**Applied Collective Intelligence 2.0**

***Can Open Source Evolutionary Cybernetics Leverage Distributed Human Intelligence While Advancing Artificial Intelligence?***

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**ABSTRACT**

The information and intelligence (decision-support) domains have lost their way. Excessive and generally incoherent investments in information technology, including scattered attempts to achieve artificial intelligence, have resulted in the neglect of 99% of all relevant information, a failure to invest in information-sharing and sense-making tools, a failure to nurture human intelligence (HUMINT) networks, and a failure to capitalize on the radical (root) value represented by holistic analytics with embedded true cost economics. In passing, because of government corruption enabling predatory industrial practices, we have also neglected open source everything engineering without which we cannot achieve truly smart cities or smart nations or a prosperous world that works for all. A Global Brain that more ably melds human and artificial intelligence is a potential advance enabling the technological shaping of our future, and positive social change. The four approaches to creating a Global Brain include organicism, encyclopedism, emergentism, and evolutionary cybernetics. The limitations of computer processing and scientific reductionism are briefly reviewed in order to reject organicism and encyclopedism as primary approaches. A way forward is outlined that restores the centrality of the human factor in accelerating emergentism and evolutionary cybernetics. An Open Source (Technologies) Agency is proposed as a platform for blending artificial intelligence with human intelligence in full transparency – a Global Brain / World Brain network and tool-kit that connects all minds to all information in all languages all the time.

**KEYWORDS**

Algorithms, Artificial Intelligence, Decision-Support, Emergentism, Encyclopedism, Evolutionary Cybernetics, Future-Oriented, Global Brain, Global Game, Human Intelligence, Hybrid Governance, Information Pathology, Intelligence, Open Source, Organicism, Public Intelligence, World Brain

**INTRODUCTION**

The information and intelligence (decision-support) domains have lost their way. In theory, an ability to discover, discriminate, distill, and deliver all information in all languages and mediums – a working Global Brain[[1]](#endnote-1) – would enable sound decisions at all levels on all topics, in the public interest.[[2]](#endnote-2) In the absence of holistic analytics and true cost economics, scientific reductionism and the combination of financial and political crime (what Matt Taibbi calls *Griftopia*) have allowed the externalization of costs and the creation of chemical, biological, radiological, and nuclear (CBRN) threats to the point that we are facing the imminent possibility of a sixth human extinction.[[3]](#endnote-3)

What is “collective intelligence?” There are perhaps a hundred serious students and practitioner mentors on this topic in the English language, and each has their own definition. Here I present a definition agreed upon by Tom Atlee, my mentor on this topic these many years, and myself.[[4]](#endnote-4)

*COLLECTIVE INTELLIGENCE is collectively generated decision-support tailored to any need at any point in time and space — it blends holistic analytics, true cost economics, and open source everything engineering toward a notional 24/7 World Brain.*

In a further conversation, Tom has distinguished among four aspects of collective intelligence:

01 Decision-Support – humans with tools finding data

02 Decision-Making -- humans with tools viewing data

03 Decision Implementation -- humans with tools using data

04 Operational Review -- humans with tools questioning data

This is interesting in part because it is a higher-order look at the totality of decision-support that rests easily on top of my earlier distinction among these four aspects of organizational intelligence:[[5]](#endnote-5)

01 Knowledge Management – internal data mining, mostly technical, old data

02 Collaborative Work -- human to human interfaces, some technical devices, new data

03 External Research – online access (20%, technical), offline access (80%, analog and human)

04 Organizational Intelligence – long-term memory, data in relation and human heuristics saved

Mindful of Ervin Laszlo’s signal contributions, particularly his sense of quantum consciousness – we are all one, all energy within a larger cosmos,[[6]](#endnote-6) where Tom and I come together, and where we connect most fruitfully with the work of others, is in distinguishing between data, tools, and humans. Data without human receptors is irrelevant; data without tools is unprocessable; tools without data or humans are waste; humans without data are retarded; humans without tools are incapacitated. The Global Brain / World Brain demands a holy (holistic) trinity of all three: all data, all tools, all humans – and all open.

**AN INDICTMENT OF THE INTELLIGENCIA – AND THEIR TECHNICIANS**

Excessive and generally incoherent investments in information technology, including scattered attempts to achieve artificial intelligence, have created a Tower of Babel effect in which no more than 1% of all collected data is exploited, while no less than 80% of all relevant data is completely ignored – not seen, not collected, not considered.[[7]](#endnote-7)

This is not a new problem. Peter Drucker is among those who insisted from the 1950’s to his death in 2005 that we needed to shift our emphasis from the “T” in “IT” to the “I” – to the meaning of information and its value, its purpose. Drucker also emphasized the futility of focusing on internally-generated information, and predicted at early as 1998 – perhaps earlier – that outside information would be the next information frontier.[[8]](#endnote-8) Explicit warnings to the US secret world in 1989-1990 were ignored, such that today we can see $1.2 trillion dollars in waste over the past quarter century, for lack of intelligence with integrity.[[9]](#endnote-9) The situation elsewhere – across governments, across corporations, universities, and non-profits, is much worse.

Among the information pathologies that have proliferated within this culture of spending on technology to the exclusion of thinking are these, each the title of a book: *935 Lies, Fog Facts, Forbidden Knowledge, Lost History, Manufacturing Consent, Propaganda, Rule by Secrecy, The Age of Missing Information, Weapons of Mass Deception*, and *Weapons of Mass Instruction*.[[10]](#endnote-10)

Within the long-standing emphasis on investment in information technology rather than human education and training has been a failure to invest in tools for information-sharing and sense-making. Author and virtual community pioneer Howard Rheingold was an early advocate of this need, along with Diane Webb and Dennis McCormick and Gordon Oehler at the CIA.[[11]](#endnote-11) Instead of spending on sense-making, both the secret intelligence worlds and the information industry (among others, Hewlett Packard, International Business Machines, Microsoft, Google[[12]](#endnote-12)) that is joined at the hip to the secret intelligence world have focused on mass surveillance – on collecting all digital information, generally without a warrant. This emphasis is best understood by William Binney, a very talented whistle-blower from the senior ranks of the National Security Agency (NSA), who is on record as saying that the secret intelligence community is not about decision-support but rather about keeping the problems (threats) alive so as to keep the money moving.[[13]](#endnote-13) This reveals a central fact: information technology consumes vast amounts of money on which profit can be made, without being held accountable for failing to produce value in the way of decision-support or actionable intelligence – or for violating all manner of laws in the abuse of one’s design and engineering responsibilities.

