of "child-centered" education. His essential idea is that education should be carried out, so far as possible, in harmony with the development of the child's natural capacities by a process of apparently autonomous discovery. This is in contrast to a model of education where the teacher is a figure of authority who conveys knowledge and skills according to a pre-determined curriculum.... The child is not told what to do or think but is led to draw its own conclusions as a result of its own explorations, the context for which has been carefully arranged…. The first stage of the program starts in infancy, where Rousseau's crucial concern is to avoid conveying the idea that human relations are essentially ones of domination and subordination, an idea that can too easily by fostered in the infant by the conjunction of its own dependence on parental care and its power to get attention by crying…. The final period of education involves the tutor changing from a manipulator of the child's environment into the adult's trusted advisor. The young and autonomous adult finds a spouse who can be another source of secure and non-competitive recognition. This final phase also involves instruction into the nature of the social world, including the doctrines of Rousseau's political philosophy.*

[2] Sina Friedrich, *Johann Heinrich Pestalozzi: Ein Überblick über Biografie, Grundgedanken und Einfluss auf das heutige Bildugssystem* (GRIN Veriag, 2010).

[3] Humanists of Utah, "What Humanistic Education Is ... And Is Not," June 1994, np [http://www.humanistsofutah.org/1994/art2jun94.html as accessed on 24 September 2013]

[4] Christopher Bertram, 2010.

[5] Arthur Brühlmeier, *Head, Heart and Hand: Education in the Spirit of* Pestalozzi (Open Book Publishers, 2010).

[6] Johann Heinrich Pestalozzi, *How Gertrude Teaches Her Children: An Attempt to Help Mothers to Teach Their ...* ed. Ebenezer Cooke (Syracuse, NY: C.W. Bardeen, 1898).

[7] Certain computer generated games like Lumosity have been shown to enhance memory and attention.

[8] Jedan Dieter, "Theory and Practice: Johann Heinrich Pestalozzi," *Vitae Scholasticae* 1990.

[9] The drug Modafinil, also known as *Provig* originally approved by the FDA for narcolepsy is now widely used as a nootropic, or "smart drug" which effect the brain's neurotransmitters, enzymes, and hormones. Other neuroenhancers include Adderall and, Ritalin are utilized by students, professors and business executives to increase brain enhancement. Although illegal and carrying stiff fines, more and more so called prohibited drugs that are found to increase brain wave activity will find their way into the illegal drug market. Many scientists believe that the drugs should be made available and utilized to help in creating a more productive and enlightened society. Several noted articles have appeared in *Science* and *Nature*.

[10] Schmid Silvia, "Pestalozzi's Spheres of Life," *Journal of the Midwest History Of Education Society,* 1997.

[11] "Johann Heinrich Pestalozzi," *Wikipedia*, [http://en.wikipedia.org/wiki/Johann_Heinrich_Pestalozzi, accessed 25 September 2013].

[12] Gary Land, *The Essentials of United States History: America Since 1941, Emergence as a World Power* (Research & Education Association, 1991). Note Christopher Lasch, *The Revolt of the Elites and the Betrayal of Democracy* (W. W. Norton & Company, 1996).

[13] "Me generation," *Wikipedia* [http://en.wikipedia.org/wiki/Me_generation, accessed 27 August 2013.

[14] Benjamin Samuel Bloom, *Taxonomy of Educational Objectives: the Classification of Educational Goals* (McKay, 1956).

[15] In 1962, Thomas Kuhn wrote *The Structure of Scientific Revolution*, and fathered, defined and popularized the concept of "paradigm shift" (p.10). Kuhn argues that scientific advancement is not evolutionary, but rather is a "series of peaceful interludes punctuated by intellectually violent revolutions", and in those revolutions "one conceptual world view is replaced by another". Think of a Paradigm Shift as a change from one way of thinking to another. It's a revolution, a transformation, a sort of metamorphosis. It just does not happen, but rather it is driven by agents of change. "What is a Paradigm Shift," *Wikipedia* [http://www.taketheleap.com/define.html, accessed 29 September 2013].

[16] Samuel Dunne, "The Virtualizing of Education," *The Futurist*, March-April (2000) 34-36

[17] Faculty at the various accredited centers of the Royal College of Teachers, of which the American College of Interdisciplinary Sciences is a member, are required to take regular courses for faculty enrichment including quality assessment which consist of numerous parts and divisions.

[18] Carl Edwin Lindgren and LaWanna Lease Blount, "Theory Development and Historical Antecedents in the Field of Generational Family Matrix Research - A White Paper," *Altair*, Fall 2012, 59-83. ISSN: 2168-0183.

[19] Carl Edwin Lindgren, *Matthew Lyle Spencer: Educator, Administrator, Writer and Journalist* (Oxford, MS: North Mississippi Antiquarian and Historian Society, 1996), 13.

[20] Carl Edwin Lindgren, "Educationists Who Assisted the College of Preceptors in Becoming an Early 'Learning Organization,'" Faculty of Business Economics and Entrepreneurship International Review (2012 No.1-2), 5-23 -- *UDC: 378.6(410); 331.1-055.2(410) JEL: I 23*.

[21] "Matrix," *The Free Dictionary* [http://www.thefreedictionary.com/matrix, accessed 6 September, 2013]

[22] World Academy of Art and Science, "Overview," [http://www.worldacademy.org/content/world-academy-art-and-science accessed 5 September, 2013]. Paper distributed at the World Academy.

[23] Helen Fisher, *Why Him? Why Her?: Finding Real Love By Understanding Your Personality Type* (New York: Henry Holt and Co., 2012).

[24] Thomas Frey, "The Coming of the Terabyters: Lifelogging for a Living," *70 Jobs for 2030*, (World Future Society, 2011), 7.