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ENKYKLIOS PAIDEIA:
THE FIFTEENTH EDITION OF THE
ENCYCLOPEDIA BRITANNICA

A review by

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Enkyklios paideia was the Greek term from which our word "encyclopedia" derives. For the Greeks, it meant not a set of books but a type of education, one, as Aristotle saw it,[1] particularly suited to the

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[1] See Aristotle, Politics, Bk. VIII, Ch. 2, 1337b4ff. Cf. Plato, Protagoras, 312B; Republic, Bk. VII, 536E; and Laws, Bk. VII, 817E. In the major histories of education in English, enkyklios paideia has been dealt with primarily with respect to the Hellenistic period, after it had become so formalized and ritualized that its pedagogic intent was lost; see H. I. Marrou, (G. Lamb, trans.), 1956, passim, esp. pp. 175-177; and James Bowen, 1972, esp. pp. 152-165. Harold Fuchs gives a better sense of the term, both in its vitality and in its decline, in his entry, 1962, pp. 366-398. A still fuller discussion, but one concentrating too much on its form as a curriculum and too little on its human purpose, is in Josef Dolch, 1971, esp. pp. 24-98.

autonomous person. In 1974, after twenty-seven years in preparation, the 15th edition of the Encyclopedia Britannica appeared. It would excel, the editors claimed, not only as a standard work of reference, but also as an educative instrument. With that, the encyclopedia, the circle of studies, would seem to have come full circle historically, returning to its original educative intent. Perhaps this return is underway, but it has not yet been effected, for with the new Britannica an educative program is more clearly professed than performed.

Consider first the profession. In his foreword, Robert M. Hutchins, Chairman of the Board of Editors, hails the new Britannica as a "revolution in encyclopedia making" (Hutchins, Propaedia, pp. x:2, ix:1). In 1947 a Board of Editors had been organized, Hutchins explains, to plan a new edition of the Britannica which would supercede the 14th, originally published in 1929 and since then reissued annually with substantial revisions. In evaluating the 14th edition of the Britannica, the new Board of Editors found it excelled as a reference encyclopedia; naturally they were committed to preserving as well as enhancing this excellence in the new edition. The Board, however, recognized that encyclopedias could and should serve not only as tools of reference, but also as instruments of education. The revolutionary intent of the Board, therefore, was to design an encyclopedia that added an educative function to the traditional reference function, somehow making the whole convey "that understanding which alone deserves to go by the name of education" (Hutchins, Propaedia, p. ix:1).

With respect to the educative function, the old Britannica was deficient: The alphabetically organized encyclopedia, by its nature, obscures the interrelations between the many separate areas of

knowledge from A to Z; and whatever general conception of the cosmos may have been latent in the original version of the 14th edition had been completely obliterated through the process of annual revision. Hence, the possibility of planned reading in the old Britannica, which might lead to an overall understanding of basic fields, "became more and more remote" (Hutchins, Propaedia, p. ix:1).

To create an encyclopedia that functioned effectively as an educational instrument without compromising its value as a work of reference: That was the task the Board of Editors set itself. The first step in translating this goal into an actuality was to decide upon a format, a system of organization. The tradition of encyclopedia making offered two basic alternatives: the alphabetical format and the topical.[2] The Board of Editors saw limitations in the pure form of each: An encyclopedia organized according to broad topics makes the retrieval of basic information about particular points more difficult for the user, whereas one organized simply according to the alphabet makes more difficult the grasp of a basic field as a whole. Superficially, a topical presentation seems most suitable in an encyclopedia primarily intended to serve an educative function and an alphabetical presentation most suitable to a reference encyclopedia, but the editors found neither suitable to the dual intent they had adopted. In

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[2] A good place to start a study of the history of encyclopedias is with R. L. Collison's "Encyclopedia," Macropaedia, 779:2-799:2. My essay criticizes the new Britannica for inadequacy as an educative instrument; as a reference work, I find it very good, and Collison's article, in comparison to the same entry in the 14th edition, is indicative of the general improvement of the reference coverage in the new Britannica.

search of an alternative, they sought to rethink the problem of format.

In doing this, they reflected on what users actually want to learn from an encyclopedia. They found that actual use occurs on three levels of generality: People go to an encyclopedia seeking an authoritative answer to questions of fact, hunting for an epitome of basic principles and information concerning significant but relatively limited subjects, and searching for a general synthesis that makes broad fields of knowledge and experience comprehensible. The editors decided on a threefold format to serve this threefold use: the Propaedia, the Macropaedia, and the Micropaedia. The Micropaedia comprises ten volumes filled with very brief, alphabetically arranged articles that are intended to answer most every question of fact that it might occur to one to ask. In this part, the alphabetical principle is followed in its pure form: the aim being to resolve the sum of learning into the 'atoms of knowledge', so to speak, the smallest possible parts, and to present these in an alphabetically arranged format. The Propaedia is a single volume organized topically, in which a comprehensive, yet detailed outline of human knowledge is provided to guide the labors of those in quest of a general synthesis. In this part, the topical principle is followed in its pure form: the aim being to organize and present the sum of learning in a coherent series of parts, divisions, and topics, such that the reader can apprehend it and use it as he sees fit to guide his systematic study. Finally, the Macropaedia comprises nineteen volumes in which long, reasonably general articles are presented in alphabetical arrangement. Here the user finds basic principles and information pertaining to the diverse subjects of human inquiry and activity epitomized by recognized scholars. In this part, the topical and alphabetical principles are

