Rationale for the LIBRARIUM, a functional social-purposive compendium of practical S.T.E.A.M. knowledge and technologies for future restorative, regenerative applications

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Abstract

The LIBRARIUM is an ongoing project intended to produce and to maintain, in perpetuity, a resource of foundational and applied knowledge and toolsets consisting of methodologies and protocols, for a variety of technologies that are deemed to be critical and valuable to a society that may find itself in a situation of need due to a variety of disruptive physical and social events. In essence, the LIBRARIUM is the knowledge-technology equivalent of the Svalbard Seed Vault for botany and agriculture. Consisting of archived resources in science, technology, engineering, arts and mathematics (S.T.E.A.M.), it is organized around practical applications and is intended to provide readily-accessible "stepping-off points and staging-levels for members of a future society to literally rebuild, resume and continue on, in manners that will be beneficial to a future renaissance period, even in the event of severe breakdowns in the social and economic order due to whatever reasons, of which aggravated and extreme climate change, the consequences of wars and conflicts, and other natural and/or human-induced events may be the most likely and the most devastating. This paper provides the basic overview and introduction to how the LIBRARIUM is being designed and implemented.

Introduction

Introduction to what the LIBRARIUM is all about

The LIBRARIUM is unique in its purposes and functions which are ambitious in many respects including its trans-generational, trans-national, trans-cultural, and trans-planetary intended functions. It is not a typical "library" collection of documents, but a highly organized, focused, structured, and analytical set of Tools – Resources for accessing some very optimal, balanced, and advanced Tools for both Research and Applications, including actual production of goods and services in some instances.

The LIBRARIUM is, in essence, an annotated, peer-reviewed S.T.E.A.M. ToolSet for those who today, or tomorrow, or in some very distant and uncertain Tomorrow, want to "pick up and go further" wither certain pathways of investigation, research, and production, in not only scientific areas but in critical, practical, civilization-sustaining areas of technology, engineering and also the arts.

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The LIBRARIUM traces its roots to the "Great Books" series (published in the mid-20th century by Encyclopedia Britannica under the direction of Dr. Mortimer Adler), and also to predecessors and parallels of that series, some of which can be found (or remembered) in the annals of history going back to even the great libraries of the ancient world, such as Alexandria and Baghdad. The roots also connect with comparatively modern projects in which some of our founders and mentors have participated themselves, including such early-internet developments as Netscape, Internet Explorer, Google, Web MD, and perhaps lesser-known but influential projects such as Planeta Znanii, INCYCLOPEDIA, NomadEyes, Pallas, IQ-Net. (Information about these and other projects is going into the resources of the LIBRARIUM and will be available soon.)

Again, for emphasis: The LIBRARIUM is not simply a repository or archive of documents (and in fact, much use is made of what is currently on the internet – and validated – such as Gutenberg, ArXiv, ViXra, and many academic and institutional archives). Nor is it yet-another online pseudo-encyclopedia. There is now a proliferation of such things and unfortunately almost all are subject subject to the influences and misinformation of group-edits, public-editing, "wiki" management, and other pathways to error, disinformation, and "fake news." Yes, there are dispositions and predispositions in the design and construction of this LIBRARIUM – this is natural, because humans are involved! But the nature of our Design (Editing) Team is such that we have expressly sought out Openness, Diversity, Objectivity and a Commitment to Truth.

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The Librarium is a consciously (and conscientiously) designed Resource of Knowledge Tools and Toolsets for people in many fields and at many different levels of comprehension, education, intelligence and ability, to Discover and Understand certain pathways of knowledge and reasoning have been developed, how certain hypotheses, experiments, investigations and theories were conceived and developed, and how certain scientific, technological, engineering, artistic, and mathematical models, techniques, designs, devices, and systems have been studied and ultimately built and produced.

The Librarium is also for many interesting studies and investigations that have "only got so far" for many reasons, and where now, or in some future time which may even be years or decades in the future, someone will come and wonder, "Where should I start? What did others do to get this far, or where they seem to have reached? How can I or we pick up on their work and do something now, more, better?"

One way to understand the purpose of the Librarium is by way of metaphor. Imagine that "everything" froze in place as far as cultural activity and not only with regard to scientific, technical, engineering, and mathematics development, but also with respect to other artistic and cultural development, particularly where methods, tools, techniques, disciplines, skills and encapsulatable, formulatable knowledge are involved.

2

Now imagine that people want to "pick up where everything left off" with regard to "something," and to resume either the basic theoretical research or the applied research and development, or the commercial production – of that "something." That may be a very life-critical, society-critical matter such as generating energy, building a bridge, constructing and flying an airplane, setting up a computing and information network, or proceeding to work upon or to produce certain medicines.

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The Librarium aims to provide a Good Practical Usable Resource for such people in a very distant and totally "unknown" future, as well as for people right here and now, today, in our world exactly as it is now. It is not a "Google" which is structured and ranked by a corporation to serve its financial and political ambitions. It is not an encyclopedia and certainly not a "Wikipedia." It is definitely not a "social network" and nothing in it is driven or controlled by factors of "blogs, clicks, hits, or influencers." It is not decided upon or controlled by a software program that has been ascribed attributes of "artificial intelligence." It is a private Library compiled by a comparatively small team of scientists, engineers, humanists, artists, and including librarians.

