Ars Hermeneutica, Limited
Form 1023, Part IV:
Narrative Description of Company Activities

1. Introduction

Ars Hermeneutica, Limited is a Maryland nonprofit corporation, created to engage in scientific research and public education as a tax-exempt, scientific-research organization within the prescribed limits of §501(c)(3) of the Internal Revenue Code.

Condensing and paraphrasing the corporate purposes as stated in our Articles of Incorporation, the mission of Ars Hermeneutica is three-fold:

1. To conduct interdisciplinary scientific research and engineering design across multiple technical disciplines;

2. To educate the public, both children and adults, about the goals, methods, and results of science, mathematics, and engineering; and

3. To uphold, by example and by activity, the highest levels of scientific integrity.

Item #3 is a guiding, philosophical umbrella for our activities rather than an activity in itself, but its importance is primary. The public's respect for the findings of science is a public trust,[1] one that must be maintained and nurtured by steadfast adherence the highest levels of scientific integrity and honesty in our goals and operations. This guiding principle will shape our choice of research activities, our operations, and the reporting of our results to our clients and to the public.

The "technical disciplines" in #1 specifically include the physical sciences, earth sciences, space sciences, information sciences, social sciences, mathematics and statistics, and the allied engineering disciplines. Although not specifically excluded by our organizing documents, we have no strategic plans to engage in research related to medicine, health, or the life sciences.

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[1] When asked whom they trust as a reliable source of information about the environment and the natural world, the public overwhelmingly (64%) looks to scientists for a reliable perspective. A scant 3% trust government officials to provide reliable scientific information. [From a *2001 National survey conducted by the California Academy of Sciences & Harris interactive.*]

Ars Hermeneutica, as a research organization, will be structured to support those goals in creative ways that stimulate technical cross-fertilization. We intend a relatively unhierarchical organization that functions as a consortium of researcher peers who team in arrangements that may change depending on the shifting demands of unique research opportunities. For that reason, we expect that the research direction and specific activities of the company will largely be determined by the team of researchers, who will chart their own research course within the mission guidelines of the company, broadly steered by the Board of Directors and subject to available funding from research sponsors.

As a tax-exempt scientific-research organization (SRO), Ars Hermeneutica is fundamentally directed towards advancing science in the public interest, and the majority of our activities will be devoted to scientific research. The tax-exempt tests we expect to meet as an SRO advancing science through research in the public interest include timely publication of the lessons and results of our research, making them freely accessible to the interested public, and performing research for government agencies, thereby relieving the burdens of government.

The balance of our activities will be directed towards science education: informing the public, both children and adults, about science: how it works, and what it has learned. Our tax-exempt activities related to education will include casual science education itself ("casual" education through non-traditional methods and channels, in contrast to "formal" education through classroom instruction and curriculum development), as well as sponsored research on questions dealing with methods, approaches, and evaluation of casual science education. Therefore, there will be some overlap between our research and our educational activities.

As an ever-present, adjunct project to our research proper, science itself will be the subject of our research. Our corporate mission includes the goal of analyzing our own research methods and techniques, and researching the fundamentals of scientific and engineering methods, then sharing that knowledge with the public and using that knowledge to inform and improve our approaches to casual science education.

Financially, Ars Hermeneutica will operate as a public charity, drawing from a broad base of income sources to pay for our scientific research (60% of total activity) and educational projects (40% of total activity), including contract-sponsored research for federal and local government, as well as research sponsored by private industrial sources, in addition to grants from government and private foundations. Donations by individuals is expected to be an insignificant source of income, at least in the near term.

Based on our current plans, the expected sources of income for our first 5 years break down approximately as:

Funding Source	Research (% of total income)	Education (% of total income)
Government Contracts	40%	
Private Contracts	10%	
Government Grants	10%	20%
Foundation Grants		20%

2. Scientific Research

Our stated objective as an SRO is to develop the capacity to undertake research projects that draw expertise and apply technical knowledge from a number of physical-science and engineering disciplines, mathematics, and statistics. More explicitly, the first three subsections of the statement of purpose in the articles of Incorporation for Ars Hermeneutica put it this way:

> (a) To gain expertise, build research capacity, and maintain laboratories and libraries to support learning, understanding, and research in the physical sciences, earth sciences, space sciences, information sciences, social sciences, and mathematics and statistics;
>
> (b) To apply its research capacity to theoretical, practical, and applied research related to any problem amenable to illuminating study or solution by the corporation's expertise; and,
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> (c) To use its expertise in pursuit of providing independent, objective, authoritative, and accurate analysis, assessment, advice, guidance, and leadership on scientific and technical matters.