The “human factor” is both a “wild card” of enormous potential – imagine five billion human brains being empowered to the fullest extent possible with free education online – and also a sad easily repressed weak link – humans and their lack of integrity enabled Fukushima and continue to enable a full range of crimes against humanity by banks and corporations as well as governments.[[14]](#endnote-14)

The next frontier – Applied Collective Intelligence – must be addressed with a combination of strategic analytic models[[15]](#endnote-15) that are holistic in nature and fully integrate true cost economics for every product, service, policy, and behavior; human minds linked and nurtured across all languages and mediums; and open source everything engineering tools – including blockchains – that permit unconstrained but also secure information-sharing and sense-making among all possible combinations of individuals and organizations at every level from local to global.[[16]](#endnote-16) While centered on human capability and human connectivity, an Open Source (Technologies) Agency with nine open source technology sub-categories, is proposed as a foundation for better merging human and artificial intelligence.[[17]](#endnote-17)

I call this technology-enhanced human intelligence Applied Collective Intelligence 2.0.

**FOUR APPROACHES**

Professor Dr. Francis Heylighen has been the leader over recent years, in studying and further developing distinct and complementary approaches to the creation of the Global Brain. Respecting the work of others, he has outlined and documented four specific approaches[[18]](#endnote-18) – the summaries are my own.

***Organicism.*** This concept is rooted in Herbert Spencer and Pierre Teilhard de Chardin, and advances the idea of a super organism that includes plan and animal consciousness and communications. It appears valid as a final destination, but we are lacking in the human concepts and tools needed to achieve our full potential toward this end. In theory this is completely organic and does not rely on information technology external to the plant and animal species.

***Encyclopedism.*** From Denis Diderot to H.G. Wells to Tim Berners-Lee this concept starts with the objective of cataloging all information and being able to process all information automatically. It falls short for lack of yodabyte level linkages, processing power, and access to the bulk of the data that is not yet digital and generally not even published at all (but known to individual humans).

***Emergentism.*** Also conceptualized by Pierre Teilhard de Chardin and more recently by Peter Russell, G. Parker Rossman, Gottfried Meyer-Kress, and Tom Atlee, as well as myself and others, emergentism combines biological and spiritual consciousness – deliberate human thinking and feeling processes, with technology in a support role. This concept has not yet matured; for example, holistic analytics and true cost economics are not yet a standard foundation for the collective conversation that must take place.

***Evolutionary Cybernetics.*** From Valentin Turchin to Thomas Malone and Francis Heylighen, this is the technology-centric counterpart of emergentism. It assumes that artificial intelligence is achievable, and that wisdom of the crowds – the aggregation of individual preferences in isolation from conversation – is a useful means of harvesting human knowledge. While this has potential and merits more attention, the reality is that technology is at 1% of its potential right now. The same can be said for human potential.

**THE LIMITATIONS OF COMPUTERS**

In considering the four approaches outlined above, it is helpful to first confront the harsh realities about computers and their limitations.

Many are now familiar with how NSA has spent hundreds of billions of dollars on the most advanced computing capabilities possible. What most may not realize is that the NSA processes less than 1% of what it collects, and contributes virtually nothing to the national security or prosperity of the USA. The following statement by James Bamford, the most prolific and in-depth observer of NSA, summarizes the relative merits of NSA computing and an average human brain:

*Eventually NSA may secretly achieve the ultimate in quickness, compatibility, and efficiency – a computer with petaflop and higher speeds shrunk into a container about a liter in size, and powered by only about ten watts of power: the human brain.*

This was the last sentence in the author’s book, *Body of Secrets: Anatomy of the Ultra-Secret National Security Agency*.[[19]](#endnote-19)

An alternative view, one that compares computer strengths with human strengths, is provided below:[[20]](#endnote-20)

*Computers (technology-centric, engineering-oriented) are good at collecting, cleaning, transforming, integrating, storing, and reporting data.*

*Humans (human-centric, design-oriented) are good at exploring, analyzing, communicating, monitoring, and predicting.*

Further to the above, a career IBM employee now an independent entrepreneur, offers eleven reasons why computers cannot understand or solve problems without human judgment organized as shown below:[[21]](#endnote-21)

Three reasons why we cannot measure data perfectly

1. Heisenberg’s Uncertainty Principle and the fundamental impossibility of knowing everything about anything

2. Accuracy, precision, noise, uncertainty and error: why measurements are never fully reliable

3. The limitations of measuring the natural world using digital systems

Three limits to our ability to analyze data and draw insights from it

1. Gödel’s Incompleteness Theorem and the inconsistency of algorithms

2. The behavior of many real-world systems can’t be reduced analytically to simple rules

3. Some problems can’t be solved by computing machines

Five reasons why the human world cannot be perfectly described using data and logic

1. Our actions create disorder

2. The failure of Logical Atomism: why the human world can’t be perfectly described using data and logic

3. The importance and inaccessibility of “local knowledge”

4. “Wicked problems” cannot be described using data and logic

5. Behavioral economics and the caprice of human behavior

Finally, and this is the part that conventional computer hardware and software companies either don’t get or do get and lie about with utter abandon, computers cannot distinguish between false information and truthful information. Stephen E. Arnold and Norman L. Johnson are among my most respected authorities on this point.[[22]](#endnote-22)

It cost the CIA $3,000 to teach me the word “heuristics,” or in layman terminology, “rules of thumb.”[[23]](#endnote-23) I understand human intelligence from the perspective of a career spy and all-source analyst who has also managed commercial intelligence operations,[[24]](#endnote-24) and I most certainly understand the hype and the limits of artificial intelligence, particularly among those that expose “algorithmic regulation” that is in direct contradiction to the Nobel Prize winning work of Elinor Ostrom and her demonstration that only humans directly involved with the matter to be regulated can a) understand it and b) monitor it.[[25]](#endnote-25)

While holding most algorithmic endeavors in high disdain, I will stress that there are two algorithmic applications for which I have great regard. The first is that of Pierre Levy. At the semantic level, he seeks to create the Information Economy Meta Language (IEML). What Pierre has going for him is transparency and integrity – most others lack both those attributes.[[26]](#endnote-26) The second is that of Patrick Meier, a co-founder of CrisisMappers and a leader in the use of Unmanned Aerial Vehicles (UAV) to collect imagery that is then screened by trained human volunteers in a redundant fashion to optimize integrity. Recently he has begun using human clicks to develop computer algorithms that can recognize buildings.[[27]](#endnote-27)

My point, in keeping with the above cited overviews: computers are binary – they can be trained to do simple things over and over – once they venture past this boundary, they become “black boxes” capable of enormous crimes and great mistakes for lack of integrity and transparency.

