UNIVERSITY OF AMSTERDAM

UvA-DARE (Digital Academic Repository)

Sum of all knowledge: Wikipedia and the encyclopedic urge

Salor, F.E.

Publication date
2012

[Link to publication]

Citation for published version (APA):
Salor, F. E. (2012). *Sum of all knowledge: Wikipedia and the encyclopedic urge*.

1. Defining the Encyclopedia

> We are persuaded that the ultimate perfection of an encyclopedia is the work of centuries. It took centuries to make a beginning; it will take centuries to bring it to an end. Yet we will be satisfied to have contributed to laying the foundations of a useful work.
>
> Jean Le Rond d'Alembert
> *Preliminary Discourse to the Encyclopedia of Diderot*, 1751

1.1 Introduction

This chapter follows the birth of encyclopedic thought in Ancient Greece through its expansion and adoption during the Middle Ages. This broadly historical approach is undertaken as a means of identifying the common characteristics of encyclopedias preceding the invention of the printing press, which will guide the subsequent discussion of the role of particular media in the evolution of encyclopedias. Extensive attention will be given to the dissemination of printing and its consequences for the cultural and social outlook of Europe in general, and encyclopedias in particular. Opposing theories concerning the impact of printing will be evaluated in detail as an example to support the theoretical framework for understanding media. The following two sections will illustrate the emergence and evolution of the modern encyclopedic form, from the revolutionary attempts of Enlightenment philosophers like Francis Bacon to the latest print edition of Encyclopedia Britannica. As in previous sections, section nine will identify key characteristics and defining elements of the modern encyclopedia. The concluding section will identify key concepts in encyclopedia making, based on the presented history with brief notes on their evolution throughout the ages. These concepts will provide the scheme with which the rest of this study will attempt to analyze *Wikipedia* and contextualize it against the history of encyclopedias.

It should be noted that this study focuses strictly on the Western encyclopedic tradition. This selection does not in any way imply that encyclopedias are exclusively a

western institution. Throughout the ages, many cultures such as the Chinese, even before the Greeks compiled major encyclopedic works. In fact, the collection of a body of knowledge for consultation can be considered a universal phenomenon in human cultures and is in some ways germane to our use of language. But, since the principal object of this study is *Wikipedia*, a project that identifies its roots in the Western heritage and in return is being judged by its standards, this selective focus is appropriate. It should also be noted; none of the sources consulted during this study refer to any significant exchange between distinct encyclopedic traditions in history, signifying the relative cultural isolation of the form during most of its evolution.

1.2 Education, well-rounded

The word encyclopedia became the preferred moniker for general reference works along with the emergence of the modern encyclopedia, in the first half of the 18th century, but the origins of the word point to a much deeper past with significantly broader implications. Meaning a "well-rounded education" in Greek, *enkyklios paideia* denoted the set of knowledge required to constitute a rational and well-functioning citizen. The expression became popular after Alexander the Great (356-323 B.C.) and the spread of Hellenism through the Greek civilization. As a tool of Hellenism, which generally connotes the virtues of ideal citizenry, the acquisition of useful knowledge was essential to the governance of Hellenistic communities. Providing such an education was the principal purpose of Plato's (428/427 BC – 348/347 BC) academy in Athens. Plato argued that rational thought "depended on knowing as much as possible, hence the value of an encyclopedia" (Katz, 20). Despite the vital importance he attributed to providing an all around education, Plato was living at a crucial moment in Greek civilization.[1] This partly explains Plato's uneasy relationship with the quickly proliferating technology of writing and the phonetic alphabet. His Dialogues reflect the oral style he and his audience were accustomed to, and they still provide the basis for many philosophical enquiries, and continue to shape the way in which common issues are organized and handled. It can be argued that, from his lasting legacy on

---

[1] See also: Havelock (1963) and Ong (1982).

philosophy and sciences, Plato had a defining influence on both compilers and consultants' expectations and approaches to encyclopedias until the late Middle Ages.

A similar claim can be made even more strongly for Plato's student, Aristotle (384 BC – 322 BC) whose writings follow the *enkyklios paideia* pattern, and were designed for students. In addition to the seminal nature of his treatises on diverse subjects, his categorization of these topics came to define how knowledge would be organized for many centuries and his system is still very familiar today.

Aristotle's categories were:

• Philosophy, psychology, ethics, metaphysics
• Politics, government, education
• Sciences
• Aesthetics
• Poetics, rhetoric

These categories still roughly correspond to the faculty structure of most universities all around the world and dictated the way encyclopedia compilers classified information for the next 1800 years. The value inherent in a compendium of useful knowledge was apparent to the pragmatic minds of the rising Roman Empire and the nature of encyclopedic works shifted in line with the change brought to the social and political outlook of the European continent. A shift in priorities relating to different categories of knowledge caused alteration in the previously established scheme, such as devotion of a greater significance to affairs concerning the subject and state instead of philosophical treatises. Along with the change in emphasis, readers' approach to encyclopedias was also gradually redefined. For the first time, encyclopedias became reference books of multiple volumes to be consulted upon need, instead of continuous treatises to be read from over to cover.

Katz cites two significant Roman encyclopedias that defined a dichotomy, which will become an intrinsic part of encyclopedia making in the following centuries. The first was written by Marcus Terentius Varro (116-27 B.C.), a scholar who also played a prominent role in the roman social life of his time. His treatises, a very significant part of which are lost, covered a wide range of topics, including Latin language and agriculture, and roughly followed Aristotle's categories, although he extended them as he thought necessary. Collison

states that Varro had a very clear conception of the organization of knowledge (23). Apart from his specific treatises, where he devoted a book to each subject, he also compiled an encyclopedia, *Disciplinae* (c. 50 B.C.) which was also lost, except for fragments. Despite the lack of comprehensive sources relating to his work today, Katz places Varro as a precursor to the generalistic, all-inclusive encyclopedias of later ages and states that his *Disciplinae* was a major source of influence for medieval scholars, and this influence has continued for at least six centuries. As Collison writes, "his works were copied, plagiarized and pillaged by later writers, and as time went on some authors appear to have been unaware that Varro was the original source of some of the material they were writing into their books" (1964, 24).

On the other end of the persistent dichotomy mentioned above, we find arguably the most famous compiler of encyclopedias of the Roman age, Pliny the Elder. His *Historia Naturalis* (c. A.D.77) was the product of a curious mind with scientific tendencies and followed the topical focus of later thematic encyclopedias. His work was composed of thirty-seven books and 2500 chapters and it can be considered as the first legendary encyclopedia that defined later ages very distinctly and definitively. His influence was such that he can be credited for defining the shape of the medieval encyclopedia that was to come after him. Pliny was an avid observer of all that surrounded him as a scholar, a lawyer and a public official and he aimed to combine all of his knowledge into a single and reliable *enkyklios paideia*. Although he was not an expert in any of the sciences he covered, he boasted a much more critical skill as an encyclopedia compiler, and he was what Collison called a "spare-time anthologist" (25). Pliny was remarkable in creating a very user-friendly encyclopedia by extensively researching hundreds of authors and combining this knowledge into an orderly and organized whole. Collison attributes this achievement to Pliny's being "an administrator accustomed to seeing the world in terms of divisions and sub-divisions" (25). His *Historia Naturalis* was thus arranged in the following scheme:

Books
I. Preface; Contents; Sources
II. Cosmography; Astronomy; Meteorology
III-VI. Geography; Ethnography; Anthropology
VII-XI. Zoology; Man; Inventions
XII-XIX. Botany
XX-XXXII. Medicine; Pharmacology; Magic

XXXIII-XXXVII. Metallurgy; Mineralogy; the Fine Arts

While still following Aristotle's categories, like most of his predecessors, he expanded it to accommodate new ideas and knowledge. The most apparent indicator of Pliny's success is the simple fact that nothing that could rival his work's authority came for many centuries. His views simply defined the way many viewed the Greek and Roman worlds as well as the development of early science (Katz, 23). Katz explains the persisting influence of *Historia Naturalis* by noting that it served as a reliable source of education well into the Renaissance and was still being revered until the end of the 17th Century (23). Collison notes that no self-respecting medieval library could afford not to have a copy of *Historia Naturalis* on their shelves (26).

Due to the success of Pliny's work, and thanks to the care he took in citing his sources, his compilation constitutes our entire knowledge concerning more than 100 books and writings that would otherwise have been entirely lost to modern historians. But, despite the impressive authority that was attributed to Pliny, his famed work was far from accurate and reliable. Collison states that Pliny was over eager in including unsubstantiated information, and what he calls "old-wives' tales", into his encyclopedia. As a result, *Historia Naturalis* was far from the all-knowing, all-encompassing source of wisdom it was attributed to be for the next 1500 years. But the perceived authority of the Greek scholars and the distinct lack of new data ensured the continuing use of Pliny and other's encyclopedic efforts as inspiration and direct source for compilers of the coming centuries. Their many errors however, are another source of invaluable information for historians, as they so comprehensively capture the worldview of the Roman society at the time.

The Roman attempts to create an encyclopedia until this point can be largely seen as an adoption of the Greek ideals for the needs of Roman citizens. But with the changing social and political climate in the centuries after Pliny concerning Europe in general and Italy in particular, there was a need to spread the knowledge in a more accessible way. Rising up to this task was the distinguished statesmen Cassiodorus (Flavius Magnus Aurelis Cassiodorus Senator, *c.* 480-575) who aimed to compile an encyclopedia for "the instruction of simple and unpolished brothers" (qt. by Collison, 29), meaning his new Goth

masters. His *Institutiones divinarium et humanarum lectionum* is considered to be an outstanding achievement and was also very influential for the monastic compilers of the Middle Ages. Collison attributes the urge of Cassiodorus to compile and preserve ancient knowledge to his far-sightedness and ability to sense the troubled future laid ahead of Europe (29). Although this remains uncertain, Cassiodorus was definitely a pioneer in his attempt to adopt classical learning to Christian needs and his prowess in editorship is cited by Katz to be his greatest gift to the medieval compilers that will follow his model. Writing from the monastery he founded, Cassiodorus is a direct model of the later shape of the encyclopedic tradition which, exactly like his *Institutiones*, took pagan knowledge and its organizational scheme and tried to fuse it with the newly developing Christian canon and beliefs.

The corresponding beginnings of Western philosophy and encyclopedic thinking goes a long way to explain a central theme that will endure until the Enlightenment, namely the belief in the possibility that a single individual is capable of gathering all the knowledge worth storing and catalogue it within the covers of a number of volumes. Such an individual, believed to have mastered all there is to know, would command boundless editorial freedom concerning both content and organization. Since the privilege to be considered as such is so rare and an opportunity to compile an encyclopedia even more so, the work of a compiler would mostly go unchallenged and copied for centuries to come. With this great respect and promise of longevity came a huge responsibility for the compiler. Since encyclopedias carried the claim to contain all the knowledge available, they were seen as a promise to inform all their readers of all the things their readers could not reach or learn about in other ways. This is one possible explanation for the inclusion of the mythical stories and hearsay in these early works, mingled with philosophical treatises and first inklings of scientific enquiry. Likewise, this lack of sources fostered an unquestioning faith in written sources for medieval scholars, which was, coupled with the lack of a scientific method or any impetus for fact checking, prone to major errors that escalate over time. Taking their limited sources at face value, medieval scholars spread many fallacies or unsubstantiated rumors of their Greek ancestors or each other and caused them to survive for centuries (Katz, 23).

Another area where the original intent of the encyclopedia has been ever-present was the authors' persistent efforts to arrive at a definitive categorization for their ever-expanding knowledge. The philosophical ambition to make a statement about the categorization of knowledge, as important for the ancient Greek philosophers as the topics themselves, never died out and since the production of new knowledge was so scarce, one aspect a compiler could show his creativity on was the organization of the same facts. Curiously, the alphabetic arrangement was among the methods tried during the period before the middle ages, but it was neither widely adopted nor its benefits essentially understood. The fact that it gave each topic equal importance must have seemed odd, even offensive, to scholars who operated by very clear hierarchies dividing their disciplines. Aristotle's *Categories*, as mentioned before, constituted the base on which most of the early compilers set up their organizing schemes. It was Porphyry of Tyre (*c.* 232-*c.*301) who explained and illustrated the *Categories* and upon his work Cassiodorus and many others have based their organization. Collison states that no encyclopedia compiler remained uninfluenced by this scheme, either by willingly following it or by unwillingly copying from another work that followed it.
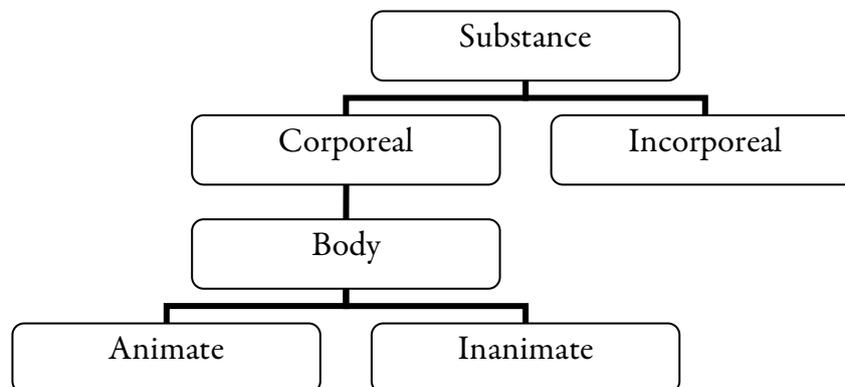

Figure 1 The Tree of Knowledge by Porphyry of Tyre

The fundamental division of knowledge into worldly and heavenly spheres that will come to define the Christian era encyclopedias can be glimpsed from this scheme, one again illustrating the crucial link that binds the ancient philosopher to the medieval scholar.