Strategically, we plan to develop and grow laboratory facilities and other infrastructure that will support our pure and applied research on most scientific and engineering questions. In the earliest stages, our tactical approach is to undertake research projects that do not rely on specialized laboratory facilities, but where the research work relies more on our diversity of analytical experience and our expertise in its systems-level applications, in areas such as technical assessment, policy analysis,

statistic applications, conceptual design, and strategic technical advising.

As mentioned in the previous section, we plan to provide contract-research services for both government agencies and private industry, in a roughly 4 to 1 ratio. All contracted research will be roughly half of our total activity. Additionally, we expect another ten per-cent of our scientific research activity to be internally directed (research projects developed and advocated by our own researchers) and supported by grants from government sources.

In the case of contracted research, Ars Hermeneutica will generally not retain rights to any intellectual property that we create or discover on behalf of our customers. Our industrial customers will typically retain control of those intellectual property rights (patents, processes, designs, copyrighted work), and Ars Hermeneutica will publish its research findings as timely and widely as permitted by due consideration for trade-secret protection. In similar fashion, research we perform on behalf of the US Government or state governments is performed in the public interest, with intellectual property generally reverting to the public domain or held in a public trust, subject to disclosure limits imposed by national security considerations.

The nature of our research is pure and applied: using analytical scientific and engineering techniques to uncover new scientific principles and develop novel engineering designs. We recognize that there can be some dispute about whether "research" (regardless of whether it is "pure" or "applied") is "scientific", and the concepts are not legally clear. Science and engineering professionals generally agree that there are discriminating features, but don't universally agree on what they are.

There are two applicable quotations from court decisions to be found in the IRS publication "Scientific Research Under IRC 501(c)(3)" that address these issues rather succinctly:

> "The terms 'science' and 'scientific' are not defined in the Internal Revenue Code, Congress apparently having chosen to rely on the commonly understood meaning of the term. The McGraw-Hill Dictionary of Science and Technical Terms, (Lapedes ed., 2d ed., 1978), p. 1414, defines 'science' as a branch of study in which facts are observed, classified, and verified; [or] involves the application of mathematical reasoning and data analysis to natural phenomenon.' . [p. 2, § 2.a: "The Meaning of the Term "Scientific" as Used in Section 1.501(c)(3)-1(d)(5)".]
>
> *and*

> The court recognized that while projects may vary in terms of degree of sophistication, "if professional skill is involved in the design and supervision of a project intended to solve a problem through the search for a demonstrable truth, the project would appear to be scientific research" and not ordinary testing [p. 4-5, § 2.b: "Meaning of the Term "Research" as Used in Section 1.501(c)(3)-1(d)(5)".]

Both of these are acceptable when it comes to describing the "scientific research" to be performed by Ars Hermeneutica. As will be seen when we discuss more specific examples below, bringing the analytical techniques of science, particularly mathematical and statistical methods, to bear on questions in fields where their application has not been widespread, in an effort to discover scientific truths, is a significant theme in our proposed research program.

That our work will be scientific will, in one sense, be largely demonstrated by the application of familiar analytical techniques by our staff of professional scientists and engineers as they attempt to solve research questions. Likewise, it will overtly be "research" as the staff look for demonstrable truth through the application of their professional expertise as scientists and engineers.

We expect our research projects to be unique in nature, and involve questions and solutions recognized as "scientific". Indeed, the nature of "scientific research" is itself a subject of our research interest. The quest for solutions may involve the development of conceptual system designs and the creation of unique prototype systems (in software or hardware), by which point the research will have moved properly into a manufacturing and production sphere and continued development would be returned to the client.

One additional way to draw some boundaries around the nature of the research and development that Ars Hermeneutica intends to undertake, in an engineering context (the GSA schedules do not address the idea of scientific research as such), is to use the nomenclature of the US General Services Administration schedule of services. The GSA offers these schedules to describe and provide services for the beginning phases of the engineering process in a project, part of its schedule number 871, "Professional Engineering Services":

- 871-1: Strategic Planning for Technology Programs/Activities;
- 871-2: Concept Development and Requirements Analysis; and
- 871-3: System Design, Engineering and Integration.

When applied to unique engineering R&D projects, these phases all involve a significant element of research activity to accomplish, and complement our goal of undertaking a broad range of interdisciplinary pure and applied research projects for our clients.

Ars Hermeneutica is in the early stages of developing specific research plans. A list of such plans will be necessarily tentative and changeable, but will indicate in more detail the nature of research that we are undertaking. The research topics can be broadly grouped into five general categories, which we discuss in the next sections.

The remaining pages of this narrative are labelled with the inscription "**NOT SUBJECT TO PUBLIC INSPECTION**". *These pages of the narrative describe in some detail the research and education-program of Ars Hermeneutica, information that we treat as trade secret. Releasing this information could adversely affect our operations.*

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