I will also observe that in a networked environment, criminal irresponsibility about computer security such as we suffer today across all boundaries, is contagious.[[28]](#endnote-28)

**POINTS OF FAILURE AND OPPORTUNITY**

In the technical arena, apart from algorithmic integrity lapses, I see four points of failure:[[29]](#endnote-29)

***Source Diversity.*** In very general terms, based on my quarter century of focus on the world of Open Source Intelligence (OSINT),[[30]](#endnote-30) I estimate that no more than 10% of what we know has been digitized, with another 20% in print in some form from formal indexed publication to local gray literature. The other 70% is known but not published – and it is known in 33 core languages and another 150 important but less widespread languages, most of which are not understood by Western analysts and scientists.

***Source Integrity.*** The provenance of data matters – if one cannot ascertain the data and time of its collection, the place and condition of its collection, and the identity and capacity of the collector, creator, or custodian of the data, it is potentially fraudulent. Today as we consider the competing narratives on multiple global crises, it is clear that neither governments nor the media nor corporations can be trusted. They lie and they cheat and absent a pervasive local to global network committed to the truth, they easily get away with lies and fraud for remarkably long periods of time. When one adds algorithms to any source mix, the integrity challenge is multiplied – as with most computer code, algorithms tends to be undocumented, their assumptions unclear, their workings obscure.

***Big Data Processing.*** Mary Meeker, cited earlier, will suffice on the fact that less than 1% of all big data is exploited. The reality is that the big data that has been collected has generally taken on a life of its own, with old mental models and old collection plans running on automatic pilot, and no one being held accountable for collecting data that is not processed and therefore not producing value. It is also important to observe that all of the various databases are totally isolated from one another – the Balkanization of data stems from national, industrial, organizational, and individual biases, firewalls, legal systems, technical disparities, and more.

***Desktop Processing.*** There are eighteen functionalities identified in the late 1980’s as being essential for the augmentation of human intellect, I simply list them here in three groups with the observation that virtually no progress of note has been made in a quarter century.[[31]](#endnote-31)

*Data Ingestion & Machine Assisted Processing: Conversion of Paper Documents to Digital Form; Automated Foreign Language Translation; Processing of Images, Video, Audio, and Signal Data; Automated Extraction of Data Elements; Standardizing & Converting Data Formats; Clustering and Linking of Related Data; Statistical Analysis to Reveal Anomalies; Detection of Changing Trends; and Detection of Alert Situations in Real & Near-Real-Time.*

*Computer-Assisted Human Analysis: Interactive Search & Retrieval of Data; Graphic and Map-Based Visualization of Data; Modeling, Simulations, & Serious Games; Collaborative Work; Notetaking & Organizing Ideas; Structured Argument Analysis.*

*Finished Intelligence (Decision-Support) Production Tools: Desktop Publishing and Word Processing; Production of Graphics, Videos, and Briefings; Revision Tracking and Realtime Group Review.*

In the human arena, I see four complementary points of failure:

***Analyst Education.*** I will not belabor my perception of the failure of academia in the past fifty years. The sad reality is that we not teaching holistic analytics and we are not teaching how to research, document, and respect true cost economics. Our students, at least in the West, continue to learn by rote, to be tested for memorization, and to be largely worthless at original thinking and intuitive leaps. We desperately need a restoration of integrity to the academy such that we achieve the “higher” in the concept of higher education, and each student learns a mix of analytic tradecraft and reflexive practice.[[32]](#endnote-32)

***Analyst Outreach.*** Most academics, however distinguished, fail to demonstrate a mature appreciation for citation analytics and multi-lingual research. In the political science world, integrity went out the window in the 1970’s when “comparative” studies (that could be done with computers and without having to learn a foreign language) replaced field work and ethnographic immersion. Analysts today do not know how to – and do not have the professional skills to credibly perform – outreach across all boundaries.[[33]](#endnote-33)

***Access to Deciders.*** In both the public and the private sector it has been my experience that the analysts – the intelligence or decision-support professionals – are largely ignored. Everyone else can offer celebrity, money, or sex – the analyst has only facts to offer, and often very impoverished facts given the preceding technical and human shortfalls.[[34]](#endnote-34) Henry Kissinger says this: *Intelligence is not all that important in the exercise of power, and is often, in point of fact, useless.[[35]](#endnote-35)* In the commercial intelligence arena I find that analysts are relegated to creating data visualizations and newsletters.

***Decider’s Integrity.*** Integrity is not just about honor, it is about striving to achieve holistic understanding, respecting nature and true costs, and generally striving to achieve one’s duties while doing as little harm to others and as much good as possible. What I see in looking across all the leadership domains is pervasive failure – a lack of integrity so deep, so broad, as to be a potential death sentence for humanity.

On a positive note, I detect a convergence of minds and methods. Below I contrast the Global Brain attributes that are technically-oriented with the World Brain attributes that are human-oriented.

|  |  |
| --- | --- |
| **GLOBAL BRAIN (TECHNICAL)**  Logos (Lazlo)  Algorithms  Collective Defines  Communication Connects  Internet Central  Technology Connects  University Still Central  Rooted in the Past  Improves Existing Knowledge  Focus on Machine Codes  Repeats Errors of Secret World  Dull & Base (HG Wells) | **WORLD BRAIN (HUMAN)**  Holos (Lazlo)  Human Intuition  Individual Defines  Conversation Creates  Internet Incidental (1%)  Hearts & Minds Connect  Pervasive Learning  Creative of the Future  Creates New Knowledge  Focus on Educated Humans  Strives to Expand Open World  Poetic & Kinectic (HG Wells) |
| **Table 1: Convergence of Global and World Brain Concepts** | |

**WHAT IS THE PROBLEM OR GRAND CHALLENGE?**

I am constantly dismayed by the combination of ignorance and hypocrisy that I see demonstrated daily by national and so-called “world leaders.” Even The Most Holy Father (the Pope) has been a disappointment. Their platitudes about climate change, illegal immigration, and other “threats” of the moment are not helpful to humanity because they refusal to acknowledge the need for holistic analytics, true cost economics, and open source everything engineering. Climate change is a symptom of systemic corruption, not the threat. The meta-threat is the 1% and their concentration of power and wealth, their repression of liberation technologies, their enforcement of false narratives, false facts, false Gods.

The ten high-level threats to humanity have been specified and prioritized by the United Nations High-Level Panel on Threats, Challenges, and Change, reporting out in 2004.[[36]](#endnote-36) No official anywhere can recite these ten threats from memory, a major symptom of why we are in such dire straits.

|  |  |
| --- | --- |
| 01 Poverty  02 Infectious Disease  03 Environmental Degradation  04 Inter-State Conflict  05 Civil War | 06 Genocide  07 Other Atrocities  08 Proliferation  09 Terrorism  10 Transnational Crime |
| **Table 2: Ten High-Level Threats to Humanity** | |

Our “leaders” are failing humanity at three levels.