combined: The articles were commissioned, and even outlined in detail for the authors by the editors, in order to deal with topics identified as significant in elaborating the general outline of knowledge that became the Propaedia. But rather than presenting the articles in their topical sequence, as they might have done, the editors presented them in alphabetical sequence for the convenience of reference users.

Substantively, the Macropaedia, the nineteen volumes of longer articles, is the heart of the new Britannica. Here the traditional excellence of the Britannica as a source of authoritative and comprehensive reference is continued, and by-in-large, I find, enhanced. And those seeking to use the new Britannica as an educative instrument will find the Macropaedia the essential part of the whole, for in it the student will find the content of whatever education he can acquire from the set. To be sure, Warren E. Preece is correct in asserting that "the fullest value of the set is to be attained only in the utilization of the whole" (Preece, Propaedia, p. xiv:2). But if he does that well, the student will continually find himself led from the other two parts into the Macropaedia. The other two parts function to guide the student, in search of understanding, to and through the Macropaedia. Thus, pedagogically, the Micropaedia is designed to lead the student from the very particular to the more general by the inclusion, within its short, factual articles, of references to the Macropaedia: Following these out, the student can put the facts found in the Micropaedia into the larger contexts pertinent to them. Thus, too, the Propaedia is meant to direct the student from a broad, schematic overview into the substantive topics treated in the Macropaedia, allowing him to organize his reading among its alphabetically presented entries according to a plan, making systematic reading in broad fields possible.

To assert that this three-part system, with the Macropaedia at the heart, will not function as an educative instrument would be indefensible. The new Britannica makes a great deal of knowledge accessible, and as good students often learn much from bad teachers, various persons will manage to extract a worthwhile education from the new Britannica. It is defensible, however, to assert that the new Britannica is disappointing as an educative instrument, that as an educative encyclopedia it is fundamentally flawed because the pedagogical design worked out for it was simply not well executed. Originally, I had intended this essay to subject the educational principles informing the new Britannica to thorough reflective criticism, but the more familiar I became with the actual contents of the 15th edition, the more convinced I became that despite whatever pedagogical ideas the editors may have begun with, in making decisions on the highest level, these ideas simply were lost in the process of production. To be sure, when deciding on the basic format for the new edition, the editors considered carefully how the reference function could best be combined with the educative function, both of which the new edition was to perform simultaneously. After this decision, however, an immense editorial effort seems to have been devoted to ensuring that the finished set would indeed be as authoritative a reference work as possible, at the same time, devoting practically no effort, it seems, to ensuring that the set would be as educative as possible. As a result, the published encyclopedia shows almost no trace of pedagogical intent outside its basic format.

Reflect briefly on the editorial situation in carrying out a revolutionary transformation of an encyclopedia such as the Britannica. The 15th edition is vast, over 42 million words the editor informs us. It could be produced only by a large, well-established

organization of persons. Traditions, habits, standards, and procedures had been built up within that organization by the continuous work on previous Britannicas. The Board of Editors fundamentally altered the announced editorial goal that would guide the production of the 15th edition, and as a basis for pursuing this broadened goal--the revolutionary creation of an encyclopedia that would simultaneously serve both the reference and the educative functions--they changed the overall format of publication. But after that they do not seem to have changed their organization's actual working procedures sufficiently, once the big editorial questions had been settled, to do full justice to the pedagogical side of their aspirations. Warren E. Preece, in his "Editor's Preface," tells much about the editorial policies that the Board spelled out as guidelines in the overall effort to translate their intents into actuality. In view of their own critique of the previous productions of their organization, in particular, in view of their finding the educative function sacrificed to the reference function, one would expect them, in detailing their editorial policies, to have particularly stressed how they wanted the educative function translated into reality. Instead, their editorial policies say nothing about the implementation of the educative function, and the procedures, as Preece explains them, would be as suitable for an unabashed reference encyclopedia as they are for the 15th edition of the Encyclopedia Britannica. To bring off "a revolution in encyclopedia making," one needs first to foment a revolution among encyclopedia makers, which the Board of Editors failed to do. Hence, operationally, the dual intent they promulgated translated into a working effort in which the reference function was primary: to present as good a reference encyclopedia as could be attained within a format that the Board deemed would increase the chances that the set would be used with educative results.