Another interesting feature of this early period was the collaboration between different philosophers and schools for the compilation of encyclopedic sources. This collaborative atmosphere was lost during the following centuries and resulted in the emergence of different schools of encyclopedia making, almost unaware of each other.

1.3 The Book of God and the Book of Nature

As Christianity spread through the European peninsula, against the increasing political instability of European Continent, isolated monasteries became the primary centers of learning and preservation of knowledge. Drawing on the work of pioneers like Cassiodorus, the monastic system established a strictly ordered structure and came to provide intellectual stability and a place of learning. The principal aim of the medieval scholar was to preserve the known interpretations of Greek and Roman texts within Christian theology. The danger of overemphasizing the secular texts that were considered pagan was usually avoided by inserting Christian themes in the beginning, to illustrate their superiority. The success of the notable examples mentioned below can be considered primarily as feats of editorship, given the lack of any new research, empirical data or fundamentally different philosophy. Building upon the heritage described in the earlier section, the noted medieval scholars defined how their contemporaries, or descendants for many centuries, perceived their past and the world around them and ultimately prepared the standard against which the Renaissance and the Enlightenment positioned itself.

Along with Cassiodorus, discussed above, one of the pioneers of Christian encyclopedias was St. Isidore of Seville (C. 560-636) and his *Originum seu Etymologiarum libri XX*. Although Isidore himself was the archbishop of Seville during the Visigothic kingdom in 599, his education was based on classical Greek and Latin texts. Isidore believed that such an education should constitute the fundamentals of a true Christian's education and he aimed to provide a model for this scheme in his encyclopedia which is most evident in his organizational scheme.[2] *Etymologiae*'s affinity to the ancients and its predecessors like

---

[2] While the original is unfortunately lost, none of the surviving copies of Isidore's encyclopedia start with Theology, which is remarkable for a Christian encyclopedia.

Pliny has led Katz to argue that Isidore's efforts can be interpreted either as an early and brief Renaissance, or the last flowering of the Roman tradition and the transition to the medieval Christian works (27).

Another strength of Isidore's work was its comprehensiveness. His effort marks a departure from the topical, almost scientific, focus of Pliny and testifies to a determination to cover all that can be known in every conceivable area of knowledge. The title of the work indicates the way Isidore approaches this goal; articles begin by the origins of the words in question but usually go much deeper and provide early histories as well as brief philosophical treatises about the topics, which can include everything from characteristics of love to early history of marriage (Katz, 28).

Despite its oddities, as for example not putting Christian Theology in the forefront, Isidore's work enjoyed lasting authority among medieval scholars, in fact Katz goes on to state that its popularity can only be compared to Pliny's (27). Its close understanding of the Greek and Roman worlds rendered *Etymologiae* the de facto starting point for educators and encyclopedia compilers of later generations wanting to learn about these topics and with the ever strengthening hold of the scholastic thought over Europe, hence Isidore remained a constant reminder of the existence that secular writing could exist (Katz, 46).

After Isidore's death, it took three centuries for another authoritative encyclopedia to emerge and its lasting and broad popularity was testified to by the remarkable fact that more than one thousand manuscript copies are still in existence today. This popularity, however, ultimately served to desecularize the ancients Isidore helped to preserve, as a result of the fact that he repositioned their ideas within the Christian worldview, sometimes sacrificing their intellectual depth for a wider coverage. This proved to be an even more pervasive effect than the actual physicality of his compilation and left its mark for the following medieval creations.

Although not nearly so influential as the other examples cited in this text, the dictionary known as *Suidas*, produced in the tenth or eleventh century, is a noteworthy compilation as it was an early example of an encyclopedic dictionary, the distinctions of which are illustrated below. Suidas was also organized alphabetically, although such an

organizational paradigm was, even for glossaries, extremely rare at the time and would remain so until the Enlightenment.

Around the same time as *Suidas*, Hugh of St. Victor (*c.* 1096-1141) was working on his *Didascalicon: de studio legendi,* without the influence of *Suidas.* Completed in the 1120's, it signifies the firm establishment of the scholastic philosophy after the transitional nature of Isidore's *Etymologiae.* Although *Didascalicon* built on Aristotle's categories and other ancient texts like many other encyclopedia before it, it was more an affirmation of the monastic tradition than a curiosity about Greek and Roman texts. His extended opening, which is concerned with scriptures, and his emphasis on perfecting the use of Latin, are two examples given by Katz to this position (29). The organizational scheme proposed for knowledge in *Didascalicon* is worth mentioning even for a simple comparison with the scheme of Porphry of Tyre above. The increase in complexity illustrates the evolution and expansion of the basic ideas that underlie perceived classification of knowledge, despite the lack of any notable discovery or scientific research (Collison, 47).

The *Didascalion* represents, in its system of classification, the age-old monastic tradition of Christianity and serves to counter-balance the growing influence of secular works, such as the *Suidas* mentioned earlier. Collison argues that Hugh's clear and cogent style helped to make his work very popular among monastic communities and nearly one hundred manuscripts have survived from the centuries following its completion.
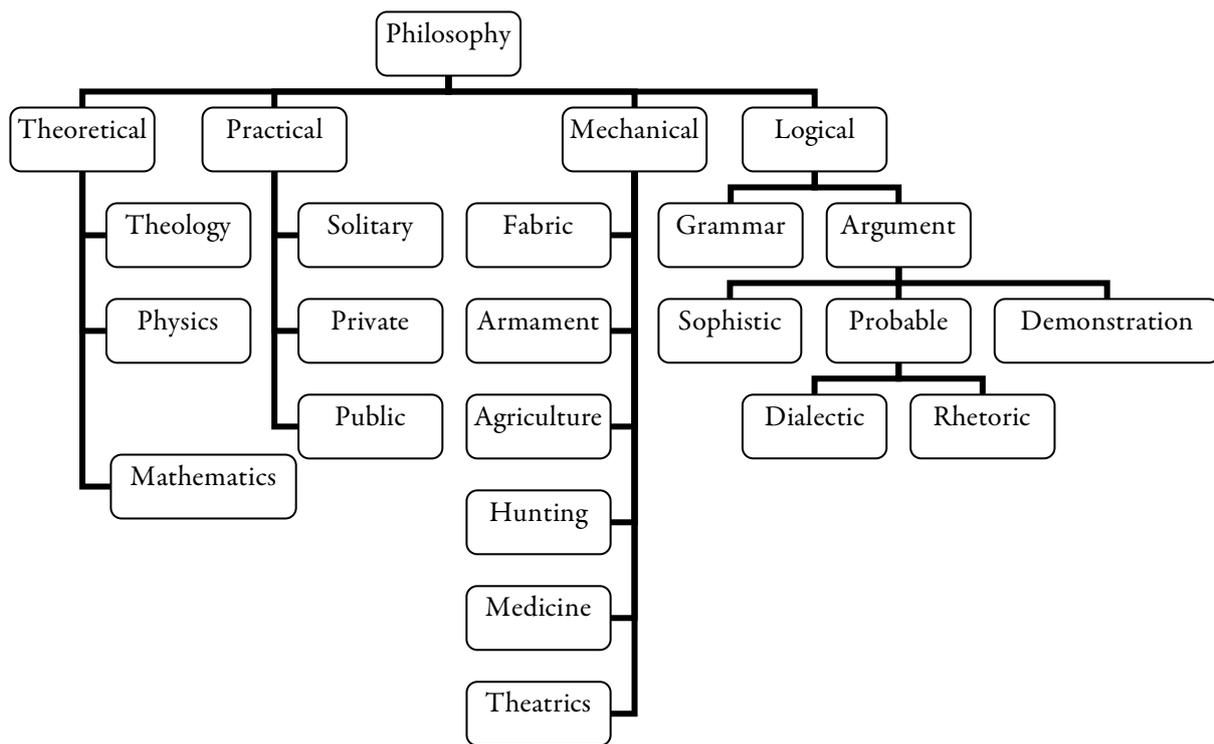
Figure 2 Didascalion by Hugh of St. Victor

It is clear from the examples above that the ever-broadening scope of encyclopedic works created a tension concerning focus and priority. From this one might surmise that Christian monks and scholars did their best to disseminate their particular worldview while hoping to address the essential requirements of an encyclopedia. The urge to cover all bases within a comprehensive, and Christian, philosophy can be credited as the principal motivation underlying this achievement of medieval encyclopedia making.

Speculum Maius, *the Great Mirror*, first completed by Vincent de Beauvais in 1244, and continuously updated until his death, is considered to be the crowning achievement of the medieval encyclopedic tradition and embodied the hope of addressing the textual overload presented by earlier works. Katz summarizes it as "a mixture of fact and fancy in over more than three million words divided into close to ten thousand chapters in eighty books. Not until Diderot in the 18th century did anyone come close to rivaling the size of Vincent's effort" (31). This outstanding work relied on both collaboration from colleagues and copied passages of past works such as Isidore's, and because of this it resembles a

collection of essays rather than a coherent encyclopedia. This aside, medieval readers of Vincent recognized his work as an encyclopedia, and regarded it as such. In fact, because it is such an excellent collection of essays, it was, and still is "a work of inestimable importance as the only repository of excerpts from some works no longer survive, as a mirror to the state of knowledge during 13th century" (Collison, 62). The *Speculum Maius* can therefore be considered the pinnacle of medieval encyclopedic tradition, a work that culminates centuries of collecting and compiling with an organizational scheme that has been worked on for generations.

Since it was so comprehensive and widely acknowledged, it continued to be the only major encyclopedia for a long time and its influence widened as it was translated into various languages. Collison states that successive works of the medieval period compromised the integrity and exhaustiveness of Vincent's work in order to appeal to a larger audience, rendering the *Speculum Maius* the last great work of the scholastic age (62). Katz also supports this claim and notes "Vincent wrote just at the moment when the scholastic organization of knowledge was complete, so that he forms the watershed between discoverers and organizers, on the one hand, and the popularizers on the other" (32).

Since no encyclopedia historian identify any of genre defining works produced in the period between 13th and late 16th century, it is fitting to attempt a synthesis of the evolution of the encyclopedic form so far. The importance of clarifying the state of the encyclopedia until the 16th century becomes much more critical as the intellectual movement behind its transformation defined itself in contrast to perceived notions about the encyclopedia at the time.

1.4 One Scribe to Bind Them All; Identifying the Pre-Enlightenment Encyclopedia

The scribal system of the Middle Ages gradually progressed through individual efforts to the maturation of a distinct encyclopedic style for the period. In spite of the fact that scribes were operating strictly under the canon of Christian theology, the medieval approach to compiling encyclopedias can be traced back to their ancient Greek and Roman counterparts. Plato and Aristotle headed the Academy in Athens with the aim to provide an adequate education for citizens who would take part in the matters of the *polis*. Similarly, Cassiodorus wrote his *Institutiones* mostly for the benefit of the new rulers of the Roman Empire, so that they could be better rulers, and the likewise, the efforts of the medieval scribes were intended to benefit the elites of the Church, the State and the University.

The style of the previous examples, all of which were important compilations dating to the end of 16th century and were organized in the form of treatises, mostly covering the traditional subjects first identified by Aristotle and expanded and edited to fit the Christian canon. The strong investment in the categorization of these treatises is indicative of the belief that the knowledge presented within a single work was to be understood as the complete circle of learning that would be required by an educated person. First, the fact that these works were written by a single compiler and second, their self-fashioning as educational tools is also an indication that individuals were expected to learn their contents and internalize their systems of knowledge. As Yeo illustrates in his article *Lost Encyclopedias* (2007):

> The hallmark of the pre-Enlightenment definition of encyclopedia was the belief that there was an agreed set of subjects, such as the circle of liberal disciplines, which could and should be known by educated individuals, and that significant parts of this corpus should be committed to memory so that the person truly possessed this knowledge (50).

A learned person who absorbed the totality of this knowledge can, in the literal sense and without the irony that the phrase would later come to carry, become a walking encyclopedia. The perceived amount of required knowledge was simply within the bounds

of the comprehensible. According to Stockwell, this was the original appeal of the Academy, to present the totality of knowledge required in one place (13).

Despite this direct link to the ancient Greek idea of complete education, with the proliferation of monasteries, universities and other educational institutions, the relationship between the encyclopedia and personal education became more complex, especially with the spread of purpose written textbooks. McArthur identifies the difference between these two kinds of educational works as the degree of control involved in accessing them (1986, 63). Textbooks were prepared to be used within lecture halls and were traditionally read by instructors during classes and as such, they were an integral part of an otherwise oral teaching environment. They were meticulously checked for their conformity to the doctrines of the institution they were used in. Although encyclopedias were written within similar institutional structures and were even read by similar classes of the society, McArthur argues that they were given a greater degree of freedom concerning the ideas and content they could disseminate (63). When the majority of the intellectual community shared similar views and sources of dissent were scarce, this potential merely lied dormant. But McArthur argues that, when the system of knowledge was disturbed, encyclopedias were one potential source where differing opinions could be spread with relative ease compared to school textbooks. As the later section of this study will illustrate, when the ideas of Enlightenment started to flourish across Europe, encyclopedias were indeed on the forefront of the ideological transformation.