Models from the Distant and Recent Past, Worldwide
The Librarium is modeled after several famous libraries of the past and also from recent history. These include: the Library of Alexandria, the monastic libraries of medieval Europe, the House of Wisdom in Baghdad, and the Seed Bank set up by Norway. The Librarium is a repository for a world that may suffer cataclysms and apocalyptic events which may be severely traumatic to world civilization. It is distributed, secure, duplicated, with careful and powerful redundancy where applicable. There is also a "Rare Books" collection which consists of real, printed books (not necessarily "rare" by today's bibliotechnical standards, but "rare" in the sense of being special and relatively small in number, compared to materials in digital formats.

The LIBRARIUM as an Intelligent Technical Resource Toolset
Perhaps the most unique attribute of the Librarium is its functional purpose and its "intelligent technical resource" orientation. which has been briefly introduced earlier, above. The Librarium is intended to provide researchers, in the present time and at any distant time, with a set of cohesive, well-organized, well-ordered "toolsets" by which many important, practical, and valuable things may be done, by individuals and teams that may have, upon first contact with the Librarium, initially very scant knowledge of different disciplines, methods and techniques. Yes, we incorporate several AI (artificial intelligence) technologies, but fundamentally there are a very diverse and very unified team of intelligent humans involved in the center of everything. The AI (or better, "SI" – synthetic intelligence) is what assists in every facet of analysis and synthesis with respect to document contents, references, implications and uses, and to user interests, needs, orientations, and directions – thus the computer-based machine learning and intelligence serves to amplify what the human mind does and can do and should do with respect to any intellectual resources like what is in the Librarium – stimulation of perception, discrimination and distinction, imagination, innovation, and logical reasoning.

Thus there is a very strong constructionist and utilitarian aspect to the Librarium with regard to what is in it and how it is organized. The Librarium is a Toolset for People of Today and Distant (Uncertain) Tomorrows to Conceive, Design, Construct, and Use new Science, new Technology, new Engineering, new Art, new Mathematics for a Better Life in a Better World.

The Arts – the Arts and Humanities – must be emphasized here, too. The Librarium is not only for builders, engineers, and operators of machines and technologies. It is also a repository and a set of intellectual tools for all of the arts and humanities, and thus its contents, and its organizational structure, accommodates many disciplines and subjects that are not explicitly considered to be within the S.T.E.A.M. domains, including art, drama, history, literature, music, and other humanities.

Primary Divisions of the LIBRARIUM

- Prime Archive and Second Archive – these involve the Librarium's own archiving system, in order to authentically preserve certain important resources, both digital and physical, in a manner tha is both independent and also consistent with the best archives already established in both digital and physical libraries around the world.
- Great Books of the World – comparable in concept to the Encyclopedia Britannica "Great Books" but this is of and about the Whole World, not just the Western World. These are not new editions but selections of the best and most authentic and accessible versions found around the world. (See further remarks below.)
- SYNERTOPICON – the dynamic compendium of topics, themes, and resource-sets. For some additional background, see MJD writings and techno-work (Incyclopedia, HORUS, Syntopicon) – work-in-progress dating back to 2002. We call this the "Syner-topicon" in order to emphasize the fundamental purpose and function of synergy-building, synergetics, that comes from what is put into not only texts and visualization tools but the actual structuring of the knowledge bases that lead and guide users to different articles, papers, books, and other creations.
- STEAM Works – serious and thoroughly peer-reviewed, authenticated, validated "How To Do X" protocols and instructions, using what has been written by others already – these derive from and through the structure of the SYNERTOPICON

Presently (January 2019) the resources of the Librarium are being made available on a special-access to students, mentors, and others in the MIRNOVA community including our Sponsors and Consulting Clients. Please note that this is an **active** research project, actually several combined into one, and thus things are subject to change and having "some dust and dirt in the workspace")))).

Librarium Resources and Structures
Presently (January 2018) there is an architecture established for knowledge and problem representation and this is based upon the Incyclopedia Project (with its Syntopicon knowledge base) and the HORUS reasoning system, all dating based to the early 2000's and the work by a coalition of individuals and companies (including Planeta Znanii, Synergetics, Avanta Press, Tetradynamics and individual contributors). There are approximately 42,000 books and papers assembled in the first-order repositories and ready for inclusion. There are approximately 4,000 physical volumes (books and collections of papers).

Storage and Preservation
There are two formats by which the works of the Library are maintained and preserved for posterity and for open, unrestricted, free access to the information.

[1] Digital Storage
Multiple and redundant forms of representation are employed in order to maintain sustainable preservation well into the future, including in times when present-day digital encoding schemes and methods

of storage may be rare, archaic, and even forgotten or inaccessible. This applies to all contents of the Librarium.

One version of the Prime Archive is maintained in a special and singularly secure form of encryption in order to mitigate the possibilities of tampering by cyber-intruders of the future. This encryption system is different from others used widely in commerce, finance and government. It involves a very complex system of interdependencies and dynamic distribution of information and, on the basis of its mathematics and its physical design, it is deemed to be impregnable to intrusion, corruption or any other form of information subversion, subject to the integrity of the Librarium and its caretakers. The technical basis for this "super protection" is itself the result of over three decades of work by several colleagues and collaborators with backgrounds in computer science, mathematics, and specifically cryptography.

[2] Physical Storage
Not all documents will be stored as physical copies, but a large number, defined as the Prime Archive, will be maintained in physical copies stored under conditions for maintaining safekeeping against all forms of decay and loss.