Such, at any rate, is my hypothesis about what happened on the way to the marketplace. I have arrived at this hypothesis not through any inside knowledge of the Britannica organization. Instead, I have come to it first by noting certain striking omissions, from a pedagogical point of view, in the 15th edition, and second, by seeking to use my general respect for institutional inertia, and the prefatory materials the editors have supplied, to explain how these omissions might have come about. I will leave it to those with inside knowledge of the Britannica organization to put the hypothesis to the test, and should they combine inside knowledge with inside power, they might even effect the hypothesis to carry out, in actuality, the revolution they have proclaimed. In the meantime, I shall content myself with elaborating the grounds that make me find the hypothesis plausible.

In three basic ways, obvious educative opportunities have been overlooked in the production of the 15th edition of the Encyclopedia Britannica. First, in it, one finds many articles whose inclusion can be justified with respect to the reference function, but not the educative; yet one cannot find the converse, although one would expect to, had the educative goal truly been on a par with the reference in the new Britannica. Second, the style and format of the articles are fully within the tradition of the authoritative reference article; practically nothing has been done to alter, adapt, or expand that style and format to accommodate the educative aim. Third, "The Outline of Knowledge," the Propaedia, which was worked out as an editorial tool to guide and control the production of the diverse articles in the Macropaedia, primarily to ensure the comprehensiveness and coherence of its reference coverage, has been

presented, basically in its original format, as a guide to the student's systematic reading, with no effort to put the whole or its parts in a pedagogically significant order. Let us examine these deficiencies in more detail.

1. In the Macropaedia, one finds many articles that are at best trivial with respect to the educative function of the 15th edition. A case in point is the twenty-one column article on "Baking and Bakery Products." To be sure, it has its place in "The Circle of Learning," and diverse users with diverse purposes will consult it and learn from it. But it is in the Macropaedia not for its centrality to the educative function; as far as that function is concerned, it could just as well have been relegated, as "Shoes" and "Shoemanufacture" were, to abbreviated treatment in the Micropaedia. Instead, "Baking and Bakery Products" received its twenty-one columns because, for some reason that I do not care to fathom, the editors judged that such treatment was in accord with the Britannica's reference function.[3] Whether or not the editors of the 15th edition have overvalued baking or undervalued shoemaking is not here the point; rather it is to illustrate the fact that they have allocated substantial space for the extended treatment of numerous topics in the Macropaedia that are irrelevant to the educative function of the whole, because they deemed these topics relevant to the reference function. Curiously, the converse was not the case.

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[3] "Baking and Bakery Products," Macropaedia, Vol. 2, 596:2-607:2. I should note that the article in the Macropaedia, "Clothing and Footwear Industry," Vol. 4, 750:2-756:2, does say something about shoes and shoemaking, but these matters receive rather short shrift in this article, and the coverage in the Micropaedia is really more extensive.

One can imagine certain topics, which could be treated with effect in twenty-one columns, that would greatly enhance the educative power of the whole, although they might be irrelevant to its reference function. An obvious example might be a good, admonitory essay on "Self-education," or "Self-culture," "Autodidacticism," or "Independent study." As a practical reality, when the Board of Editors set out to make the Britannica into an educative instrument, they set out to make it an educative instrument primarily for those engaged in self-education, and it is strange that the editors did not deem that enterprise worthy of independent coverage in their work. It would be imprudent to say that nothing is said in the 15th edition about self-culture, for as Preece points out in his "Preface," "every editor's file contains instances of complaints that a given topic is not dealt with in a set, when all that the reader really means is that it is not dealt with in an article bearing the name under which he had expected to find it, and that he has not yet troubled himself to refer to the index. . ." (Propaedia, p. xvi:2).

Well, I've tried the two forms of indexing offered in the 15th edition. In the Micropaedia, "Study," "Independent study," "Self-culture," "Self-education," "Autodidacticism," and "Inquiry" are matters deemed unworthy of notice, and the only possible point of entry into the topic that I found was under "Learning theories." But, on following out the references there given, the reader will find that however useful learning theories may be to someone engaged in self-education, they tell him very little about the nature and practice of that endeavor. The other mode of indexing in the 15th edition is "The Outline of Knowledge," and its sections on education prove equally disappointing as a means of locating the topic of self-education. Rather, they reveal a

pre-occupation with education as schooling and tell much about 'teaching' in theory and practice, and about 'learning' defined as a positive response to efforts to teach, but they say very little about study, self-education, or even patterns of informal education. One might fault this imbalance simply as a deficiency in the reference function of the Macropaedia, but in view of the proclaimed educative purpose of the set, the failure to treat self-education prominently and fully is a most serious failure, one calling into question the degree to which the announced purpose actually had an effect on editorial practice.

As soon, moreover, as one admits the possibility of including articles that may be irrelevant to the reference aim but highly serviceable to the educative aim, one becomes aware of many further deficiencies in the Macropaedia. For instance, there are articles on "Legal education" and "Medical education," and the orientation of both is clearly indicated by the opening sentences of the latter.