However, until that intellectual cataclysm, encyclopedias continued to be schemed on Aristotle, translated into Latin, and although medieval compilers took in knowledge from the Middle East and rigorously scoured the resources, the information they could access was limited and the scope of their intellectual interest was focused accordingly. In their effort to combine the Christian theology with the knowledge of the ancients under a grand scheme of complete education, the medieval scribes aspired to complete people's minds, contributing to their role on Earth. The underlying assumption to such an ambition is the belief that God had two books, one being the Bible and the other being nature. A complete encyclopedia would then complete humanity's knowledge, drawing people closer to the creator. Also motivating the medieval compiler was the promise of longevity, as any

work deemed successful would be copied and distributed as much as possible in order to preserve the scarce knowledge within it, and this position was strengthened by the lack of any new empirical or scientific data coming in, which rendered obsolescence a non-issue. Yeo illustrates this by stating that the medieval encyclopedias were directed towards the past and not the future (2001: 6).

With passing generations and a few very successful works, a usually accepted form had emerged and readers began to expect some degree of consistency from encyclopedic works including layout and indexing. At this juncture the ever-growing body of text deemed necessary for inclusion begins to feel overwhelming for both compilers and readers in the mediaeval period. Although alphabetical classification was known, thematic classification was still an essential part of the integrity of the encyclopedia. The scheme for various thematic arrangements differs among works as they depend on assumptions concerning the moral significance of the knowledge being handled. The Christian notion that an appropriate moral state is the precondition for any advancement in knowledge, obviously based on the Platonic ideals, was dominant among the schemes of organization conceived for encyclopedias and schemes based on this assumption were usually manifested in various metaphors and graphic illustrations within different works. A famous example is the tree of wisdom, which implies a common origin for all knowledge. A later illustration was as a map, which did not imply a common origin but lay down all that is knowable as a navigable, and therefore, conquerable territory.

The pinnacle of medieval encyclopedia making also signifies a certain maturity of literary culture across Western Europe. My historical survey so far has illustrated that the conceptual basis of encyclopedias is inexorably intertwined with the adoption of literacy against orality at their origin. The following section will further analyze this relationship.

1.5 Scrolls and Scriptoria; Literacy and the Encyclopedia

When the ancient Greeks adopted the widespread use of the phonetic alphabet and papyrus scrolls, their culture have undergone a transformation from a predominantly oral tradition to a literate one. The profound influence attributed to this change has been a subject of lengthy scholarly analysis throughout the 20th century.

Specific works such as Eric Havelock's *Preface to Plato* are well-established texts, which aim to analyze the effects of literacy on Greek culture. However, Walter Ong in his *Orality and Literacy* (1982), and his earlier work *The Presence of the Word* (1967) provides a more overarching study on literacy which is more fitting for this analysis. The central notion in Ong's work is the fundamental divide in the way the human mind is structured after the proliferation of writing technologies. In his preface to the *Presence of the Word*, Ong writes that the modern, literate, individual has to "labor to regain the awareness that the word is still always at the root of the spoken word. Early man had no such problem; he felt the word, even when written, as primarily an event in sound (ix)." In his later, and more detailed, study on the differences between oral and literate cultures, Ong concentrated mainly on this transition of the corresponding mentality and its various implications. He sketches out general characteristics of primarily oral cultures in the following points:

- Additive rather than subordinative.
- Aggregative rather than analytic.
- Redundant or 'copious'.
- Conservative or traditionalist.
- Close to the human lifeworld.
- Agonistically toned.
- Empathetic and participatory rather than objectively distanced.
- Homeostatic.
- Situational, rather than abstract.

Based on these distinctions, Ong argues that an oral culture does not have the potential to create scientific or philosophic thought; because of the way it organizes and transmits information. The perceived divide between oral and literate cultures has been a topic of heated academic debate ever since Ong. For the purposes of this study however, it is sufficient to note that it was Plato, Aristotle and their followers who established the

categories by which most subsequent generations understood the world and their relationship with the written word as being situated in a defining moment in European cultural development.[3] The history presented in the earlier section covers a time span of 2000 years and the changes in the encyclopedic form have been strictly evolutionary for the most part, testifying to the importance of their achievements.

Seen in the light of arguments presented by theorists such as Ong, the combination of various economic, social and technical factors resulted in the emergence of encyclopedic thought in ancient Greece. Utilizing the most readily available writing material available, Greek philosophers adopted the technology of writing to disseminate and preserve their intellectual output. Papyrus scrolls, limited in length and accessibility and completely closed to random access, was inherently suitable for the treatises produced by ancient Greek philosophers, which were relatively short and consisted a discrete entity from beginning to end. A notable fall in the cost of paper and the introduction of binding individual sheets, contributed to the codex becoming the standard format for textual production and distribution. These developments notably coincide with the spread of Christianity in the first century A.D. It was suggested by some scholars that the adoption of codices by Christian pioneers enabled them to transport their ideas even further and more easily, ultimately contributing the rapid spread of the religion around Europe. When the codex was adopted to compile existing knowledge, the proposed categories of Aristotle were the apparent choice for the organization of the teachings of the ancients. These efforts initially gave birth to what the medieval scholars called the commonplace books and after centuries of expanding and polishing, resulted in great works such as the *Speculum Maius.*

Vincent de Beauvais, when compiling the *Speculum Maius*, was hoping to address the everlasting ambition to acquire knowledge. Desired by the ancient Greeks to improve thought, by the Romans to ameliorate actions, and by the medieval Christians as a means of

---

[3]For a few examples that contributed to this debate;
Emevwo Biakolo, "On the Theoretical Foundations of Orality and Literacy," <u>Research in African Literatures</u> 30.2 (1999): 42-65.
Ruth H. Finnegan, <u>Literacy and Orality : Studies in the Technology of Communication</u> (Oxford: Blackwell, 1988).
Olson, David R., Nancy Torrance. Ed., <u>Literacy and Orality</u> (Cambridge: Cambridge University Press, 1991).

nearing God and his glory (McArthur, 67). While the stated objectives of compiling encyclopedias have changed, and their scope and coverage has increased enormously over the centuries, the perceived and expected totality has not been challenged. A reader of Aristotle's treatises in first century B.C. and a medieval monk studying *Speculum Maius* both expected to become better and more complete human beings from their experience, and demanded that their texts present an all encompassing worldview organized, through a logical and self-contained scheme.

The intellectual framework of the medieval encyclopedia outlined above is based on a process of refinement and sophistication encompassing many centuries, and there is no doubt that the scholars who prepared these volumes prided themselves on the works they created. This pride is justified, given the acknowledgement of many historians that the great encyclopedias of the time were sometimes the only remaining source into their contemporary cultural production. However essential and useful this urge to collect and preserve the past may be, it certainly did not give encyclopedists the edge in innovation with respect to their craft. The rising interest in ancient texts through the Renaissance cannot be expected to exert any pressure on the encyclopedic craft either. The history of encyclopedia making records a fundamental shift, not in the 15th but in the 17th century, during which time the European cultural landscape has been fundamentally transformed, not by an intellectual movement but by the proliferation of the printing press, which would act as one of the greatest catalysts of new ideas, and in time, foster new encyclopedias to record these ideas in novel ways.

1.6 A Revolutionary Construct; Understanding the Printing Press

Analyzing the significance of the printing press has been the elusive goal for diverse fields of scholarship throughout the 20th century. Some authors, such as Marshall McLuhan, argued that the transformation brought by the printing press was so fundamental and overwhelming that it is simply not possible for the post-print society to understand what life was like before it. McLuhan's typically eccentric statement only served to intensify the interest in print and both with their historical depth and analytical disagreements, print

scholars offer invaluable insight into this phenomena that reshaped the future of encyclopedias.

Lewis Mumford was among the first to discuss the properties of mechanical printing press in his *Technics and Civilization* (1934). Mumford concentrated primarily on the properties of the printing press as a revolutionary technical invention and an astounding mechanical achievement. He states that, the printed sheet was the first completely standardized product, even before the military uniform. It was also the first uniform production line with interchangeable parts, heralding the industrial revolution centuries before. McArthur, in his analysis of the influence of print, notes that the industrial nature of the process took the control of book production from the Church and the State and put it in the hands of merchants (72). On the one hand, this change liberated the relatively small pool of literate and educated workforce from mundane tasks of copying existing works, giving them the ability to pursue their own interests and creativity. On the other hand, it empowered the merchant classes who now found themselves in the key position of controlling the flow of knowledge into society. The undermining of the traditional bastions of knowledge was such that McArthur goes as far as stating; "it is, I suspect, no accident that the first Latin Bible was printed in German Europe in 1450s and the first eruption of the Reformation took place there, under Martin Luther, in 1517" (73).

In addition to being a foreshadowing of the approaching industrial age, the mechanization of bookmaking also produced unforeseen, yet very profound, effects in language as well. Through the standardization of the printed page and specifically the type, the printing press drew attention to irregularities in punctuation and spelling as well as to more stylistic choices and more aesthetic concerns with the layout that had previously gone mostly unnoticed, since every book was unique and they were comparatively scarce in the marketplace. The standardized output of the press would not be fully efficient without a similarly standardized input, and this played an important role in the emergence of unified spelling and punctuation of national languages. It is also a remarkable testament to the success of the press that it was disseminated across early-modern Europe with such rapidity after its initial development. Pierce Butler explains that printing press passed through four stages of development, all within the first hundred years of its invention and lists them as:

i. Establishment, where printers aimed to provide the same products as the scribes, only cheaper and faster, exemplified by the gothic type of the Gutenberg's 42-line bible of 1455, widely attributed as the first printed book.

ii. Gradual discovery of the unique potentials of print by early printers, in the shape of new typographic styles and calligraphic ornaments.

iii. Discovery of true publications, where printers not only aimed to answer the demand but also started to actively create it by scouting for new texts.

iv. Maturity of printed book where it became a recognizable force in history.

Probably more important than any other single work is Elizabeth Eisenstein's *The Printing Press as an Agent of Change* (1979). Thirty years after its publication, it is still considered one of the most influential studies on printing. The book presents a detailed analysis of issues discussed by earlier scholars such as Mumford and, to a large extent, Eisenstein's work defined the of argument for later scholars such as McArthur. Eisenstein clearly identifies the advent of print as a communications revolution and, during the course of her lengthy analysis, she argues that the effect of print was instrumental in the emergence and spread of Renaissance ideas and the Scientific Revolution. Eisenstein's specific historical observations deserve to be elaborated in detail since they have been so influential in debates of the topic in diverse fields, and have come to define how we think about the print revolution. Eisenstein starts by stating the marked increase in the number of books produced and the reduction of effort required to produce a single copy. Although exact numbers are unobtainable on the book production in early-modern Europe, different sources can be located for corroborative statistics to back Eisenstein's statement. Hirsch states the number of titles introduced within the first 100 years of the printing press as well over 100.000 (VII). In their more recent work, Febvre and Martin state that about 20 million books were printed before 1500, based on 30.000-35.000 surviving editions belonging to 10.000-15.000 different texts (248). Eisenstein organizes her analysis of the printing press into six major effects, all of which have applications to the future of encyclopedias.

i. *Dissemination.*

Eisenstein emphasizes commentator culture's role in dissemination, where the scholar's interaction with a canonical text is adding commentary in the process of making a copy. With the advent of printing, and the considerable increase of both the number of copies and the geographical reach of a individual print run in certain amount of time, scholars began to cross-reference other works much more easily, fertilizing cross-cultural interchange and dialogue (72). It should be noted however that Eisenstein differentiates between the immediate increase in the cross-textual dialogue and the much later attempts to organize this massively expanding collection of books within libraries and compilations (78).

ii. *Standardization*

Eisenstein gives the example of the publication of *errata*'s as an indication of increased standardization, enabling authors to locate errors and share exact corrections simultaneously with scattered readers (80). It is also noteworthy that the technique for producing books also allowed for standardized reproduction of charts, maps and images. Since one of her main interests is the development of scientific method and the corresponding community of scholars, Eisenstein emphasized the fact that the increased standardization of texts allowed geographically distant scholars to correspond to each other on the same text and further their research in greater synchrony (81).

iii. *Reorganization*

The relevance to and subsequent effects of print on the encyclopedia is particularly significant and evident in this case, as Eisenstein explains, "the owner of a medieval compendium, preparing an index for his own use, felt no obligation to employ anybody else's system but rather followed whatever method he chose" (90). Whereas after the introduction of print, any system of organization in a collection had to be prepared to enable it to be reproduced thousands of times and to be compared and cross-referenced by similar works. This apparent intellectual pressure on scholars to standardize their

organizations was compounded by financial pressure from the printers who saw the benefits of reliable catalogues and indexes (91).