***Level I – Data Fragmentation:*** There is no world brain, nor is there even a global information environment. We suffer from a complete fragmentation of knowledge, much of that fragmentation by design inclusive of proprietary technology systems and massive monopolies on value-added information locked up behind firewalls. Beyond the commercial blockages, there are iron curtains among the eight “tribes” of information

|  |  |
| --- | --- |
| 01 Academia  02 Civil Society including labor unions & religions  03 Commerce especially small business  04 Government especially local | 05 Law enforcement including private security  06 Media including bloggers  07 Military including Gendarme  08 Non-Government / Non-Profits |
| **Table 3: Eight Information “Tribes” or Networks** | |

Within these eight broad aggregations of interest, there are wooden walls between industries and organizations with common information needs; and plastic sheets among individuals, often in the same organizations, with shared needs for information.

***Level II – Tool Fragmentation:*** As discussed earlier, we do not have – fully twenty-five years after defining eighteen specific needs – tools for sense-making. Our defense, diplomacy, and development (D3) efforts – by one country or many countries – cannot achieve their full potential, for lack of affordable, inter-operable, scalable and secure information-sharing and sense-making tools that allow holistic analytics, true cost economics, and Open Source Everything Engineering (OSEE) to be applied to the ten high level threats to humanity. *Fragmentation is a commercial strategy intended to force end-users to pay for all kinds of engineering, training, and maintenance support – while good for individual vendors in isolation, it is very bad for both the end-user and society at large.*

***Level II – Purpose Fragmentation:*** At a strategic scale, despite some excellent thinking in relation to Sustainable Development Goals (SDG) and related US initiatives, the reality is that donor promises are insufficient and often fail to materialize, and the current development paradigm – inherently bureaucratic with little accountability or coherence, cannot do the job – less than 20% of the funds and often as little as 1% -- actually arrive at the village level. The current techno-industrial-financial paradigm is not affordable, not inter-operable, and will not scale to address the needs of the five billion poorest in time to avoid a climate change collapse that makes today’s illegal immigration look like the thin stream that it is – we envision tens of millions of displaced persons moving north – many of them violent --in our future, absent a radical change in how we do the business of D3.

The antidote to our lack of balance – 1% own it all instead of 99% being co-owners and stewards of it all – is a Global Brain / World Brain that introduces transparency, truth, and trust to every human transaction.

**WHAT IS TO BE DONE?**

I propose an Open Source (Technologies) Agency (OSA) with two bureaus, one focused on information and the other on innovation. There are nine technology areas where human and artificial intelligence can converge to good effect on one condition: that they converge on the basis of transparency, truth, and trust. [[37]](#endnote-37) In the below table, just three examples are provided within each sub-category.

|  |  |  |
| --- | --- | --- |
| Open Data   * Open Geospatial * Open History * Open Language   Open Decision-Support   * Open Access * Open Document * Open Research   Open Governance   * Open Banking * Open Politics * Open Standards | Open Health   * Open Cures * Open Drugs * Open Procedures   Open Infrastructures   * Open API\* * Open BTS\*\* * Open Spectrum   Open Manufacturing   * Open Circuits * Open Hardware * Open Materials | Open Provisioning   * Open Energy * Open Food * Open Water   Open Software   * Free Software * Libre Software * Open Code   Open Space   * Open Cities * Open Design * Open Innovation |
| \* Application Oriented Interfaces  \*\* Base Transceiver Station (essentially, free cellular and Internet access) | | |
| **Table 4: Principal Elements of an Open Source (Technologies) Agency** | | |

Over sixty distinct technology domains have been organized into these nine categories, and within each, there are ample opportunities for both human and artificial intelligence advances to be made.

An Open Source (Technologies) Agency funded by defense,under diplomatic auspices, and focused on a mix of Whole of Government and multinational information-sharing and sense-making with a digital Marshall Plan emphasizing Open Source Provisioning (energy, water, shelter, food) as well as Open Infrastructures (free cellular and Internet), will quickly and radically enable leap-frog innovation that stabilizes and reconstructs at a local to global scale.

This idea is directly responsive to both normal Western defense guidance documents, and especially to the *US State-USAID Joint Strategic Plan 2014-2017*, particularly goals 1.2 (inclusive economic growth reducing extreme poverty and improving food security), 3.2 (clean energy helping transition to a cleaner global economy), and 5 (modernize the way we do diplomacy and development). With respect to digital deserts, this idea would for the first time aggregate research, development, and implementation of all the opens relevant to connecting, empowering, and stabilizing the five billion poor.[[38]](#endnote-38)

This idea is immediately relevant to and could be embraced independently by the various international groups who consider the prevailing Western capitalist system to be inimical to the future of society – for example, Brazil, Russia, India, Indonesia, China, and South Africa (BRIICS)[[39]](#endnote-39) or the Union of South American Nations (UNASUR) or the Association of Southeast Asian Nations (ASEAN), or all of them, apart or together. The OSA is nothing short of a total alternative to the prevailing paradigm.[[40]](#endnote-40)

Two implementation elements are proposed, with additional nodes to be funded elsewhere by others:

***D3 Information Bureau.*** This multinational information-sharing enterprise would be manifest in a United Nations Open-Source Decision-Support Information Network (UNODIN) inclusive of a Multinational Decision Support Center and Network that makes it possible to collect other people’s open source information and harmonize other people’s money at the village level (eliminating the 80% lost to intermediaries) while delivering open source innovation blueprints. It would be complemented by a School of Future-Oriented Hybrid Governance, a World Brain Institute, and a Global Game with embedded true cost economics information for testing each innovation idea.[[41]](#endnote-41) This element offers the potential of universal education online, free, in thirty-three core languages including eleven dialects of Arabic, while also making possible Liquid Democracy at every location and globally on every topic.

***D3 Innovation Bureau.*** This multinational open source everything engineering center (with a global network of applied scientists and engineers including many volunteers) would have a division for each of the nine open technologies categories, with initial emphasis to be placed on Open Provisioning – free energy, unlimited desalinated water using free energy, the rapid completion and global deployment of the Global Village Construction Set including pressed-brick shelters (the ultimate affordable housing), decentralized composting, and aquaponics – sustainable agriculture without pesticides. The existing “village in box” idea, for example, would enable the resettlement of one million Somalis now in UN resettlement camps across the region to be moved to northeastern Somalia (uncontested territory with unlimited dirt, sunlight, and seawater) at a cost of $500 per person, inclusive of transport, energy, water, shelter, cellular, and aquaponics.[[42]](#endnote-42)

The two bureaus in combination would fund the Global Brain / World Brain in a manner that respects the primacy of human intelligence while exploring with complete transparency the possibilities of artificial intelligence.