> Medical education is directed toward imparting to persons seeking to become physicians the knowledge and skills used in the prevention and treatment of disease and also toward developing the methods and objectives appropriate to the study of the still unknown factors that produce disease or favor well-being. Medical education may be classified as (1) the basic training, (2) the training of specialists, and (3) the continuing education of the practicing physician. ("Medical education," Macropaedia, Vol. 11, 809:1)

To be sure, good articles on the professional education of doctors and lawyers are fully appropriate within the Macropaedia, and these would be most useful to youths contemplating the study of medicine or law. But many who do not contemplate becoming doctors or lawyers may well want to learn more about medicine and law, and good essays responsibly discussing the problems and possibilities of learning about these fields would seem appropriate to the educative function of the Britannica's 15th edition. This is true not only of medicine and law, but of practically every substantive division demarcated in "The Outline of Knowledge." The coverage of each would be more educative were there provocative essays included, addressed directly to the layman, discussing the strategy and tactics of learning about the field, and wherever possible, about participating in it.

Against this suggestion of a deficiency, the editors of the 15th edition may well reply that their holistic coverage of the fields, as organized through the outlines in the Propaedia, provides precisely such an overall introduction for the layman. Below, we will come to significant limitations in the outlines, but despite these limitations, the editors would in a sense be correct in their defense: Mastery of the fundamentals of any field as they are presented through "The Outline of Knowledge" would give one a good foundation for learning further about the field. The type of article I would like to see added should not be added as a substitute for the Britannica's overall coverage of the various fields, but as a limited yet valuable complement to it. The overall coverage takes the body of knowledge pertinent to a field as 'the given' and is written to put an authoritative summary of that knowledge before "the curious, intelligent layman" (Propaedia, p. xv:1). The pedagogical tragedy of the well-meaning authority, who wants desperately to explain his subject, but who

is so caught up in it that he cannot perceive how his students come to the subject, and thus cannot speak to them nor engage them in his subject, is proverbial. This is the problem with the overall coverage in Britannica's new edition, and it could be made much more educative if at least once in each field the lay reader came across an entry in which 'the given' was not the body of knowledge, but the curiosity and intelligence he was bringing to the field. A standard reference work need not take the user's particular interests into account; an educative instrument must.

Certain problems arise for the encyclopedia maker with this proposition. Anticipating these problems, I observed above that to carry through a revolution in encyclopedia making such as the one the Board of Editors proclaimed, they would have had to first foment a revolution among encyclopedia makers. To have manifested the educative function in the actual contents of the encyclopedia, the staff would have had to depart on frequent occasions from the standards and procedures that have come to control the writing of authoritative reference articles. To maximize the educative function, there should have been a number of articles included in which the author concretized and spoke directly to the curiosity and intelligence of the layman. To do this, the author would have to make presumptions and express opinions. He would need to anticipate:

> These are the questions you are likely asking; this is the sea of information in which you find yourself floundering; here are some of the roots of various frustrations you feel in your pursuit of understanding; here are some tips, capitalizing on which may help you overcome those frustrations you are feeling.

Such direct discourse to a concretely imagined "curious, intelligent layman" on fifty or a hundred of the most pressing topics of human concern would greatly strengthen the educative power of the 15th edition, but to generate such articles would require a revolutionary departure within the Britannica organization from the editorial standards and procedures that have become associated with it.

A minor example of what is here at stake can be found by reflecting on how intentionally educative articles might affect the Britannica's well-known international orientation. The editors might well object that a substantial addition of articles addressed directly to a real, general reader would give the Britannica too nationalist a tone, for in doing so the editors would have to allow authors to write for particular readers, ones living in a particular time and place, possessing a nationality, endowed with interests, facing issues, personal and public. With these articles, the audience would cease to be "anyone," no one in particular, and would become at least a fairly concrete, imagined version of the curious, intelligent, Anglo-American layman, more probably the curious, intelligent, urban American. This would conflict with the "international orientation" that is one of the six ennumerated goals supposedly guiding editorial policy in the 15th edition. It is a fine policy, in my view at least. with respect to the reference function. But even in that area, in practice, the editors have departed from it and have been quite willing to tailor the weighting of their coverage to their real audience where it has seemed to them appropriate. A case in point is the coverage of sports. American football and baseball receive respectively 33 and 36 columns, whereas association football, soccer, worldwide a far more popular team, spectator sport, receives only 6 columns. In the matter of sport, the Britannica is

not even reluctant to reflect the fact that it is the encyclopedia of the more educated classes; soccer, the passion of the British populace, receives only 6 columns, whereas rugby receives 12 and cricket 16. Clearly, in sports, the Britannica is tailoring its articles to its audience; in developing a repertory of articles, primarily educative in intent, it would be fully justified in doing the same.