iv. New Process of Data Collection

As previously noted, the rapid publication and widespread dissemination of *errata* was made possible by the printing press. It also did not take very long for publishers and authors to realize the mutual benefit of citing sources, not because of the intrinsic moral integrity of the involved parties but, rather the realization that such a code of conduct would be most beneficial to all in the long run (111). Eisenstein notes the crucial importance of the emerging textual fixity for the advancement of learning in any society, echoing the benefits of a literate culture sketched by Ong.

v. Fixity and Cumulative Change (Preservation)

Eisenstein considers the transformation of the way in which a certain text is preserved to be the most influential of them all (113). Whereas the medieval reflex to preserve precious, rare books and to make them out of the most durable materials possible, and to hide them in the relative safety of monasteries, mass printed editions, although printed on less durable paper, sustain their existence through abundance (114). On a purely material level, this move from stable rarity to more perishable yet abundantly available form can be interpreted in Innis's terms as a shift from a time-biased print culture to a space-biased one, with strong implications for both the content and mindset of the society that uses them. Eisenstein's following analysis proceeds this argument, as she notes that "the notion that valuable data could be preserved best by being made public, rather than by being kept secret, ran counter to the tradition and, led to clashes with new censors and was central both to early-modern science and enlightenment thought" (116). As she goes on to explain:

> Given drifting texts, migrating manuscripts, localized chronologies, multiform maps, there could be no systematic forward movement, no accumulation of stepping-stones enabling a new generation to begin where the prior one had left off. Progressive refinement of certain arts and skills could and did occur. But no sophisticated technique could be securely established, permanently recorded, and stored for subsequent retrieval. Before trying to account for an 'idea' of progress we might look more closely at the duplicating process that made possible not only a sequence of

improved editions but also a continuous accumulation of fixed records. For it seems to have been permanence that introduced progressive change. The preservation of the old, in brief, launched a tradition of the new (124).

vi. Amplification and Reinforcement

Concerning the act of reading itself, Eisenstein notes the marked difference between being read aloud and studying a text individually (132). As noted earlier by McArthur, the Medieval education system depended on the lecturer reading from a canonical text while providing commentary, and pupils employing various mnemonic aids to memorize a large portion of these texts, for the simple reason that their access was not in any way guaranteed. With the increasingly widespread availability of books, obtaining a personal copy of an important work and studying it individually became a much more feasible option for a much greater portion of the reading population. Eisenstein argues that the increased effect of this was the atomization and increased individualization of societies. Based on these specific effects, Eisenstein goes on to argue that in these ways the dissemination of the printing press laid the foundational infrastructure for the emergence and rapid development of the Renaissance and the Scientific revolution. Both movements, in the space of two centuries, have recast the intellectual and social outlook of Western Europe and along with them ushered in the age of the modern encyclopedia.

1.7 Challenging a Revolution; Differing views on the Printing Press

The revolutionary character attributed to the printing press as a medium did not go unchallenged and, following the publication of *The Printing Press as an Agent of Change*, many scholars went on to discuss its claims from the point of view of different disciplines. In his review, Grafton takes note of the issue and states that, although it might be tempting to criticize Eisenstein for being deterministic, this might not be entirely justified. "To be sure, Eisenstein is far too learned and too subtle a scholar to claim that printing by itself brought about the Renaissance, the Reformation, and the Scientific Revolution. Nor does she claim that it affected every area of culture in the same way" (Grafton, 267). Nevertheless, Grafton still considers Eisenstein's preference of secondary sources over primary texts

troubling, and concedes that, occasionally the overarching ambitions of the work impede its overall persuasiveness. Still, Grafton's critique can be considered as a warning for a more cautious reading and not an outright rejection of Eisenstein's claims.

Among the most interesting and comprehensive of Eisenstein's critics is Andrew Johns. In his 1998 study *The Nature of the Book* Johns proposed a different approach to what Eisenstein called a *communications revolution* and argued against the strong influence of the medium on the Renaissance and the scientific revolution. In his attempt to reject any inherent properties of print, Johns builds his argument on the evolution of tacit assumptions that are now inherent in print culture - basic features that societies have come to associate with books, their publishers and their authors. Johns' principal thesis is that, contrary to Johns' interpretation of Eisenstein, these features of print were build on by the community of printers and authors who worked with the medium over time and did not simply derive from their method of production. Johns argues that a printed book is "both the product of one complex set of social and technological processes and also the starting point of another...In that sense a book is the material embodiment of, if not a consensus, than at least a collective consent" (3). In line with this argument, Johns goes on to illustrate how the intrinsic properties that the modern reader associates with print, such as fidelity, reliability and truth, was not so readily apparent to the early-modern bookmaker, and had to be actively cultivated and constructed over the course of generations.

Johns focuses on the 17th century community of English printers to prove his argument, and provides a detailed analysis of the organization and workings of their community. Johns then describes the way interpersonal relationships among printers evolved into guilds that keep track of the intellectual and financial credit of its members. The guilds then eventually came into contact with political forces and through their interaction produced the modern understanding of copyrights. Johns concludes that the *printing revolution* as we know it today is "thus a product of a later, political revolution. It was a retrospective creation forged with tools selectively chosen from the arguments created by 18th century historians for other purposes" (374). Regarding the reliability and fidelity attributed to print, Johns concludes "the persuasive power of printed materials to affect the readers [...] exists but it's a hard-won and brittle achievement", the result of a long struggle

by the printers community's struggle for credit (624). Moving on from his conclusions, Johns explains that Eisenstein's argument carries with it the risk of positing a technological fact in the place of a cultural struggle and accomplishment.

The seeming disagreement over the precedence of technology of media over its community of users is a very deep-rooted one and, given the central importance of the printing press in the history of encyclopedias, it is worth exploring the finer points of both camps' arguments. In a series of articles published in *American Historical Review* in 2002, Eisenstein revisited her arguments, taking into account the criticisms of Johns. Restating her interest in the overarching transformative aspects of the printing technology, Eisenstein argues that appreciating the human elements and not acknowledging the role of the technology itself, as in the case of Johns, would be missing a very crucial part of the picture and goes on to present her critique of Johns (2002: 89). While acknowledging many qualities of *The Nature of the Book*, Eisenstein identifies three key areas where she is in disagreement, the most important of which is his dismissal of any intrinsic characteristics of mechanical printing press in contrast to scribal practices it replaced. Eisenstein also considers Johns' focus on the English cultural landscape as a hindrance to his account of the intensifying cultural interchange going on in the European continent, particularly the struggle between Catholic and Protestant movements. Finally, Eisenstein takes issue with Johns' argument that the printing revolution was a cultural construct of the 18th or 19th century, and claims that such an argument makes sense only if one disregards as many aspects of the history of printing as Johns did.

Following Eisenstein's comments Johns, was also given the opportunity to reply in the same issue of the *AHR* and he restated his disagreement with Eisenstein over two very fundamental points, "the first is the degree of autonomy that historians should or should not ascribe to readers of printed works (or, for that matter, to manuscript ones). The second is the character, potency, and even existence of something called 'print culture'" (Johns 2002: 106). In addition to his previous remarks, Jones states that his work in general, and *The Nature of the Book* in particular, does not aim to replace *Printing Press as an Agent of Change* but to supplement it with a different approach (109). "Where Eisenstein asks what print culture itself is, I ask how printing's historic role came to be shaped. Where she

ascribes power to a culture, I assign it to communities of people. Most generally, where she is interested in qualities, I want to know about processes" (110).

Although both scholars are constructive in their own right, Eisenstein offers her own perspective concerning their difference of approach, which, again, proves a valuable observation when applied to similar problems regarding the effects of media on exiting social structures:

> We differ because we approach early modern printing from the opposite ends of a time scale. I start with medieval texts and the incapacity of hand copying to achieve certain goals long valued by Latin reading elites. Johns starts with the modern book and the incapacity of the handpress to achieve the degree of standardization and uniformity that is now taken for granted. (Eisenstein, "A Reply": 126)

For the purposes of the present study, the two approaches broadly discussed above by these two prominent historians represent a very significant perspective for the understanding of the evolution of the encyclopedic form. Both the influence of different media, and the particular intervention of extraordinary individuals in interpreting this influence, will be a recurring theme of this study and constitutes an integral part of my analysis. So far, it is clear that the combined effects of all the influences affected by the movable type is a massive expansion of the reach of printed material, matched in time by an expansion of the audience ready to receive it.

Along with Eisenstein, MacArthur also agrees with the statement that we owe the development of the very concepts of authorship and his/her audience to the possibilities afforded by the printing press, since before the increased ability to produce books, it would be impossible for a prospective author to receive wide-scale feedback on his or her work within a lifetime (73). Lewis Mumford, writing decades before any of the discussions reviewed above, claimed that moveable type ended the reign of the local and the immediate for the highly atomized societies of the Middle Ages, and opened up the relatively isolated communities. Mumford also noted the great significance of the mass production of paper, which enabled a society capable of recording all its transactions and encounters, thus creating a reliable accountancy of time and money.

The academic discussion concerning the exact impact of the printing press on the evolution of the encyclopedia is rather vague. The fact that books became a mass-produced

consumer good and have largely lost their position as precious objects meant a significant change in the potential readers of encyclopedias outside of monasteries. Also, the changing economic structure behind book making and the desire of emerging book merchants to create new demand for their products, also created a new market for current and accessible works of reference. In addition to these economic factors, the intellectual climate of Europe was going through cataclysmic transformations during the two centuries following the introduction of print in 1455, regardless of the direct influence one ascribes to the press. The Renaissance, the Protestant Reformation and the Scientific Revolution all in their own way demanded new schematics of thought and new ways to create and organize knowledge. All of these developments were bound to be reflected in encyclopedias, whose medieval forms and ambitions suddenly seemed so anachronistic.

1.8 Transforming Encyclopedic Thought

On the forefront of the re-evaluation of the role and content of encyclopedias was Francis Bacon (1561 – 1626) whose work is representative of the transition form the Middle Ages to the Enlightenment. The major debates around encyclopedias throughout the Middle Ages concerned the precedence of particular topics due to their importance within the scholastic mode of thought. While planning for his encyclopedia, named *Magna Instauratio* (Great Renewal, 1620) Bacon aimed to transcend these debates and "wished to claim that all the knowledge could be captured, organized and presented" (Katz, 33). While this may not sound so radically different from the work of previous medieval scholars, what Bacon envisioned was "not a *Summa* of all truth or a *Speculum* reflecting the absolute but rather a fallible human attempt to see shape in nature. It is what we call today an exercise in model making" (McArthur, 110). Bacon's model entailed a total of 130 sections, categorized into three main branches (Collison, 82);

i. (Sections 1-40) *External Nature*
Astronomy. Meteorology. Geography. The Greater Masses- Fire, Air, Water and Earth. Species- mineral, vegetable, and animal.

ii.(Sections 41-58) *Man*
Anatomy. Physiology. Structure and Powers. Actions- Voluntary and involuntary

iii.(Sections 59-130) *Man's Actions on Nature*
Medicine. Surgery. Chemistry. Vision and the Visual Arts. Hearing, Sound, and Music. Smell, and Smells. Taste, and Tastes. Touch, and the Objects of Touch (including physical love). Pleasure and Pain. The Emotions. The Intellectual Faculties. Food, Drink, etc. The Care of the Person. Clothing. Architecture. Transport. Printing, Books, and Writing. Agriculture. Navigation. Other arts of peace. The Arts of War. The History of Machines. Arithmetic. Geometry. The Miscellaneous History of Common Experiments which have not grown into an art.

Although Bacon only managed to publish a very small portion of his great encyclopedia, the influence of his plan on his successors was profound. Katz states that Bacon's list became an unofficial checklist for future compilers to see if they missed any particular topic, while Collison argues that Bacon's attempt became a yardstick by which to judge later efforts and a goal for future encyclopedists to surpass (Katz, 34, Collison, 84). McArthur interprets Bacon's effort as a desire "to give mankind back what it has lost through the fall of Adam" (110). Although such an ambition may sound familiar to the medieval attempts to create a *Book of Nature,* Bacon's insistence on the collection of new facts through experiment and observation was a crucial departure from his predecessors. Bacon's writings represent the first flourishing of rational-humanist thought in the world of encyclopedia making and it is no surprise that all the epoch-defining works that followed soon after acknowledge their debt to his influence.

Collecting of new data and presenting it in a previously unseen format entails many challenges for an encyclopedia compiler, and these challenges are only compounded by the natural desire to be taken as an authoritative source of information. While discussing the evolution of the authoritative text throughout the first century of printing, Feld argued that "success in printing depended upon the perspicuous elevation of the editorial function" (86). Feld goes on to describe the emergence of three distinct ways in which editors hoped to assure their authority (ibid.):

i. *Primal:* Superiority of the text is based on its claim to be the closest possible representation to its original.
ii. *Idiosyncratic:* Authority claim of the text is linked to the personal credibility of an expert scholar.

iii. *Consensual:* Superiority of the text is based on its claim to be a summation of all available resources and comments.

It is clear that the perceived authority of a re-issued edition of a classical text, Feld's object of choice in his article, is different than an encyclopedia. As a compilation of important texts, written and put together by expert scholars, the authority of encyclopedias has depended upon a combination of all three sources throughout centuries, yet the changing conditions introduced partly by print has resulted in a reassessment of priorities and a reimagining of the form.