Emergentism (the human factor) and Evolutionary Cybernetics (the technical factor) can come together to create a hybrid means of making the most of our human intelligence while very carefully augmenting that human intelligence with artificial intelligence. We must integrate holistic analytics, true cost economics, and open source everything engineering. Furthermore, to be successful we must be able to think and act at all four levels of analysis: strategic, operational, tactical, and technical. The below four aspects of creating a smart nation or world brain are offered for reflection:[[43]](#endnote-43)

***Strategic Level:*** Morally and intellectually holistic approach to all ten high-level threats to humanity (especially poverty, disease, and environmental degradation), all core policies from agriculture to water, with complete respect for the major demographics here-to-fore neglected (Brazil, China, India, Indonesia, Iran, Russia, South Africa, Turkey).

***Operational Level:*** Deliberate human, legal, and technical approaches to enable information-sharing and sense-making across all boundaries among academic, civil society, commerce, government, law enforcement, media, military, and non-government/non-profit organizations and networks, with absolute respect for the rights of individuals to anonymity, identity, privacy, and security.[[44]](#endnote-44)

***Tactical Level:*** Local to global commitment to documenting and disseminating true cost economic information into every product, service, policy, and behavior.

***Technical Level:*** Local to global commitment to move away from proprietary and predatory engineering practices (Genetically Modified Organisms being among the worst examples of this threat to humanity), pursuing an Open Source Everything Engineering (OSEE) approach to each of the nine open categories, so as to provide the five billion poorest affordable, inter-operable, scalable options toward prosperity.

**THE DESIRED END STATE**

Alvin Toffler was among the first to point out that information is a substitute for wealth, violence, time, and space.[[45]](#endnote-45) We are at the beginning of the end of an era where an elite could hoard both knowledge and physical wealth, using legal and political means to repress ninety-nine percent of the public into subservience and relative poverty, while also choosing to engage in elective wars and other mass crimes against humanity.[[46]](#endnote-46) *Achieving a non-violent revolution and ending political and economic tyranny is among the most important advances to be achieved with Applied Collective Intelligence 2.0.*

Corruption has enabled waste on the order of fifty percent across all domains from agriculture to energy to health to the military and beyond.[[47]](#endnote-47) Once full transparency is achieved and comprehensive true cost economic information is available about every component in every product, about the true cost in toxins and other forms of waste in every policy and service, mass market behavior will take on a life of its own and both advertising as well as legalized crime will begin to fail. *Eliminating waste through grass-roots access to true cost economic information is a second important advance to be achieved with Applied Collective Intelligence 2.0.*

*Empowering humanity to create heaven on Earth is the third and final advance that will be made possible by Applied Collective Intelligence 2.0.* The human brain is the one unlimited resource we have on Earth. In the context of Open Source Everything Engineering (OSEE) in which the eradication of waste is made possible, artificial intelligence appears to have an important role to play, but it is a secondary role, not the center of gravity.

The truth at any cost lowers all other costs. Humans, not machines, discern truths. Humans achieve their fullest potential when we enable the integration of all data, all tools, and all minds in one seamless Global Brain / World Brain. An Open Source (Technologies) Agency will advance this possibility. Finding leaders who can lead in this direction is proving difficult.