A repertory of primarily educative articles would run counter to a much more important editorial policy in force within the Britannica organization: the standard of objectivity and neutrality. The statement of editorial policy that guided the production of the 15th edition puts this standard concisely:

> Objectivity and neutrality. a. Articles should be so written that they avoid expressions of bias or prejudice on any matter about which a respectable and reasonable difference of opinion exists. b. Further, in all areas in which the scholarly world acknowledges significant and reputable differences of opinion, diverse views concerning such differences should be fairly presented, though the majority or accepted view may be so designated. (Propaedia, p. xv:2)

This standard is essential with respect to reference coverage, but if it controls everything that is to go into the encyclopedia, it precludes any significant educative coverage. "That understanding which alone deserves to go by the name of education" cannot develop in someone who is systematically isolated from controversy, from the clash of opinion, from criticism and exhortation. Great teachers are not unrelentingly objective and neutral. Socrates! Socrates--I know I

do not know: There is my wisdom--what an antithesis to the cult of authority, objectivity, and neutrality embodied in the Britannica. To make it a truly educative instrument, place must be made within its pages for authors to write, not as man knowing, but as man thinking.

Yes, there are dangers in such a course. The Britannica, owing to its standard of objectivity and neutrality, has achieved a position of authority with the public: Should it suddenly introduce provocative, opinionated articles within its pages, it risks at once abusing and unseating its authority. But there are ways of guarding against these dangers. As editorial policies have been developed, setting standards for the writing of reference articles, so too could editorial policies be developed to set standards for educative articles. Were that done, it would then seem necessary to distinguish in the text between articles written according to the reference standards and those written to the educative standards, and the simplest, most unmistakeable way of doing that would be to print the reference articles in roman type and the educative in italic. Were that done, it would be possible to make the encyclopedia serve both the reference function and the educative function, not through some mysterious gimick in its format, but through its substantive content. To have done this, the editors would need to have entertained the possibility of a new type of encyclopedia article, one in which the primary aim was to be "educative" rather than "authoritative." The failure to develop such a new type of article is the first deficiency of the Britannica's 15th edition, viewed as an educative instrument.

2. If one grants that there is a difference between an authoritative reference article and a stimulating educative article, and that there should

be a place for both in an encyclopedia that sets out to be both a standard work of reference and a powerful instrument of education, then the question arises of how the authoritative style should best be balanced with the educative style in the general run of articles.

In content, the articles in the Macropaedia reflect major substantive revisions in comparison to the previous edition of the Britannica. Stylistically, however, the articles are very much the same as in the previous edition: In style, they are generally high-quality examples of the authoritative reference article. The one clear change in the format is in the bibliographies appended to the articles: In the new edition these are a bit longer than in the previous and are supposed to be annotated so as to be more useful guides to further reading (Propaedia, p. xvii:2). But one must add that far too often these bibliographies are not written as guides to further reading for the "curious, intelligent layman," but rather as supports for the authority of the author. A good example occurs in the bibliography to the article on "Law, Western Philosophy of" (Macropaedia, Vol. 10, p. 722:1), which includes a long bibliography in which the "annotations" are nought but laconic headings. The article itself treats its topic historically and may well kindle a further interest in the history of the philosophy of law. Of the four books mentioned under that heading, three are in German and one in Italian. Undoubtedly other specialists in the field will recognize those four books as the authoritative ones, but they are not the ones that will best serve the Anglo-American layman seeking to read further in the history of the philosophy of law. Overall, this example, is atypical and on the average there has been some improvement in the bibliographies, improvement that makes them more effective in serving the interests of the general reader. Yet this alteration

of the bibliographies (and there is certainly ample room for their further improvement) is the only way in which the style of the articles has been adapted to the educative aim that had been formally adopted as one of the two basic goals of the new edition. The question arises whether this change is sufficient and opens a problematic matter.

Encyclopedia articles are rarely examples of great literature, but they do fall within a well-established genre, one that professional encyclopedia makers are unlikely to change lightly. Preece in his "Editor's Preface" tells a good deal about what goes into making up this genre. Within the Britannica organization, editorial policy started with the specification of six qualities for which previous editions were known; these were to be further enhanced in the new edition: authoritativeness, comprehensiveness, encyclopaedic brevity of condensation, accessibility, accuracy, and international orientation (Propaedia, xiv:2). The problem does not lie with these qualities, nor does it lie primarily with the further elaboration of editorial objectives designed to ensure the attainment of these qualities. Rather the problem lies with the habits of editors and writers and readers who have long been accustomed to thinking of an encyclopedia primarily as a standard work of reference. They seek these qualities only with respect to the reference function, and ignore the question of their achievement with respect to the educative function that the Board of Editors wanted the 15th edition to serve.

In the statement of editorial policies, there is an innocuous sentence, or so it seems: "A general encyclopedia is a summary statement of learning" (Propaedia, xiv:2). The editors did not bother writing their policies to specify the purpose of this summary statement; they forgot to remind themselves of

their revolutionary intent, to design a new encyclopedia, a new summary statement of learning, for the dual purpose of reference and of education. In the absence of a conscious effort against it, the tradition of reference encyclopedias asserted itself, and told most everyone concerned what "a summary statement of learning" comprises, namely, an authoritative, comprehensive, condensed, accessible, and accurate set of articles that were written so as to make the current body of knowledge accessible to the curious, intelligent layman. Because the current body of knowledge is the central concern of the reference encyclopedia, articles written for it are invariably written in what I will call the "authoritative voice." Each article written in the authoritative voice is a summary statement of what the authorities, on the topic at hand, find the present state of knowledge to be.