Alphabetical ordering is arguably a feature of modern encyclopedias that came into prominence with the adoption of the printing press. According to McArthur, the earliest examples of alphabetical ordering can be found in the 11th Century, yet they were unusual, not to mention offensive to the scholastic order of knowledge (76). McArthur argues that Gutenberg's invention changed the linguistic landscape in favor of alphabetical ordering by fundamentally altering the way creators of the texts interact with their work. With the introduction of printing, scholars and printers started, for the first time, to think of words as made up of individual letters and this interaction with individual letters rendered alphabetical ordering much less alien to compilers than it might have been to medieval compilers (77).

Given the challenges of defining authority discussed above, along with the slowly but steadily accelerating pace of intellectual development in Europe, the statement from Katz as to the loss of popularity of encyclopedias following death of Bacon in the second half of the 17th century and the beginning of 18th century should not come as a surprise (34). Katz only mentions Louis Moreri's *Le Grand Dictionnaire Historique* (1674) as a very successful example with very notable features (ibid.*).* Moreri's set went through many re-issues and was hugely popular, hence Katz's analysis of the likely reasons for its success reads like a sign for the shape of encyclopedias to come:

> The set was one of the first works to be arranged alphabetically...Second, there was a heavy concentration on the interests of the day, particularly biography and history. Third, thanks to constant updating and expansion, it was relatively current. Finally, it was in the vernacular and could be read by almost any literate individual. The day of the current popular encyclopedia was near (ibid*)*.

1.9 Emergence of the Modern Encyclopedia

Given the intellectual turmoil surrounding Europe, catalyzed by the diverse effects of printing press, the rising vernaculars within emerging national boundaries and completely new methods of acquiring and interpreting data that came about with scientific revolution, any aspiring encyclopedia compiler would face an enormous challenge. Writing to a previously inaccessible public, in a new way and in the vernacular, authors of reference works were forced to redefine their own categories, starting with the previously unproblematic distinction between a dictionary and encyclopedia. McArthur draws this distinction by stating that a dictionary is concerned with words while an encyclopedia focuses on things (102). While seemingly clear-cut, it is obvious that in practice it is much more difficult to draw such lines, and that most works are defined by their tendencies within a continuum between the two extremes. For the early 18th century compiler, an encyclopedia was more akin to a special dictionary than to a distinct type of reference work, and this approach was most clearly visible in the titles of the works which, by their very struggle to mark their boundaries, defined our modern sense of encyclopedias.

If Moreri's set can be considered as an origin to one of the most important national encyclopedic traditions, John Harris' 1704 *Lexicon Technicum* (*An universal English dictionary of the arts an sciences, explaining not only the terms of arts, but the arts themselves)* was its counterpart across the channel. As a fellow of the Royal Society, Harris was well versed in most of the technical and scientific developments of his era and he did not refrain from focusing his work on these topics at the expense of other disciplines. Harris' work is also notable for featuring contributions by such luminaries of the age as Newton, thus setting a precedent for encyclopedic practice of directly seeking assistance from experts for particular fields, a practice that was to become a pillar of modern encyclopedia making. Supporting the technical and scientific emphasis of Harrris' text were very high quality drawings, plates and diagrams along with biographies of some of the pioneers of scientific discovery. Collison states that Harris' work was the first purely English general encyclopedia and the reversal of a trend where by English compilers stopped copying French works and started influencing them in to the coming decades.

Both Moreri's and Harris' works can be considered as attempts to continue in the footsteps of Bacon, but Ephraim Chambers and his *Cyclopaedia (An universal dictionary of arts and sciences, containing an explication of the terms and an account of the things signified thereby in the several arts, liberal and mechanical, and the several sciences, human and divine, compiled from the best authors)* of 1728 was the first work to carry the concept of modern encyclopedias in to the mainstream and definitively showed the way to the future. A globe-maker by trade, Chambers recognized the strength of Harris' work but determined to broaden its focus and produce a more easy to use compendium. Chambers assembled such an accessible combination of materials that shortly after publication, his encyclopedia became the pride of the English nation, and its author was rewarded with a fellowship at the Royal Society. The qualities that made Chambers' work so popular were many, chief among which was the care he took to make *Cyclopaedia* accessible to casual readers, a goal achieved chiefly by his easy-to-read articles and his meticulous cross-references.

While defining the shape of the modern encyclopedia, Chambers also outlined the ways in which these reference works related to their history, both in terms of contrasts and similarities. In his 1996 article, Yeo has examined the relationship between the modern encyclopedia, represented by *Cyclopaedia*, and the traditional practice of keeping commonplace books by medieval and Renaissance scholars and pupils. A commonplace book is a collection of quotes and snippets from a multitude of sources relating to diverse fields of interest. Since access to books was much more limited, such a practice was often the only way medieval scholars could retain extensive knowledge on resources that mattered to them. Commonplace books retained some of their importance during the Renaissance as a personal selection of useful quotes and also as educational tools that teach students to categorize different fields and to envision them as a whole. Although at first sight the similarities between commonplace books and the early encyclopedias might be striking, there are critical differences concerning both style and purpose. While a commonplace book was a personal collection, often written down from memory and stored to be consulted in order to make one's conversation richer, encyclopedias, especially after the 18th century, become ever growing repositories of knowledge, hoping to address a dramatically expanding body of knowledge. Yeo quotes Leibniz, known by many as the last of the *walking-*

encyclopedias, as lamenting the multitude of books that he could not manage (160). Thus, it is interesting to note the evolution of the commonplace book into the *Cyclopaedia*, which states in its title that it is "compiled from the best authors", just like its predecessors. Yet, during a copyright dispute concerning his usage of other's work in his encyclopedia, Chambers defended himself by claiming the act of compiling and cross-referencing diverse sources into a whole gave them new meaning and that, therefore, his *Cyclopaedia* should be considered an original work. Yeo argues that the general encyclopedia, replacing the old practice of personal commonplacing, has the potential to serve many needs at once:

> Whereas educated readers could use the Cyclopædia as a commonplace book to prompt their memory for earlier reading, the non-educated reader studied it as a single point of reference, accepting the warrant of the author (Chambers) that it was based on a reliable abridgment of the major subjects. In both cases, it functioned as a ready-made commonplace book (169).

A very noteworthy distinction between the traditional commonplace book and *Cyclopaedia* is Chambers' focus on new knowledge and his ambition to foster intellectual curiosity and innovation. Yeo argues that Chambers' was an answer to Bacon's call for new facts and knowledge, whereas the principal aim of the traditional commonplace book was to preserve and reuse old knowledge. The analysis of my study up to this point concurs with Yeo, in that the modern encyclopedia replaced the practice of commonplace books while retaining some of their purpose, but not without reformulating their use and the system of knowledge they embody. In addition to redefining and repurposing the traditional commonplace book to a large extent, Chambers was also aiming to address the possible concern that might arise from the use of alphabetical ordering instead of age-old thematic conventions. In his study of the evolution of topical treatises in *Encyclopedia Britannica* Loveland, explains that one of the reason Chambers was so meticilous in his cross-referencing was to counter possible critcism to the effect that he broke the circular and complete nature of knowledge, in favor of a fragmentary approach (57).

Despite all the tensions and struggles his work embodies, Chambers was confident in presenting his *Cyclopaedia* as nothing less than a replacement for a whole library and the best book ever written. History was not unkind to his claims though, for all its pioneering features and the transition it represents, Collison is clear in placing *Cyclopaedia* in the

encyclopedic heritage: "Almost every subsequent move in the world on encyclopedia-making is thus traceable to the example of Chambers" (104). This statement that becomes more credible when one considers that the success of the *Cyclopaedia* was not only intellectual – the work was equally successful as a publishing venture as well. Its profitability encouraged numerous publishers to commission diverse reference works in England and throughout the continent. Among the publishers who hoped to replicate its success was the Scottish publishers of the *Britannica* later in the century and a French bookseller, André-François Le Breton (1708-79) who commissioned its translation into French and thus unknowingly started the project that would result in the *Encyclopédie,* arguably the most famous and influential encyclopedia ever published.

1.10 Enlightening the Citizens

It is common practice among scholars across disciplines to assume that the *Encyclopédie* was a unique achievement, but taking its fame and superiority for granted would be detrimental to understanding its place in the history of encyclopedias. This section will attempt to illustrate "in what ways it actually was unique, bold and innovative, and in what ways it was conventional, timid and even, retrograde" (Kafker, 1981, 223). Despite the publication and considerable finanacial success of such works as *Le Grand Dictionnaire Historique, Lexicon Technicum* and most importantly *Cyclopaedia*, the 18th Century has failed to produce an encyclopedia that would both address Bacon's call for reform, and compare with the sheer volume and reach of a great medieval compilation.

The intellectual and social background that prepared the minds that collaborated to give the world the *Encyclopédie* is well known. While the discussion of new sciences and knowledge in their respective fields was encouraged and expected from the new encyclopedias, the socio-political climate was much less open to a comprehensive worldview based on new philosophical and scientific principles. The hold of the Church and the Crown over all intellectual output was as tight as ever and as self-appointed gatekeepers of truth about all matters social and spiritual, they exerted their power with censors, police spies and deep-rooted ecclesiastical institutions. Against all the traditional sources of

authority, a burgeoning group of *philosophes*, epitomized by figures such as Voltaire and Montesquieu, were gradually becoming more confident and prominent. Booksellers and printers, as discussed by Johns and Eisenstein, were among the central figures of the movement for both financial and intellectual reasons. Among them was, Le Breton who was hoping to purchase licenses to translate the encyclopedias of Harris and Chambers into French with the help of appointed editors. After numerous problems with licenses and changes in editorship, Le Breton handed the job to two relatively young and very promising intellectuals, namely Denis Diderot (1732-1784) and Jean Le Rond d'Alembert (1717-1783). D'Alembert was well known as an all-around intellectual and an especially brilliant mathematician, whereas the publishers knew Diderot as an excellent translator with literary aspirations. While outlining their envisioned project, under constant pressure from the police and the church, Diderot and d'Alembert quickly distanced themselves from the idea of translating existing works and set out to formulate one of the most ambitious literary and intellectual projects ever attempted. Before the work proper began, Diderot published a short *prospectus* (1750) that outlined their work, illustrated their goals and methods which was built upon and expanded by d'Alembert in his *Preliminary Discourse* (1751), presented as a preface to the first published volume of the *Encyclopédie*. These two documents, especially the *Preliminary Discourse,* still remain as key resources in understanding the hopes and ambitions of the young editors at the beginning of a long and arduous journey that would make them legends of the Enlightenment.

D'Alembert leaves no doubt concerning the scope of the project from the very beginning:

> The work whose first volume we are presenting today has two aims. As an *Encyclopedia*, it is to set forth as well as possible the order and connection of the parts of human knowledge. As a *Reasoned Dictionary of the Sciences, Arts, and Trades*, it is to contain the general principles that form the basis of each science and each art, liberal or mechanical, and the most essential facts that make up the body and substance of each. These two points of view, the one of an *Encyclopedia* and the other of a *Reasoned Dictionary*, will thus constitute the basis for the outline and division of our Preliminary Discourse. (d'Alembert, 4)

It is also clear that the editors are aware of the challenge they are facing, as early as Diderot's 1750 *Prospectus,* and are not attempting to face it on their own:

What man, then, could be so brash and so ignorant in understanding as to undertake single-handedly to treat all the sciences and all the arts? It thus became clear to us that to support such a great load as one we would have to carry, it would be necessary to share it; and forthwith we cast our eyes upon a sufficient number of artisans who were competent and well-known for their talents, and scholars well-versed in the particular discipline which was to be their share of the work. To each one we distributed the part that was suited to him. (d'Alembert, 112)

D'Alembert goes on to discuss the connections among sciences and arts and the rules with which they are governed how they are discovered through senses. His treatise details the processes through which philosophers and scientists arrive at knowledge, and how to categorize this knowledge, culminating in an intellectual framework never seen before or since for any encyclopedia. In addition to these detailed analyses, d'Alembert also presents his and Diderot's views on Bacon's writings, and offers their version of a *System of Human Knowledge*, connecting all branches of human understanding in the shape of a tree.

Richard Schwab presents an excellent analysis of d'Alembert's work in his *Preface*, which deserves to be quoted in length:

Of all the shorter works of the eighteenth-century philosophes, the Preliminary Discourse to Diderot's Encyclopedia is incomparably the best introduction to the French Enlightenment. It is the Enlightenment insofar as one can make such a claim for any single work; with a notable economy and vigor it expresses the hopes, the dogmas, the assumptions, and the prejudices we have come to associate with the movement of the philosophes (ix).
Indeed, the *Preliminary Discourse* could be regarded as the manifesto of the French Enlightenment, at least in the retrospective view of the historian. To be sure, it was not designed to be a pronouncement heralding or justifying revolutionary political action as were the Declaration of Independence, the Declaration of the Rights of Man, and the Communist Manifesto, but it expressed the spirit of an intellectual and emotional revolution going on in the eighteenth century that in one way or another lay in the background of each of these. It breathed a confidence that man, through his own intelligent efforts, could transform the conditions of human life and that the beginning of that revolution could already be seen in the sciences and arts. Compared with anything that had preceded it, the Discourse was unique. We have seen its likes since, but one looks in vain throughout previous history for a declaration of principles that represented, as this one did, the views of a party of men of letters who were convinced that through their combined efforts they could substantially contribute to the progress of humanity (xi).