**Endnotes**

1. The original term is World Brain. Today the two terms appear to reflect a technical emphasis on one side (Global Brain), and a human emphasis on the other (World Brain). Both terms are used in part to honor original usage in cited works, and in part to represent the dualistic nature of the concept. [↑](#endnote-ref-1)
2. I am deeply honored to have been invited to present at the 2015 conference on “The Global Brain and the future information society,” a track within the International Society for Information Studies (ISIS) summit in Vienna, on the basis of article, “Applied Collective Intelligence: Human-Centric Holistic Analytics, True Cost Economics, and Open Source Everything,” *Spanda Journal* (Vol. 2, 2014, pp 127-137). The most recent additional publications related to my focus on creating the world brain include a White Paper for the United Nations, *Beyond Data Monitoring – Achieving the Sustainability Development Goals Through Intelligence (Decision-Support) Integrating Holistic Analytics, True Cost Economics, and Open Source Everything* (Earth Intelligence Network, October 2014); “The Evolving Craft of Intelligence,” in Robert Dover, Michael Goodman, and Claudia Hillebrand (eds.). *Routledge* *Companion to Intelligence Studies* (Oxford, UK: Routledge, 31 July 2013); and “The Ultimate Hack: Re-inventing Intelligence to Re-engineer Earth,” in U. K. Wiil (ed.), *Counterterrorism and Open Source Intelligence* (Springer-Verlag, 2011). [↑](#endnote-ref-2)
3. Matt Taibbi, *Griftopia: A Story of Bankers, Politicians, and the Most Audacious Power Grab in American History* (Spiegel & Grau, 2011). Three other particularly pertinent books among thousands of others are Charles Perrow, *The Next Catastrophe: Reducing Our Vulnerabilities to Natural, Industrial, and Terrorist Disasters* (Princeton University Press, 2011); Peter Linebaugh, *Stop, Thief!: The Commons, Enclosures, and Resistance* (PM Press, 2014); and James Risen, *Pay Any Price: Greed, Power, and Endless War* (Mariner Books, 2015). There are many books and articles on extinction possibilities, see for instance Adam Vaughan, “Humans creating sixth great extinction of animal species, say scientists,” *The Guardian*, 19 June 2015. [↑](#endnote-ref-3)
4. Our iterative conversation is documented at “Definition: Collective Intelligence by Robert Steele — A Conversation with Tom Atlee,” *Phi Beta Iota Public Intelligence Blog*, 8 May 2015. [↑](#endnote-ref-4)
5. The original depiction, “Graphic: The Four Quadrants of Knowledge,” *Phi Beta Iota Public Intelligence Blog*, 15 August 2008, was inspired by Harold Wilenski, *Organizational Intelligence: Knowledge and Policy in Government and Industry* (Basic Books, 1967). Nova Spivak, who is more technically-oriented, distinguishes between the web, the social web, the metaweb, and the semantic web, see “New Version of My “Metaweb” Graph – The Future of the Net,” *NovaSpivak.com*, 21 April 2004. [↑](#endnote-ref-5)
6. Ervin Lazlo, “The One Mind in the Cosmos and Its Manifestations in Our Consciousness,” *Spanda Journal* (Vol. 2, 2014, pp 1-4). See also his earlier “WORLDSHIFT! Creating a Quantum Leap in the Global Brain: To Shift or Not to Shift – Why That Is NOT the Question,” *World Future Review* (April-May 2009), pp. 14-19. As the US Government contemplates full disclosure of past and present contacts with extraterrestrial intelligence, it is appropriate to contemplate the five book series, *The Law of One* (L/L Research, 1984-1998). [↑](#endnote-ref-6)
7. Mary Meeker, “Internet Trends 2014 – Code Conference,” *kpcb.com/InternetTrends*, 28 May 2014; NSA is known to only exploit roughly 1% of its mass surveillance collection, while Google, by its own admission, indexes less than 4% -- some would say less than 2%-- of the Internet that is divided between the Shallow Web (what Google indexes), the Deep Web (openly available documents and data not indexed), and the Dark Web (the anonymous web, much of it devoted to illegal exchanges). *Cf.* James Bruce, “18 Fun Interesting Facts You Never Knew About The Internet,” *MakeUseOf.com*, 31 December 2010. Perhaps the best over-all assessment is provided by Micah Sifry, *The Big Disconnect: Why the Internet Hasn’t Transformed Politics (Yet)* (O/R Books, 2014). [↑](#endnote-ref-7)
8. *Cf.* Peter Drucker, “The Next Information Revolution,” *Forbes ASAP*, 24 August 1998, and Rick Wartzman, “Peter Drucker and the Big Data Revolution,” *Forbes*, 23 April 2013. [↑](#endnote-ref-8)
9. In 1990 I outlined six specific challenges for the secret intelligence world that today costs the U.S. taxpayer as much as $100 billion a year, and today, $1.2 trillion dollars later, we still have not addressed any of the six. *Cf.* “Intelligence the 1990’s: Recasting National Security in a Changing World,” *American Intelligence Journal* (Summer/Fall 1990), pp. 29-36, and “Graphic: US Intelligence Six Fundamental Failures Over 25 Years – $1.25 Trillion,” *Phi Beta Iota Public Intelligence Blog*, 22 January 2013. See also (General) Al Gray (ghost-written by Robert Steele), “Global Intelligence Challenges in the 1990’s,” *American Intelligence Journal* (Winter 1989-1990), pp. 37-41. [↑](#endnote-ref-9)
10. Charles Lewis, *935 Lies: The Future of Truth and the Decline of America’s Moral Integrity* (PublicAffairs, 2014); Larry Beinhart, *Fog Facts: Searching for Truth in the Land of Spin* (Nation Books, 2006); Roger Shattuck, *Forbidden Knowledge, From Prometheus to Pornography* (Mariner Books, 1997); Robert Parry, *Lost History: Contras, Cocaine, the Press & ‘Project Truth’* (Media Consortium, 1999); Edward Herman and Noam Chomsky, *Manufacturing Consent: The Political Economy of the Mass Media* (Pantheon, 2002); Jacques Ellul, *Propaganda: The Formation of Men’s Attitudes* (Vintage, 1973); Jim Marrs, *Rule by Secrecy: The Hidden History That Connects the Trilateral Commission, the Freemasons, and the Great Pyramids* (William Morrow Paperbacks, 2001); Bill McKibben, *The Age of Missing Information* (Random House, 2006); Sheldon Rampton and John Stauber, *Weapons of Mass Deception: The Uses of Propaganda in Bush's War on Iraq* (Tarcher, 2003); and *Weapons of Mass Instruction: A Schoolteacher's Journey Through the Dark World of Compulsory Schooling* (New Society Publishers, 2010). Completely apart from the failure of artificial intelligence, we have a loss of integrity in human intelligence. Ethics and leadership are inherently human factors that will require nurturing if we are to achieve our full potential. [↑](#endnote-ref-10)
11. Howard Rheingold, *Tools for Thought: The History and Future of Mind-Expanding Technology* (MIT Press, 2000), first published in the mid-1980’s. Diane Webb with Dennis McCormick and Gordon Oehler, *CATALYST: Computer-Aided Tools for the Analysis of Science & Technology* (Central Intelligence Agency, October 1989). [↑](#endnote-ref-11)
12. When NSA in 1994 was given the mission of making US commercial communications and computing secure, it chose instead to focus on handicapping US-produced hardware and software for its own convenience. Shockingly, the CEOs of multiple firms including explicitly HP, IBM, Microsoft, and Google chose to collaborate, allowing for the installation of backdoors so infantile they may have spawned the Chinese and Russian hacking industries. There are numerous articles on this point, here is just one: Shane Harris, “Google’s secret NSA alliance: The terrifying deals between Silicon Valley and the security state,” *Salon*, 16 November 2014. [↑](#endnote-ref-12)