A 'summary statement of learning' need not be presented only in the authoritative voice. It can equally well be presented in the "educative voice," and the difference between the two voices, understood as ideal types, can be clearly stated. When one speaks in the authoritative voice, one's prime concern is to give a good exposition of the attained body of knowledge; and when one speaks in the educative voice, one's prime concern is to communicate the questions, the posing of which has led to the attainment of the body of knowledge. As existential realities always mix and combine the ideal types that we create by abstracting from those realities, one cannot assert that nothing is explained in the educative voice in the 15th edition of the Britannica: Here and there within its many pages, one encounters its provocative resonance. The question is whether the proper balance between the authoritative voice and the educative voice has been attained within the Macropaedia in order to do justice to the dual intent the editors gave the work. To me, the answer is clearly negative.

To provide evidence for this answer with reasonable economy is, however, difficult, for there is so much. I cannot claim to have read the whole, but rather merely over a period of eight months to have spent much time sampling it with care and curiosity. In not one of the many articles I have read has the educative voice been dominant. To subject a few articles out of the thousands in the set to close analysis here would be liable to the stigma of bias, one seen to arise from either the conscious intent to prove a point or the accidents of too small a random sample. Some good evidence, however, can be found in the statement of editorial policy formulated for the new Britannica. Here, not once is it suggested that the articles should be so written as to communicate the questions that have given rise to the present body of knowledge; instead, articles are repeatedly spoken of as dealing with subjects, fields of knowledge.

Similarly, the meaning of the phrase "the circle of learning" can be interpreted in two quite different ways. The editors of the new Britannica clearly hold it to be the attained body of knowledge, in which case it is seen to be based on the authority of those deemed most knowledgeable. One can equally well hold the "circle of learning" to be the present state of man's attempt to solve, through the use of intellect, human problems of sufficient import to move men to think with rigor, in which case it is seen to be based on the doubts and questions that people find most intellectually compelling. The diverse phenomena that are dealt with in the various articles could have been seen as problems worthy of intense human concern and, had they been so viewed, writers would have been led to discuss them primarily in the educative voice. But not once does the statement of editorial policies suggest that the phenomena covered in an article be so viewed or discussed. Instead, the policies assume

that writers will cover their assigned phenomena as subjects of attained knowledge, knowledge resting on authority, which leads writers to discourse in the authoritative voice. Consistently, this is what the statement of editorial policies suggests to the writers.[4]

Further, a random sample of articles shows that writers almost always conformed to this suggested emphasis in dealing with their assigned phenomena, primarily as subjects of knowledge secured by authority. Throughout the nineteen articles I located by opening each volume to page 500, the authors write almost invariably in the authoritative voice: They see their task as reporting what the authorities hold with respect to the assigned phenomena. Each of the nineteen articles in this sample is pure and simply a reference article. One of the best written among them, from the point of view of education, is that on "Automata Theory" (Macropaedia, Vol. 2, esp. 497:1-2), for it opens making clear that the theory has its existential roots in important human artifices, but even this essay reflects the overriding urge to report what the authorities hold, rather than to explain how and why they came to hold it. The authors do give an historical exposition of how automata theory was built up, but it tells not so much how certain human problems were perceived and solved as how an authoritative body of theory was built up. For instance, the authors explain that in 1936, Alan Mathinson Turing, an English mathematician, "conceived a logical machine the output of which could be used to define a computable number." They go on to describe the machine and to state that it has since

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[4] Propaedia, p. xv:1-2. There is no mention that writers are dealing with problems; that they are dealing with "subjects" is mentioned ten times; this in a statement about 800 words long.

become a standard reference point in automata theory. All this is done ex cathedra: The reader is told that the machine is very important, but he is not drawn into understanding why it is very important. The reader is told nothing about the problem that was on Turing's mind that led him to devise his logical machine, nor about the problems on the minds of later theorists that led them to make his machine a standard reference point. Even in this case, the article for the most part merely tells the reader what automata theorists think and largely fails to draw the reader into thinking as an automata theorist.

With respect to the style of separate articles, this sample yields evidence that the editors of the 15th edition have been less hospitable to the educative voice than were the editors of the 14th. A case in point is the entry on "Algebra, elementary and multivariate" (Macropaedia, Vol. 1, 499:1-507:1): No more unrelieved example of the authoritative voice can be imagined. The article, signed significantly by the editors, gives an epitome of the current principles of elementary and multivariate geometry: Here are the basic theorems and here are their basic uses in the solutions of equations. Why men have sought such solutions to such equations is passed over completely, as is the question why, in seeking such solutions, men have been stimulated to postulate such theorems. Nothing is said to elicit in the reader an understanding of the mode of thinking that has given rise to algebra; instead, the matter is dealt with entirely as an established subject of human knowledge, which is simply to be stated as comprehensively and concisely as possible, with no real effort at clarity for the novice. The condensation is such that without a previously thorough and reasonably recent mastery of the subject, one has no hope of following it with comprehension. Who can read this article with profit? Certainly not the great majority of curious,

intelligent laymen. Will it help to educate its readers? Certainly not, if by educating one means drawing someone into a clear understanding of what, in this case, algebra is about.