Founded on such principles, the resulting work carried the full title *Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers.*

MAP of the SYSTEM
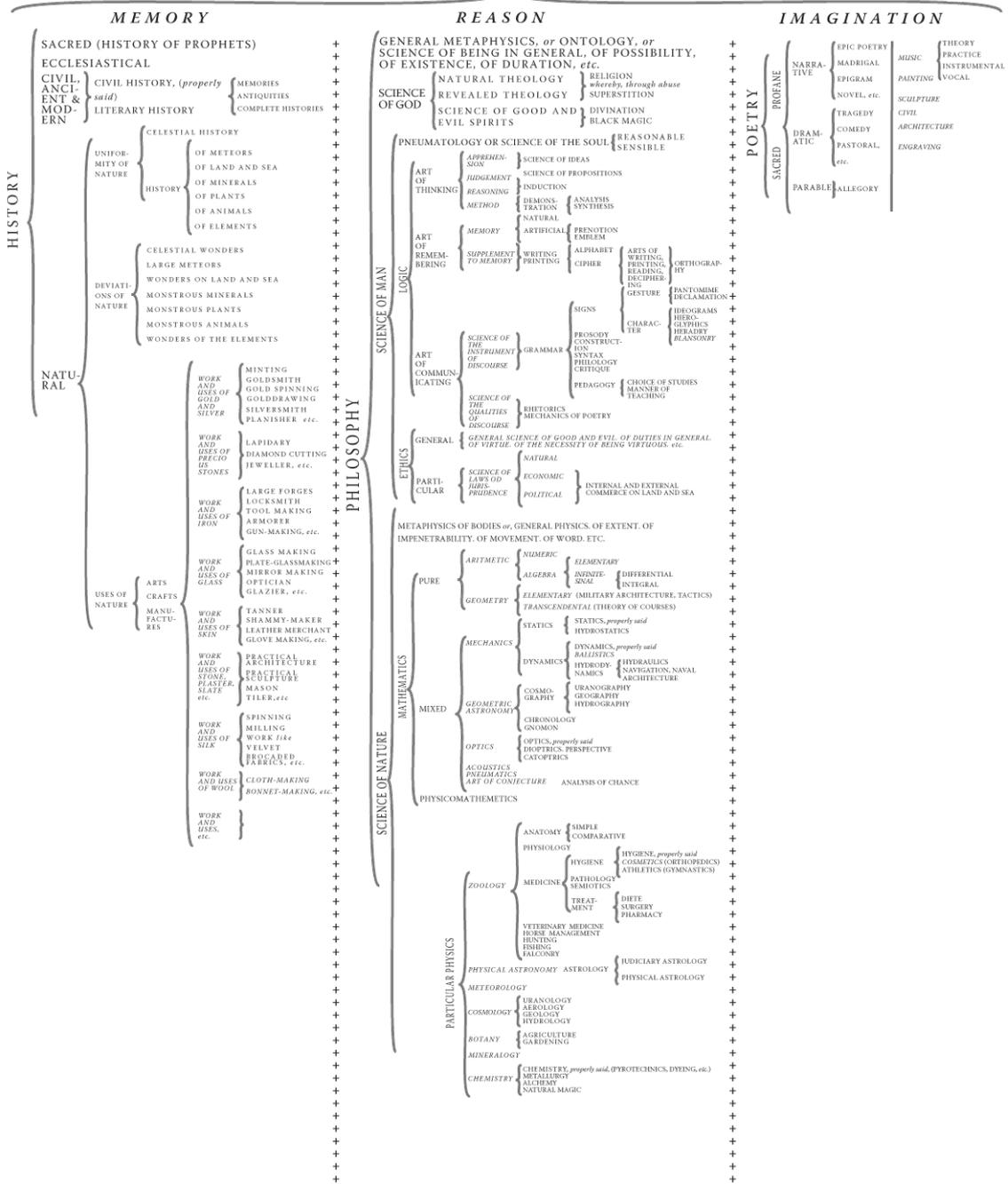## *of* HUMAN KNOWLEDGE

UNDERSTANDING

MEMORY   *REASON*   *IMAGINATION*

MEMORY

HISTORY

SACRED (HISTORY OF PROPHETS)
ECCLESIASTICAL
CIVIL, ANCIENT & MODERN
- CIVIL HISTORY, *(properly said)*
  - MEMORIES
  - ANTIQUITIES
  - COMPLETE HISTORIES
- LITERARY HISTORY

NATURAL

UNIFORMITY OF NATURE
- CELESTIAL HISTORY
- HISTORY
  - OF METEORS
  - OF LAND AND SEA
  - OF MINERALS
  - OF PLANTS
  - OF ANIMALS
  - OF ELEMENTS

DEVIATIONS OF NATURE
- CELESTIAL WONDERS
- LARGE METEORS
- WONDERS ON LAND AND SEA
- MONSTROUS MINERALS
- MONSTROUS PLANTS
- MONSTROUS ANIMALS
- WONDERS OF THE ELEMENTS

USES OF NATURE — ARTS CRAFTS MANUFACTURES
- WORK AND USES OF GOLD AND SILVER
  - MINTING
  - GOLDSMITH
  - GOLD SPINNING
  - GOLDDRAWING
  - SILVERSMITH
  - PLANISHER *etc.*
- WORK AND USES OF PRECIOUS STONES
  - LAPIDARY
  - DIAMOND CUTTING
  - JEWELLER, *etc.*
- WORK AND USES OF IRON
  - LARGE FORGES
  - LOCKSMITH
  - TOOL MAKING
  - ARMORER
  - GUN-MAKING, *etc.*
- WORK AND USES OF GLASS
  - GLASS MAKING
  - PLATE-GLASSMAKING
  - MIRROR MAKING
  - OPTICIAN
  - GLAZIER, *etc.*
- WORK AND USES OF SKIN
  - TANNER
  - SHAMMY-MAKER
  - LEATHER MERCHANT
  - GLOVE MAKING, *etc.*
- WORK AND USES OF STONE, PLASTER, SLATE *etc.*
  - PRACTICAL ARCHITECTURE
  - PRACTICAL SCULPTURE
  - MASON
  - TILER, *etc*
- WORK AND USES OF SILK
  - SPINNING
  - MILLING
  - WORK *like*
  - VELVET
  - BROCADED FABRICS, *etc.*
- WORK AND USES OF WOOL
  - CLOTH-MAKING
  - BONNET-MAKING, *etc.*
- WORK AND USES, *etc.*

REASON

PHILOSOPHY

GENERAL METAPHYSICS, *or* ONTOLOGY, *or* SCIENCE OF BEING IN GENERAL, OF POSSIBILITY, OF EXISTENCE, OF DURATION, *etc.*

SCIENCE OF GOD
- NATURAL THEOLOGY
- REVEALED THEOLOGY — RELIGION *whereby, through abuse* SUPERSTITION
- SCIENCE OF GOOD AND EVIL SPIRITS — DIVINATION, BLACK MAGIC
- PNEUMATOLOGY OR SCIENCE OF THE SOUL — REASONABLE, SENSIBLE

SCIENCE OF MAN

LOGIC
- ART OF THINKING
  - *APPREHENSION* — SCIENCE OF IDEAS / SCIENCE OF PROPOSITIONS
  - *JUDGEMENT* — INDUCTION
  - *REASONING*
  - *METHOD* — DEMONSTRATION — ANALYSIS, SYNTHESIS
- ART OF REMEMBERING
  - *MEMORY* — NATURAL / ARTIFICIAL — PRENOTION, EMBLEM
  - *SUPPLEMENT TO MEMORY* — WRITING PRINTING
    - ALPHABET
    - CIPHER — ARTS OF WRITING, PRINTING, READING, DECIPHERING — ORTHOGRAPHY
    - GESTURE — PANTOMIME DECLAMATION
    - SIGNS — CHARACTER — IDEOGRAMS HIEROGLYPHICS HERALDRY BLANSONRY
- ART OF COMMUNICATING
  - *SCIENCE OF THE INSTRUMENT OF DISCOURSE* — GRAMMAR
    - PROSODY
    - CONSTRUCTION
    - SYNTAX
    - PHILOLOGY
    - CRITIQUE
    - PEDAGOGY — CHOICE OF STUDIES, MANNER OF TEACHING
  - *SCIENCE OF THE QUALITIES OF DISCOURSE* — RHETORICS, MECHANICS OF POETRY

ETHICS
- GENERAL — *GENERAL SCIENCE OF GOOD AND EVIL. OF DUTIES IN GENERAL. OF VIRTUE. OF THE NECESSITY OF BEING VIRTUOUS. etc.*
- PARTICULAR — *SCIENCE OF LAWS OD JURISPRUDENCE*
  - *NATURAL*
  - *ECONOMIC*
  - *POLITICAL* — INTERNAL AND EXTERNAL COMMERCE ON LAND AND SEA

SCIENCE OF NATURE

METAPHYSICS OF BODIES *or*, GENERAL PHYSICS. OF EXTENT. OF IMPENETRABILITY. OF MOVEMENT. OF WORD. ETC.

MATHEMATICS
- PURE
  - *ARITMETIC* — NUMERIC / ALGEBRA — *INFINITESINAL* — DIFFERENTIAL, INTEGRAL
  - *GEOMETRY* — ELEMENTARY (MILITARY ARCHITECTURE, TACTICS) / TRANSCENDENTAL (THEORY OF COURSES)
- MIXED
  - *MECHANICS*
    - STATICS — STATICS, *properly said* / HYDROSTATICS
    - DYNAMICS — DYNAMICS, *properly said*, BALLISTICS / HYDRODYNAMICS — HYDRAULICS, NAVIGATION, NAVAL ARCHITECTURE
  - *GEOMETRIC ASTRONOMY*
    - COSMOGRAPHY — URANOGRAPHY, GEOGRAPHY, HYDROGRAPHY
    - CHRONOLOGY, GNOMON
  - *OPTICS* — OPTICS, *properly said*, DIOPTRICS. PERSPECTIVE, CATOPTRICS
  - *ACOUSTICS PNEUMATICS ART OF CONJECTURE* — ANALYSIS OF CHANCE
- PHYSICOMATHEMETICS

PARTICULAR PHYSICS
- *ZOOLOGY*
  - ANATOMY — SIMPLE / COMPARATIVE
  - PHYSIOLOGY
  - MEDICINE
    - HYGIENE — HYGIENE, *properly said*, COSMETICS (ORTHOPEDICS), ATHLETICS (GYMNASTICS)
    - PATHOLOGY, SEMIOTICS
    - TREATMENT — DIETE, SURGERY, PHARMACY
  - VETERINARY MEDICINE, HORSE MANAGEMENT, HUNTING, FISHING, FALCONRY
- *PHYSICAL ASTRONOMY* — ASTROLOGY — JUDICIARY ASTROLOGY / PHYSICAL ASTROLOGY
- *METEOROLOGY*
- *COSMOLOGY* — URANOLOGY, AEROLOGY, GEOLOGY, HYDROLOGY
- *BOTANY* — AGRICULTURE, GARDENING
- *MINERALOGY*
- *CHEMISTRY* — CHEMISTRY, *properly said*, (PYROTECHNICS, DYEING, etc.), METALLURGY, ALCHEMY, NATURAL MAGIC

IMAGINATION

POETRY

PROFANE
- NARRATIVE
  - EPIC POETRY
  - MADRIGAL
  - EPIGRAM
  - NOVEL, *etc.*
- DRAMATIC
  - TRAGEDY
  - COMEDY
  - PASTORAL
  - *etc.*

SACRED
- PARABLE — ALLEGORY

MUSIC — THEORY, PRACTICE, INSTRUMENTAL, VOCAL
PAINTING
SCULPTURE
CIVIL
ARCHITECTURE
ENGRAVING

Figure 3 Map of the System of Human Knowledge by Diderot & d'Alembert.[4]

[4] Translated by Benjamin Heller. http://quod.lib.umich.edu/d/did/tree.html

Every figure associated with the project was impressive in its own right; published between 1751 and 1772, it spanned "28 volumes, of which 11 were illustrations, 72,998 articles totaling some 20 million words written by hundreds of collaborators" (Blom, 2005, xvi). The *Encyclopédie* was the first work of modern principles that could compare with the massive compilations of the Middle Ages.

The sheer volume of such a work also had widespread economic implications, Blom states that the project "involved a thousand printers, etchers, draughtsman, bookbinders, and others, meaning that almost one out of every hundred Parisians benefited from the enterprise financially, directly or indirectly" (58). Beyond all its intellectual achievements, it was this economic leverage that saved the project from imminent oppression from the authorities. According to Blom, publishing the *Encyclopédie* proved to be too lucrative a business to kill in spite of the dangers it presented, which he interprets as a sign of the increasing political power of the newly developing bourgeoisie and its accumulation of capital (235). The reasons why various authorities wanted the project banned were also numerous and could be found in both very subtle and not-so-subtle guises.