13. At Hackers on Planet Earth (HOPE) in New York City in July 2014, the author heard Binney say, as recollected, “the intelligence community is not about providing intelligence, it is about keeping the problem alive so as to keep the money moving.” An overview of Binney’s views on this point is provided at “Binney: ‘The NSA’s main motives: power and money’, *Deutche Welte*, 19 August 2015. [↑](#endnote-ref-13)
14. The Innovation Hub of the NATO Transformation Command has done some exciting work in this area, and inspired the following, all at *Phi Beta Iota Public Intelligence Blog*: “Graphic: First Cut on Human Factors and Technology,” 30 May 2013; “2012 Robert Steele: The Human Factor & The Human Environment: Concepts & Doctrine? Implications for Human & Open Source Intelligence 2.0,” 12 December 2012; and “2012 Robert Steele: The Human Factor & The Human Environment: Contextual Trust for Sources & Methods,” 20 December 2015. [↑](#endnote-ref-14)
15. *Cf.* “1976-2015: Analytic, Methodological, & Technical Models 2.2,” 30 March 2013 and “1957+ Story Board: Peace & Prosperity Through Ethical Evidence-Based Decision-Support — Analytic Sources, Models, Tools, & Tradecraft,” 21 June 2011, both at *Phi Beta Iota Public Intelligence Blog*. [↑](#endnote-ref-15)
16. *Supra* Note 2. See also *Intelligence for Earth: Clarity, Diversity, Integrity, & Sustainability* (Earth Intelligence Network, 2010); *The Open Source Everything Manifesto: Transparency, Truth, & Trust* (North Atlantic Books, 2012); and “Foreword,” in Stephen E. Arnold, *CyberOSINT: Next Generation Information Access* (Arnold Information Technology, 2015). [↑](#endnote-ref-16)
17. My Memorandum proposing an Open Source (Technologies) Agency was delivered to offices of the Vice President of the United States, the Secretaries of State and Defense, the Director of the Office of Management and Budget, and the Administrator of the US Agency for International Development, on 12 October 2015. It has also been shared with *WIRED Magazine* and can be viewed online at *Phi Beta Iota Public Intelligence Blog*. [↑](#endnote-ref-17)
18. Francis Heylighen, “Conceptions of a Global Brain: An Historical Review,” *Evolution: Cosmic, Biological, and Social,* 2011, pp. 274-289. His most recent overview is “Challenge Propagation: Towards a Theory of Distributed Intelligence and the Global Brain,” *Spanda Journal* (Vol. 2, 2014, pp 51-63), and includes a superb portal to many of his prior publications that are central to my own thinking on how to blend artificial and human intelligence. [↑](#endnote-ref-18)
19. James Bamford, *Body of Secrets: Anatomy of the Ultra-Secret National Security Agency* (Anchor Books, 2002). [↑](#endnote-ref-19)
20. Stephen Few, “BI Has Hit the Wall,” *PerceptualKnowledge.com*, 9 September 2010. [↑](#endnote-ref-20)
21. Rick Robinson, “11 reasons computers can’t understand or solve our problems without human judgment,” *The Urban Technologist*, 7 September 2014. [↑](#endnote-ref-21)
22. Stephen E. Arnold’s body of work is visible at *www.ArnoldIT.com*. Two of his recent posts are “Algorithms Still Need Oversight…” (8 September 2015) and “Computers Learn Discrimination from Their Programmers” (14 September 2015). Norman L. Johnson, “The Applied Science of Collective Intelligence: Solving the Grand Challenge Facing Humanity,” *Spanda Journal* (Vol. 2, 2014, pp 97-108). Dr. Johnson documents two major findings. First, that most program managers are not actually engaged in solving the greatest challenges, but rather the smaller challenges they think their bureaucratic systems (a form of computer, I would add) can handle. Second, he finds that collectives of human minds are extraordinarily better suited than computers at coping with false information. [↑](#endnote-ref-22)
23. It was my privilege to be selected to help the CIA enter the 21st Century as one of the first digital innovators, from 1986-1987, on the Artificial Intelligence Staff of the Office of Information Technology (AIS/OIT). I failed, in part because Bill Casey, the Director of Central Intelligence, died before he could mandate the embrace of new ideas and methods that included, in addition to expert systems and natural language understanding and maps with memories, the imposition of access tracking by document and by individual. Our one formal published product is online, *Artificial Intelligence Baseline Bibliography: Expert & Decision Support Systems, Heuristics, Encoding Specificity & Cognitive Mapping, Decision Making in Foreign Policy* (Office of Information Technology, Directorate of Administration, Central Intelligence Agency, 5 August 1986). My greatest lesson from that experience was that data entry is the choke point for everything – until all minds can share all data into a World Brain with speech recognition, text recognition, and image recognition being the greatest values to be had from artificial intelligence, no other artificial intelligence applications really add that much value across the whole. [↑](#endnote-ref-23)
24. *Cf.* *Human Intelligence: All Humans, All Minds, All the Time* (Strategic Studies Institute, June 2010), and my various books from the first, *ON INTELLIGENCE: Spies and Secrecy in an Open World* (Armed Forces Communications and Electronics Association, 2000). [↑](#endnote-ref-24)
25. One of many critiques of algorithmic regulation is that of Lambert Strether, “Algorithmic Regulation, ‘Code is Law,” and the Case of Feguson,” *NakedCapitalism.com*, 20 August 2014. For an example of algorithmic regulation as a persistent pervasive crime, see Michael Lewis, *Flash Boys: A Wall Street Revolt* (W. W. Norton & Company, 2015). A vastly deeper – dare I say more human – understanding is found in Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge University Press, 1990). [↑](#endnote-ref-25)
26. Pierre Levy, “The Philosophical Concept of Algorithmic Intelligence,” *Spanda Journal* (Vol. 2, 2014, pp 17-25). I consider Professor Dr. Levy’s “root” form of algorithms to be an honest trustworthy implementation, at a level of discovery and exploitation that is transparent and useful. Once one moves beyond semantics, the opportunities for fraud and obscurity multiply exponentially. [↑](#endnote-ref-26)
27. Patrick Meier, “Using Computer Vision to Analyze Big (Aerial) Data from UAVs During Disasters*,” iRevolution.net*, 12 October 2015. [↑](#endnote-ref-27)
28. It was my honor to be one of the co-founders, with Winn Schwartau, of the first Information Warfare Conference in the early 1990’s. Winn has done more than any other to sound the alarm on the insecurity of computing systems, each built by the lowest bidder without regard to risk of breach from inside or outside. Today most Supervisory Control and Data Acquisition (SCADA) systems, most aircraft and other transportation systems, and many of the US military weapons systems are connected to the Internet in a manner that can only be construed as criminally irresponsible. [↑](#endnote-ref-28)
29. This is a much abbreviated version of my longer post with graphics and links, “2014 Robert Steele: Appraisal of Analytic Foundations,” *Phi Beta Iota Public Intelligence Blog*, 1 May 2014. [↑](#endnote-ref-29)
30. *Cf.* “Open Source Intelligence,” in Loch Johnson (ed.), *Strategic Intelligence: The Intelligence Cycle* (Praeger, 2007), Chapter 6, pp. 96-122. For a selection of the best offerings from across 750 mentor-practitioners in this discipline that has been severely corrupted by the secret world, see “OSINT Literature Review, Name Association, Lessons Learned,” *Phi Beta Iota Public Intelligence Blog*, 22 December 2015. [↑](#endnote-ref-30)