One might think that algebra is a rather cut and dried subject, one that does not lend itself to treatment in the educative voice. Then one should consult the previous edition of the Britannica, where the basic article on "Algebra"[5] is an excellent example of a summary statement of learning written in the educative voice. The article is about the way of thinking--abstracting from finite sets of operations--that has given rise to algebra in its elementary and modern forms. In this article, one does not get an epitome of the current state of knowledge in the field. Rather one gets an intelligent introduction to thinking algebraically, an invitation and useful orientation for further study. The curious, intelligent layman can read this article with profit: The article will educate its reader in that he will come away from it with a clearer understanding of what algebra is about, a comprehension of particulars he needs to learn to turn his incipient understanding of algebra into a mastery of it, and an excitement and a motivation to do precisely that.

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5 "Algebra," Encyclopedia Britannica, 14th edition, 607:2-611:2. It should be said that as reference coverage, the overall treatment of algebra in its various branches is greatly improved in the 15th edition, compared to the 14th, but that coverage is useful really only for someone who has previously mastered the subject and wants to look something up in the field or to refresh his memory about something in it (and by mastered the subject, I mean something more, a good deal more, than completing good secondary school and beginning college courses in it). Such coverage is simply not educative.

In comparing these two articles from the 14th and 15th editions, one sees clearly that a summary of learning about any given matter can be couched, to varying degrees, in either the educative or the authoritative voice. The editors of the 15th edition do not seem to have been concerned with generating articles that treated a matter engagingly in the educative voice. To be sure, the statement of editorial policy stipulated that articles should maximize, to what degree possible, "readability by, and intelligibility to, the curious, intelligent layman," but what is then said in elaboration of this quality shows that the editors were concerned that material written in the authoritative voice remain readable and intelligible to the layman (Propaedia, xv:1). Before commissioning authors to write the articles projected for the Macropaedia, the editors outlined the contents that were to be covered in each article: "the purpose of such outlines--each author was informed--was to assure that all of the circle of knowledge would be covered somewhere in the set on the one hand, that wherever possible each of its parts would receive its major treatment in only one place, and that each of its parts would be treated on a scale determined by all of the other parts. As authorities, authors were, of course, given wide latitude in reordering the presentation of the material called for by their outlines, and much latitude in re-evaluating the amount of space to be assigned to each of the topics for which they were to accept responsibility" (Propaedia, xvi:1). The effect of these procedures could only be to encourage authors to rely heavily on the authoritative voice; they reveal the editors' preoccupation with controlling and properly weighting the reference coverage in the Macropaedia. Given their commitment to the reference function, this was proper, but given their proclaimed commitment to the educative function, this was not by itself adequate.

Certain latitudes were given authors, as authorities. Nothing seems to have been said about the latitudes they could take, as educators. Telling emphasis and selection are the genius of good educative discourse; balanced neutrality and comprehensiveness are the hallmarks of authoritative discourse. Whether these two forms can be well synthesized within a single article is moot. To me, the editors would have come much closer to such a synthesis had they proceeded with a full and explicit recognition of the duality of their intent, informing authors that what they wanted might be impossible. I believe they would have done better asking authors to first draft essays that, in the author's judgement, would engage the curious, intelligent layman in thinking critically about the matter at hand, and then ask these authors to work into that text an authoritative reference coverage of the topics specified in the editors' outlines, using smaller type or other techniques for distinguishing one concern from another within a single essay. Such was the practice frequently used in the eleventh edition of the Britannica, and it would have freed authors to write at once with educative emphasis and authoritative comprehensiveness.

Unfortunately, the educative function does not seem to have been much on the minds of the editors as they thought about the content and form of the articles to be included in the Macropaedia. Articles that might have uniquely served the educative function have been entirely omitted. The stated editorial policy, as distinct from the proclaimed editorial aims, encourages contributors to write in the authoritative voice, which a sampling of their results shows beyond a shadow of a doubt they have consistently done. Where, then, does one find the educative intent proclaimed for the new Britannica manifest in its text? That question leads to the Propaedia and how it works in theory and practice.

3. With the Propaedia, the user is supposed to be able to turn the Macropaedia, in which articles are printed according to their alphabetical order, into a topically organized, grand synthesis of knowledge. The Propaedia is a systematic outline of knowledge, which guided the production of the Macropaedia, and which the reader can use to guide his studies in the Macropaedia. Systematic outlines of knowledge have been a long-standing concern with the makers of encyclopedias: The best known is Bacon's tree of knowledge, which was popularized by D'Alembert and Diderot in the making of the French Encyclopédie.[6] Previously, the systematic outlines generated by the makers of encyclopedias have been utopian: The actual encyclopedias made have not conformed to the outlines projected for them. What is original in the editing of the new Britannica is not that the editors had in their minds some systematic outline, but that they actually went about their work in strict accordance with their outline, to the point that they have been able to print it, complete with detailed page and column references, as a table of contents to all the world's learning.