The whole project is full of signs of its philosophical stance, starting with the way the articles are arranged. Although the selection of alphabetical ordering was not revolutionary in itself, the *Encyclopédie* can be credited as the first major work to have grasped the categorical implications of this organizational approach. Alphabetical organization has the burden of rendering the task of editing and writing the encyclopedia much more arduous, since the whole scheme and the complete list of keywords have to be laid down from the beginning with all the cross-references. But, it also enabled very unique opportunities. For instance, if the editors had organized the *Encyclopédie* by category, they would have been expected to devote a large section to theology. But, since alphabetical order democratizes all titles, and mixes the categories up, the editors could get away with completely ignoring many such loaded topics or devoting very little space to them. Even the tree of knowledge presented by d'Alembert in the *Preliminary Discourse* was laden with clues as to the stance of its editors. As Blom explains, one would find heraldry next to pantomime and "theology found itself relegated to a withered and unproductive branch, leading directly into divination and Black Magic" (84). Trying to sustain such an elaborate effort against

constant pressure from authorities through two decades of work inevitably took its toll on Diderot, amongst the examples given by Kafker are contradictory remarks, two articles on the same subject and cross-references that lead nowhere (1981: 226).

Most of the subversive ideas in the entries employed various techniques to deliver their sometimes-subliminal messages. Diderot himself or his co-editor d'Alembert would skillfully disguise their opinions about matters behind competently written essays, which would discuss all the aspects of the issue in a scientific, and sometimes dull, manner but ultimately leave no conclusion other than the author's, although this position is never explicitly revealed within the article.[5] Entries concerning religious matters, which will be under the closest scrutiny of the censors, also had a curious feature. In the *Encyclopédie,* one would find that all the required religious articles for a reference work of the time have been dealt within immense detail and great length but also with staggering dullness and a lack of emotion. Not one member of the clergy could object to the content of the articles but the prose and the approach to the subject was so cold and lifeless, that it was guaranteed to kill any religious sentiment. The chosen author for these entries was Abbé Edme Mallet and he was responsible for almost all of the sections on religious matters, totaling a massive 484 entries. Whether his texts reflect his state of mind or an intentional plot to debunk every pillar of the Christian faith, continues to be a topic of debate.

Another important aspect of the *Encyclopédie*, which was perhaps indicative of a constructive intent rather than a disruptive attitude, was the work's detailed descriptions of *arts et métiers*. The ambition of the publishers and the editors was to include all the crafts in existence at the time, not only by way of carefully detailed descriptions but also by means of elegantly crafted plates. This detailed treatment of the common people further highlighted by a lack of coverage of the noble families amounted to a significant social statement of the Enlightenment. By putting the people who undertake production in the centre, and by valuing their crafts and trade secrets, the *Encyclopédie* presented what really mattered in society and widened its own base of prospective readers to a general public, who could

---

[5] An illustrative example is given by Blom. In the entry on the *Soul* Diderot explains where in the body the soul might be located, refuting all of the suggestions by case studies, ultimately leaving nowhere to put it and, therefore, implying its non-existence (78).

actually learn practical things about their craft. Such a detailed portrayal of pre-revolutionary France is also important, as it is now an invaluable historical document that described a world long gone in the fires of revolution to come. The artisanal crafts that are documented so meticulously, and the socio-political institutions depicted so, were recast first during the French revolution, followed by the industrial revolution, and culminating in a society that would have been alien to the creators of the *Encyclopédie,* although this new age realized some of their most passionate dreams.

Despite the uneven quality of its entries and editorial inconsistencies, as well as intentional tactics to evade censors and unintentional slips due to the crushing workload of Diderot, the significance of the *Encyclopédie* cannot be overestimated. As an intellectual enterprise, it stands unique and unsurpassed within the history of encyclopedias. Kafker argues that "never before or since has any encyclopedia been so openly committed to so much economic, religious and political reform" (1981, 233). According to Katz, the *Encyclopédie* "served as a platform for a necessary debate rather than entirely as a source of information about the world" (36). Donato argues that what made Diderot and d'Alembert unique was their intention to influence the way people think (11). According to Donato, "This was a crucial and a momentary instance, our concept of an encyclopedia is a compilation of knowledge, which is closer to the medieval and ancient notions than to the encyclopedists" (ibid*).* Kafker concurs with the views expressed above, stating that "Diderot and d'Alembert did not content themselves with creating an outstanding reference work. Their ideal was to be engaging, not to resemble dispassionate, 'objective' scholars. They were committed to change people's beliefs and society's ways" (1981, 232).

All the intellectual motivations of Diderot and d'Alembert would have been in vain if their work did not achieve its primary function, but the ideals that informed the structure and organization of their great reference work accomplished their goal. As an encyclopedia, it was more than a recognition of a good idea. "Diderot and d'Alembert successfully enlisted numerous contributors from their circles and managed to give voice to most of the leading scholars, men of letters, and scientists of the 18th Century" (Kafker, 1981, 235). After the *Encyclopédie*, encyclopedias could at last be considered as looking forward to the new developments within the sciences and society rather than being preoccupied with preserving

and copying existing knowledge. Even more importantly, the *Encyclopédie* proved that, however ambitious, a good encyclopedia can be a very lucrative business venture, and their work was instrumental in motivating other entrepreneurs in the area, spawning copies that endeavored to surpass the original in the following decades.

While the *Encyclopédie* immediately captured the public's imagination, other publishers hoping to repeat its economic success certainly did not aspire to the attention and scrutiny it received from censors and authorities. Most publishers therefore, focused on providing a reliable reference source rather than a platform for social and political reform. In fact, the ordeals faced by Diderot and his collaborators had such a negative effect on the prospective publishers that most successive works tended towards conservative religious and social views. Kafker states that by avoiding confrontation with authorities, editors concentrated on pleasing their readers by offering more appealing sources of information (1994: 396). As Collison reports, "the beginning of 19th Century brought with it a boom in encyclopedia publishing" (174). The enduring success of the *Encyclopédie*, despite its endless hurdles, proved that a sizeable demand exists for a balanced encyclopedia made widely available and affordable.

In France, the most notable successor to Diderot was Pierre Larousse (1817-1875) who started by publishing a young people's work in 1853 and later expanding his reach with a 15-volume set entitled *Grand Dictionnaire Universal di XIX Siecle.* Since Pierre Larousse's time, the publishing house bearing his name has become synonymous with expertly written dictionary-encyclopedias, which excel particularly in their coverage of fine arts (Katz, 37). In Germany, David Friederich Brockhaus (1772-1823) published his *Koversations-Lexicon* between 1796 and 1811, also setting off a publication heritage that continued through the 20th Century. Motivated by his conviction that an encyclopedia should never be out-of-print or out-of-date, Brockhaus set up a cycle of continuous updates that aimed to address both of these concerns, while always staying one step ahead of its competitors and widespread piracy (Collison, 158). After its founder's death the publishers of *Brockhous* kept up the standards of the work, and the German encyclopedia has made a name for itself by featuring accessible articles written by subject experts and other notable contributors, and continues to enjoy high prestige in Germany. However, the publishers announced in 2008

that another print edition of the encyclopedia would not be published, citing the popularity and quality of the German edition of *Wikipedia* as a reason, marking the end of an almost two century print run(Germany's Brockhaus Encyclopedia Goes Online, 2008).

In the English speaking world, amongst all the successors of the *Encyclopédie*, one enterprise may be credited as being more responsible than any other work in defining the modern encyclopedia. The *Encyclopedia Britannica*, first published in 1771 by three Scottish gentlemen, Andrew Bell, Colin Macfarquhar and their chosen editor William Smellie. The first edition consisted of three volumes and "as a book of knowledge, …[it was] very uneven" (Kafker, 1994, 155). A simple overview of its three volumes is sufficient to see Kafker's point: while Vol.1 covered letters A to B, Vol.2 covered C to L and Vol.3 had to include all the articles from L to Z. Pressed for time and money, Smellie is recorded as having admitted, with a certain pride, "I wrote most of it, my lad, and snipped out from books enough material for the printer. With pastepot and scissors I composed it!" (qtd. in Kogan, 14). Despite its flaws, the first edition of *Britannica* was still a significant achievement and not only because it was the first edition of an encyclopedia legend that continues to be published even today, it was also "the first work published in the English language calling itself an 'encyclopedia' and the first alphabetically arranged reference book of the arts and sciences published in Scotland" (Kafker, 145). Although not an outstanding work by most accounts, the publication history of *Britannica* is of an almost constant improvement and refinement spread over more than two centuries.

The following second edition, issued between 1777 and 1784, was greatly expanded under the direction of a new editor, James Tytler, and emphasized the inclusion of biographies of notable persons. By all accounts, the ten-volume set was a distinct improvement, despite its omission of certain controversial topics such as the American Revolution. Following the death of its founders, the ownership of the *Britannica* passed over to Archibald Constable, an ambitious and talented publisher who set out to revise the collection of articles with the aim of making *Britannica* noticed outside of Edinburgh and Scotland. Constable planned and published supplements to update the existing 5th edition of the encyclopedia, and among the contributors to these now-famous supplements were some of the most prominent literary and scholarly figures of the day, including Sir Water

Scott, James Mill, Thomas Robert Malthus and David Ricardo, who refused to accept payment for his article on the moral ground that financial gain was not his motivation for contributing to *Encyclopedia Britannica* (qtd. in Kogan, 37). With such impressive authors in its roster, a frequent cycle of updates, the 5th and 6th edition, with supplements completed in 1824, *Britannica*, under Constable's ownership, took major strides in establishing itself as a respectable and authoritative reference source. Kogan illustrates the evolution of fundamental principles underlying *Encyclopedia Britannica* and their emergence with consecutive editions, chief among which is inclusiveness (42):

> The presentation of an orderly system of knowledge as comprehensive as the books would permit [...] an encyclopedia that would digest the principles of every science in the form of systems or distinct treatises had been something of a revolution in encyclopedia making. The second edition, with its biographies and history, and the next [...] had taken strides toward establishing [...] authority and authenticity. With Constable, these concepts received massive impetus.

Bought by Adam Black after the death of Constable, the 7th and 8th editions, published in 1830-1842 and 1853-1861 respectively, both were marked improvements over their predecessors and were prepared by an ever-expanding cadre of sub-editors and advisors in addition to editors-in-chief. The journal *Meliora*, regarded the 8th edition to be "the greatest collection of literary wealth ever compiled" (qtd. in Kogan, 50). However, all of the incremental improvements detailed above pale into insignificance when compared to the famous 9th edition, also known as the Scholars' edition, published between 1875-1888. *Britannica*'s first English editor, Professor Thomas Spencer Baynes strived to record all the recent scientific developments and to capture the essence of its time. Among the many distinguished contributors invited to write for the 9th edition was Thomas Huxley, the most outspoken proponent of Charles Darwin and his theory of Evolution, who supplied articles on "Biology", "Animal Kingdom" and "Evolution". Culminating in 16.000 articles, 25 volumes, the finished set included "superb woodcuts, colored palettes, and special colored maps of London, Rome, Paris, New York and Philadelphia" (Kogan, 62). Upon reviewing its first volume in 1875, *Nature* claimed that the entire edition will be "regarded as indicating the highest tidemark of the science, literature and arts of the time" (qtd. in

Kogan, 53). Katz states that the 9th edition is "still referred to today by researchers who see it, along with the 11th edition as a landmark in accessible scholarship" (39).

The publication of the widely acclaimed 9th edition marked another turning point in the history of the venture, namely, the opening up of the encyclopedia to the masses. American bookseller Horace Everett Hooper was among the first to recognize in publishing the budding market comprised of middle-class English and Americans who has been recently acquiring the promising assets of literacy, a relatively higher disposable income, greater leisure time, and intimately tied to a desire for self-improvement. Hoover's proposal to the *Times* of London to sell the 9th edition of *Britannica* at a much cheaper price than usual and to support the campaign with a barrage of clever advertising was revolutionary for both the ailing newspaper company and the encyclopedia. Moreover this innovative campaign was to further circulation especially when coupled with similar campaigns in the States. The most important effect of the campaign, for the purposes of this study, was the "popularization of the set. What heretofore had sold well enough to a limited group of better-than-average-educated English people now became international, part of many public and personal libraries wherever English was read" (Katz, 39). These campaigns, and Hoover's marketing genius behind them, in the late 19th century were instrumental in creating the now entrenched popularity and recognition of *Britannica* as *the* encyclopedia in the English-speaking world. Katz compares selling an academically minded set as with such marketing fury usually associated with *penny dreadfuls* nothing short of wizardry (39).[6] To support the skyrocketing sales a 10th edition was prepared as a stopgap, which was only a slight update on the 9th. Subsequently the publishers, motivated by the strong sales, concentrated their efforts on the entirely new 11th edition. During this time, the ownership of *Britannica* was passed over to American investors, Hooper and his associate Walter Montgomery Jackson.