31. *Supra* Note 11 (Webb et al). In 2012 Ms. Webb published *CATALYST Revisited: Challenges to Creating Advanced Analytic Environments* (BizInt Solutions, July 2012), concluding that over time we have lost some of the technologies useful to analytic tool development (UNIX, collaborative tools such as Lotus Notes, and new implementations of rapid prototyping by end-users), while there has also been “surprisingly little progress” in key elements of the original CATALYST pyramid. Several graphics showing the eighteen functionalities are available online, such as “Graphic: Analytic Tool-Kit in the Cloud,” *Phi Beta Iota Public Intelligence Blog*, 16 August 2008. [↑](#endnote-ref-31)
32. *Cf.* Harlan Cleveland, *The Knowledge Executive: Leadership in an Information Society* (Plume, 1989); Jack Davis, “1997 Davis A Compendium of Analytic Tradecraft Notes,” *Phi Beta Iota Public Intelligence Blog*, 11 February 1997; and Kent Myers, *Reflexive Practice: Professional Thinking for a Turbulent World* (Palgrave Macmillan, 2010) [↑](#endnote-ref-32)
33. In my experience academics cite those they know and hear about via informal channels. They do not do methodical surveys of the literature and most do not use the *Science Citation Index* and the *Social Science Citation Index* to identify the latest relevant works or possibly related works from adjacent disciplines. Most academics are mono-lingual – while Europeans and some Asians do better in this regard, as a general rule academics read and write in one language. I have posted some remarks and links including graphics at “Reference: Citation Analytics 201,” *Phi Beta Iota Public Intelligence Blog*, 22 August 2010. Further to those posted remarks, it merits observation that we still do not have the ability to do Open Hypertextdocument System (OHS) as devised by Doug Engelbart, such that we can automatically connect at the paragraph level among digital documents in any language or medium. *Cf.* Doug Engelbart, “Toward High-Performance Organizations: A Strategic Role for Groupware,” *Long Range Planning* (Vol 27 No 1, 1994), pp 12-24. [↑](#endnote-ref-33)
34. A graphic is shown at “Graphic: Competing Influences on the Policymaker (Treverton),” *Phi Beta Iota Public Intelligence Blog* (16 March 2012), sourced to Robert David Steele, *ON INTELLIGENCE: Spies and Secrecy in an Open World* (AFCEA 2000, OSS 2002), “Figure 17: Competing Influences on the Policymaker,” p. 53.  Recreated by the author from memory of the same information presented by Dr. Gregory Treverton (originator) at the Harvard JFK “Intelligence Policy Seminar” *circa* 1986. [↑](#endnote-ref-34)
35. As documented in Michael and Jean Thomsett, *War and Conflict Quotations* (McFarland, 2008 ) credited to *Esquire*, June 1975, no further information. [↑](#endnote-ref-35)
36. United Nations High-Level Panel on Threats, Challenges, and Change, *A More Secure World: Our Shared Responsibility* (United Nations, 2004). [↑](#endnote-ref-36)
37. There are over sixty open source technology application areas. In addition to my own book cataloguing many of them, *The Open Source Everything Manifesto: Transparency, Truth, & Trust* (North Atlantic Books, 2012), I worked with Dr. Marcin Jakubowski, founder of Open Source Ecology and the Global Village Construction Set; and with Michel Bauwens, founder of the Peer to Peer Foundation, to arrive at a consensus on the nine open source categories within which sixty open source technologies are organized: Open Data, Open Governance, Open Health, Open Infrastructures, Open Decision-Support, Open Manufacturing, Open Provisioning, Open Software, and Open Space. Learn more at http://p2pfoundation.net/Category:Open\_Source\_Everything. [↑](#endnote-ref-37)
38. *U.S. Department of State – U.S. Agency for International Development FY 2014-2017 Joint Strategic Plan* (Washington, D.C., 17 March 2014). [↑](#endnote-ref-38)
39. I take the liberty of including Indonesia, which by virtue of its demographic mass is long over-due for inclusion in the existing alliance. [↑](#endnote-ref-39)
40. *Cf.* Charles Sokol Bednar, *Transforming the Dream: Ecologism and the Shaping of an Alternative American Vision* (State University of New York Press, 2003). This book earned my highest rating, 6 Stars (my top 10% across thousands of books reviewed). My review at Amazon summarizes the book – among the many brilliant observations: the educational system continues to teach the prevailing techno-industrial-financial paradigm; absent respect for the limits of natural capital, we are headed for extinction as a species; localization and ethics are part of the self-healing capacity inherent in humanity, globalization has been neutralizing that public good. [↑](#endnote-ref-40)
41. The UN White Paper is entitled *Beyond Data Monitoring – Achieving the Sustainability Development Goals Through Intelligence (Decision-Support) Integrating Holistic Analytics, True Cost Economics, and Open Source Everything* (Earth Intelligence Network, October 2014) . [↑](#endnote-ref-41)
42. An informal cost study has been posted at “2013 Robert Steele: $500 Million to Resettle 1 Million on a Moonscape with Sun, Dirt, & Salt Water….Exploring the Practical Edge of Intelligence with Integrity — Call for Substantive Ideas 2.0 Habitat Cost Sheet Posted,” *Phi Beta Iota Public Intelligence Blog*, 25 June 2013. The point is that for the first time, someone actually thought through with modest precision what it would take to convert dirt, sunlight, and seawater into a habitat using an integrated approach to energy, water, shelter, food, and connectivity. [↑](#endnote-ref-42)
43. Previously discussed, inclusive of two graphics, in Hal Berghel, “Robert David Steele on OSINT,” *IEEE Computer* (Vol 47, No 7, 6 July 2014), pp. 76-81. [↑](#endnote-ref-43)
44. These terms have been given integral meaning by Kaliya Hamlin, also known as “Identity Woman.” [↑](#endnote-ref-44)
45. Alvin Toffler, *PowerShift: Knowledge, Wealth, and Violence at the Edge of the 21st Century* (Bantam, 1991). He expanded on the theme in *Revolutionary Wealth: How it will be created and how it will change our lives* (Crown Business, 2007). [↑](#endnote-ref-45)
46. *Supra* Note 3, Linebaugh, *Stop, Thief!* and Risen, *Pay Any Price*. The book has yet to be written on the degree to which the City of London and Wall Street have destroyed entire national economies with malice aforethought. [↑](#endnote-ref-46)
47. **Agriculture:** Nadia Arumugam, “UN Says Europe Wastes 50% of Fruit and Vegetables – and America Isn’t Must Better,” *Forbes* (4 October 2012), Dana Gunders, “Wasted: How America is Losing Up to 40 Percent of Its Food from Farm to Fork to Landfill,” *National Resources Defense Council* (August 2012); **Energy:** Barry Fischer, “US Wastes 61-86% Of Its Energy,” *CleanTechnica* (26 August 2013); **Health:** Michael Galper et al, “The price of excess: Identifying waste in healthcare spending,” *PriceWaterhouseCoopers* (April 2008); **Military:** Scot Paltrow, “Behind the Pentagon’s doctored ledgers, a running tally of epic waste,” *Reuters* (18 November 2013), Stockholm International Peace Research Institute, “The US spends more on defense than the next eight countries combined,” *Peter G. Peterson Foundation* (13 April 2014), Perry Chiaramonte, “War on waste: Pentagon auditor spotlights US billions blown in Afghanistan,” *Fox News* (28 July 2014); **Water:** Robert David Steele, “Water: Soul of the Earth, Mirror of Our Collective Souls,” *Huffington Post* (7 January 2011). [↑](#endnote-ref-47)