Published in 1910, 11th edition was the last *Encyclopedia Britannica* that was completely prepared in Great Britain, it was also the first to be published all at once. Most sources agree that the 11th edition was the greatest issue of *Britannica* ever published. In part

---

[6] *Penny Dreadfuls* were popular works of fiction, usually serialized stories, printed on cheap pulp paper and sold for a penny in 19th century England. < http://en.*Wikipedia*.org/wiki/Penny_dreadful>

because amongst its 1507 contributors, there were 168 fellows of the Royal Society, 53 presidents or secretaries of learned societies, 47 members of the British Museum staff, 53 members of staffs of similar institutions and 47 staff members of various laboratories and observatories (Kogan, 168). Compiled under the editorship of Hugh Chisholm, it combined the intellectual and academic excellence of its predecessors with modern touches, such as shorter articles and greater emphasis on living persons' biographies. Collison notes the editorial benefits of printing the whole set at once, thus enabling control and oversight into both the complete organization of the encyclopedia and the refinement of individual articles (149). The time of its publication also contributed to the 11th edition's special status since it was, as Collison explains, "positioned in time as a summary of the world's knowledge just before the outbreak of World War I" (147).

The following 12th and 13th editions, published in 1922 and 1926 were little more than minor updates to the main body of work constituted by the 11th edition. The 14th edition published in 1929 can be regarded as the first truly American edition of the encyclopedia, as it was also the first to adopt what editors called a "continuous revision" cycle and dropped edition numbers. While periodically issued new editions have been the naturally evolved method of encyclopedia makers to keep their work up to date in the age of print, even the five to ten years that it takes to compile an encyclopedia afresh started to become much too slow for the pace of development, especially in sciences and politics. This problem was also compounded by the fact that sales of the current edition ground to a halt when a new edition was announced. While trying to address these problems, *Britannica* sales and editorial staff conducted studies on their editing patterns over the years and realized that "much of the material in any one edition required only periodical correction, but that the remainder needed continually to be brought up to date" (Collison, 152). The editorial board adopted their practices around constantly and incrementally updating only what was necessary and issuing the changes in annually published yearbooks. These were then adopted into the main body of text in the next reprinting of the whole set.

Although much more cost effective and efficient, this garnered vocal criticism over the years, over some of which the editors took action, resulting in "a much higher standard in scholarship and regard for modern discoveries and contemporary opinion" (Collison,

153). With this innovative new editorial policy, the 14th edition of *Britannica*, through numerous reprints and updates, remained in circulation until 1974.

The 14th edition also marks a shift in emphasis on more practical areas of knowledge as opposed to academic treatises. The traditional British critics from Oxford and Cambridge saw the changes as a step down in quality while the much-larger American audience welcomed a user-friendlier encyclopedia that has greater relevance to their day-to-day lives. Kogan therefore identifies two trends in the recent history of *Britannica*, one striving towards ever greater scholarly excellence and depth, which found its ultimate expression in the 9th and 11th editions, and another which consider the encyclopedia "not only as an authoritative source of knowledge but as a publication, within reasonable physical limits, designed to stimulate, inform, and instruct. It contended that the work should be edited not merely for a learned minority but for all who seek self-improvement" (Collison, 233).

The next complete revision of the encyclopedia came in 1974. Under the guidance of American philosopher Mortimer J. Adler, who became the chairman of the board of editors in 1974, *Britannica* underwent a complete restructuring process for the 15th edition. The resulting 28 volume set was divided into three main parts: *Micropaedia* (short references for quick consultation), *Macropaedia* (in depth treatises) and *Propaedia* (Outline of knowledge). According to Britannica Online, 4000 contributors from 100 countries were consulted and the editorial cost of the project alone was $32 million, the single largest private investment in publishing history.[7] Taking into account the criticism received over the radical restructuring, the editors of *Britannica* continually refined the contents and organization of the different parts of the encyclopedia, culminating in a 32-volume set in 1985. With the introduction of optical storage and multimedia capabilities to personal computers, *Britannica* was amongst the first to offer CD-Rom versions of its content with evolving capabilities and depth. With the introduction of *Britannica Online* during the 90s, the venerable encyclopedia started its experiment with ways to deliver its content over the Internet, which is still continuing its evolution today. Although not impossible, but it seems highly unlikely that the 21st century will see any major new print editions of *Britannica* like

[7] http://www.britannica.com/EBchecked/topic/186618/Encyclopaedia-Britannica

the 9th, 11th or the 15th, marking an end of a very long era in encyclopedia publishing and concluding the historical review of this study.

The continuous evolution of *Britannica* through multiple ownerships and numerous editors, all with their vision of making a great encyclopedia, has left *Britannica* with an unmatched reputation among encyclopedias. With the longest continuous publishing history of any encyclopedia, *Britannica* represents the most refined achievement of the encyclopedic urge and can be considered as a landmark of modernity. As Collison notes, "it is by no means an ideal encyclopedia, but it has for long approached more nearly to this target than most" (155). The validity of such a statement has been under much stringent questioning since Collison's 1964 book and attempting to understand and better address it is the principal goal of this study. But before such an attempt can be made, the historical review of the modern encyclopedia has to be analyzed, culminating a complete and overall picture.

1.11 Beacons of Civilization: Understanding the Modern Encyclopedia

The effects of the printing press on the production and distribution of books and the influence of the social and economic institutions forming around it on the creation and promotion of authority have been discussed earlier. The intellectual renaissance and the following scientific revolution were followed by the pioneering figures of the enlightenment like Bacon, who questioned the established authority and the systems of knowledge it perpetuated. Building on those economic and intellectual foundations, the encyclopedias of 18th century marked the emergence of a completely new approach in contrast to medieval works and the consistent evolution of this new form in line with the economic and social factors throughout the 19th century resulted in the modern encyclopedia as most people recognize it even today. According to Yeo, encyclopedias of the Enlightenment inherited from their ancestors the desire to hold up a mirror to the complete landscape of knowledge, despite their growing doubts that doing so is at all possible (2001, 2). While discussing the *Encyclopédie*, it was mentioned that the work of Diderot and d'Alembert was considered as

an embodiment of the French Enlightenment thought, which is in line with the expressed desires of the editors in the *Preliminary Discourse*. Yeo argues that, by replacing the medieval desire to become closer to God with encapsulating a revolutionary intellectual movement, the *Encyclopédie* secularizes the encyclopedic motive and brings it to the modernity (3).

One of the most visible ways the encyclopedias of modernity departed from their medieval ancestors was the switch to alphabetical organization. As illustrated above, although alphabetical organization was not unheard of, it only became popular after 16th century and faced with criticism that it was destroying the unity of knowledge previously attempted by the medieval encyclopedias. But, as Loveland argues, its benefits in usability and accessibility were so overwhelming for every type of user that ultimately it was accepted as a necessary compromise (57). However, switching to a more flat organizational structure did not mean that compilers abandoned the pursuit of organizing knowledge. Starting with Bacon, most of the encyclopedias published during the 17th and 18th centuries include treatises, as part of their introduction, on the nature and organization of knowledge, supported by tree diagrams, illustrating the placement of different disciplines on the human perception and their interrelations. These efforts were supported by in-text cross-references and indexes. As a whole, the encyclopedias of Enlightenment continued to strive for a vast picture of knowledge, attempting to replace old themes with a map and corresponding cross-references. Although it represented a new perspective on knowledge, and its creation, such a model did not scale well. Chambers' work was a relatively short one and the much larger *Encyclopédie* already illustrated the shortcomings of its own proposed system with previously mentioned problems such as cross-references that lead to nowhere. Despite their shortcomings, immediate followers such as Harris and Chambers were of immeasurable importance in the development of future forms of the encyclopedia and their successors both built on and against the models they created.

As Yeo points out, most works dating from the era of Harris and Chambers were called *dictionaries of arts and sciences* (2001,13). It was the enlargement of their model that led to the *Encyclopédie* of Diderot. With the massive increase in scale, learned societies in general and encyclopedia compilers in particular were realizing that no single person can be expected to know all the knowledge contained within their works, regardless of the

organizational schemes and their inherent problems. d'Alembert and Diderot acknowledged this as such in their *Preliminary Discourse*. This change in perceived usage also signified another stark contrast with the medieval encyclopedia, which was designed as a memory aid for the scholar who was expected to know the contents of any *Summa* in question. The 18th century encyclopedia replaced this notion with two new self-defined missions, first was to be a guide, and map, to all knowledge in the case that the multitude of books were lost and knowledge and crafts had to be reconstructed. Second, it was meant to be an aid to condensing and navigating the increasingly unmanageable deluge of new publications, and to help users in summarizing what is essential (Yeo, 83).

While the 17th and 18th centuries were periods of experimentation that lead to pioneering and fascinating works such as the *Cyclopaedia* and the *Encyclopédie*, it was during the 19th century when Encyclopedias matured and came into the form that late-20th century observers recognize as a general-encyclopedia. In this process, the relentless and continuing evolution of the *Encyclopedia Britannica* was instrumental. Smellie's first edition set the tone by omitting the use of a tree of knowledge As Yeo explains, while it may look like laziness to omit a map of the sciences, "by the early 19th century its editions came with a philosophical justification for this absence" (278). Instead, *Britannica* introduced the concept of treatises that go along with normal articles. While it was only articulated in the preface to the 3rd edition, the organizational scheme of *Britannica* had both practical and theoretical considerations. By attempting to identify disciplines that encompass several concepts, *Britannica* forgo the previous attempts to navigate whole of knowledge via cross-references. Also reflecting its publisher's practical goals, *Britannica* also emphasized the value of self-improvement, a fundamental value of Scottish Enlightenment, hence according to its editors, anyone could open a large treatise on a given science or craft and receive an adequate education. McArthur argues that while *Britannica* editors lacked the intellectual fervor of Diderot, their attempt to reach a much more modest goal proved to be just as revolutionary and even more successful in the long run (108). In his study of the early editions of *Britannica*, Kafker concurs with this view, stating that through a combination of a more fertile socio-political climate in England in 18th century and the lasting business acumen of its owners, *Britannica* achieved longevity from seemingly humble beginnings

(Kafker, 2009,307). Throughout the 19th century, consecutive editions of *Britannica* expanded to bring its readers to latest advances in diverse areas of scholarship and exhaustiveness became a virtue in itself. Despite criticisms to the effect that the writing style was inaccessible and the sheer breadth of knowledge presented was becoming a hindrance to the users, the editorial policy and resulting sales efforts always emphasized it as "the home-university kit par excellence" (McArthur, 108). Succeeding editors usually tried to address the criticisms directed to their precursors and continuously aimed to enhance the value of each new edition, the most dramatic example of which was Adler's attempt to reorganize knowledge, and the encyclopedia, into three parts.

Other works following similar principles have emerged throughout the 19th and 20th centuries, and their success and failure stories point to one overarching principle that first surfaced in the beginning of the 18th century; it is absolutely essential that a good encyclopedic endeavor combine both elements of excellent scholarship and a solid business plan. The 19th and 20th centuries also saw the identification of individual encyclopedias with the national identities of their home countries as many newly independent nations that are eager to establish themselves started to compile their own encyclopedias. Collison provides a general survey of such works, which acts as a list of principles distilled from almost three centuries of modern encyclopedia making. The modern encyclopedia is:

- Written in the language of the country in which it is published
- In alphabetical order
- Contains articles written by specialists
- Involves subject specialists employed as sub-editors
- Includes biographies of living people
- Features maps and illustrations.
- Contains bibliographies and,
- Analytical indexes of people, places and minor subjects
- Supported by periodical supplements for staying up-to-date
- Contains numerous in-depth cross-references.

In search for refinement and advancement, such principles inevitably make up a body of criteria against which every emerging form or work will be judged for credibility and longevity. Collison states that any enterprise that has neglected any of the above principles

has suffered either commercial failure, or failed to be recognized as an authoritative reference (199).

Emerging from the ideas of Bacon, who was challenging the medieval establishment and harnessing the opportunities presented by the mechanical printing press, the enlightenment encyclopedia has emerged as an effort to distance itself from its past. Through their struggle to chart the newly emerging territory of modern science, the pioneers of enlightenment encyclopedias inherited some of their instincts from their ancestors, whom they strived to replace. The desire to organize and contain all the world's knowledge and present it in an accessible way guided their efforts, resulting in such exemplary works like the *Cylopaedia* and the *Encyclopédie*, which for the first time and probably the last, hoped to provide its readers not only knowledge, but a whole new mindset built around the access and understanding of that knowledge. With the ever accelerating growth of knowledge and the resulting specialization of sciences, the encyclopedia largely abandoned its claim to map the knowable and focused on being able to keep up and make the most of the newly emerging knowledge accessible to the greatest number of people. The overarching tension between depth and coverage forced editors to make compromises and identified successful works from shallow or exhaustive ones. The ability of an editorial team to strike a balance within practical limits set by the physical format of a multi-volume set has been a key determinant of success.

Until the appearance of digital media and related storage technologies, the multi volume general purpose encyclopedia set has continued to exist based on its 19th century foundations, which were matured versions of their 18th century origins. It is possible to trace a relatively consistent line of evolution from the intellectual breaking point represented by Bacon to the latest print edition of *Britannica* and with such consistency coupled with continuous evolution and refinement has rendered the encyclopedia a pillar of modern western civilization and its intellectual and social achievement in the last three centuries. By its very nature, the modern encyclopedia presents an excellent documentation of its own history and intellectual evolution, which is why positioning it in contrast to both its medieval past and any contemporary examples like *Wikipedia* is both worthwhile and feasible.