Mortimer J. Adler, as Director of Planning for

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[6] See Francis Bacon, The Advancement of Learning, passim, and esp. Bk. 2:V:2: "But because the distributions and partitions of knowledge are not like several lines that meet in one angle, and so touch but in a point; but are like branches of a tree, that meet in one stem, which hath a dimension and quality of entireness and continuance, before it come to discontinue and break itself into arms and boughs. . ." (Bacon, 1906, p. 100). For the use of Bacon's system in the French Encyclopédie, see Jean Le Rond D'Alembert, (Schwab, trans.), 1963, pp. 159-164).

the 15th edition, developed the outline.[7] He gave up Bacon's metaphor of the tree and returned to the earlier metaphor of the "circle of learning." As a metaphor it will do; it goes back to the Greek roots of the word "encyclopedia," enkyklios paedeia, a subject about which I shall have considerably more to say in a companion essay to this one. Whether Adler's outline can really somehow be likened to a segmented circle, as he likens it in his opening remarks to the Propaedia, is dubious, but not essential. What is important is that Adler and his staff did work out an outline, which is comprehensive, coherent, and usable. Adler does not claim that this outline is the only possible outline or the best of possible outlines, but rather that it was the outline the editors found they were able to develop and use in fashioning the 15th edition of the Britannica.

It serves no purpose here, I believe, to second guess this outline. It is there as a datum, impressively complete in its range and detailed in its elaboration. According to it, knowledge can be divided into ten parts: matter and energy, the Earth, life on Earth, human life, human society, art, technology, religion, the history of mankind, and the branches of knowledge. These ten parts comprise between them forty-two divisions, which in turn sub-divide into 189 sections: such is the table of contents to the outline of knowledge. By itself, it makes fascinating reading, for it serves as a humbling checklist by which one can inventory one's shares of knowledge and of ignorance. The main body of the Propaedia consists of detailed outlines of the knowledge pertinent to each of the 189 sections, and these outlines provide not only a synopsis of the subject in tabular form, but also, for each heading, page and column references to articles, article

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[7] See Adler's remarks, Propaedia, 5:1-7:2.

sections, and brief mentions where the matter will be found discussed in the Macropaedia. In what follows my intention is not to argue that the editors of the 15th edition should have proceeded on the basis of some other outline. Rather, I shall contend that given this outline, I find that it does not serve well the educative functions the editors attribute to it.

Pretensions that the 15th edition can function as a significant educative instrument depend for their plausibility on the Propaedia and its usefulness to the student as a guide to systematic reading in the Macropaedia. "As its title indicates, the Outline of Knowledge is intended to serve as a topical guide to the contents of the Macropaedia, enabling the reader to carry out an orderly plan of reading in any field of knowledge or learning that he may wish to study in some depth" (Propaedia, 8:1). The basic theory is that the Propaedia provides the student with a systematic, topical guide to the Macropaedia, which will enable him to follow a course of reading in it that will yield, with perseverance, an overall understanding of wide areas of human knowledge. This is a very attractive theory, and one cannot dismiss the possibility of so using the Propaedia. Here and there, resolute students will arm themselves with it and under its guidance mine the Macropaedia to build up a general understanding of diverse fields, "that genuine understanding that in itself somehow defines what the world means by the word education" (Preece, Propaedia, xiv:1). But for each such student, there will be many who will have made the attempt and found themselves daunted, not by the scope and detail of the Propaedia, but by the fact that the form of the outline given there has not really been designed with the needs of the inquiring student in mind.

As in analyzing the style of a particular article one can set up as poles two ideal types, the

authoritative voice and the educative voice, in assessing the character of an outline of knowledge, one can identify two forms of order that the outline may embody, an authoritative order and a pedagogical order. In working out an authoritative order, one starts with a body of knowledge and asks what order do the authorities see in it, what do they see to be fundamental, how would they proceed from the foundation through the elucidation of all the various parts. In working out a pedagogical order, one starts with a student and asks what order he should follow if he is best to apprehend the subject at hand, what he needs to understand first to engage himself productively in study, how he can best proceed from that beginning to a mastery of the whole. It is not impossible that an authoritative order, which the authorities would find conceptually sound for the body of knowledge as a whole, would coincide with a pedagogical order, which students would find helpful in directing their study of the body of knowledge. But often, hitting upon such a dual purposed order is very difficult. In many fields, the authorities find most fundamental precisely those areas of advanced work, progress in which is the limiting factor that alters the understanding of all other aspects of the field. But pedagogically , these areas of seminal advance are the least elementary, and to the student they constitute the most difficult beginning point. The outline of knowledge in the Propaedia will often not serve the student well because it embodies, not a pedagogical order, but an authoritative one.

Readers will find a good example of this problem directly at the beginning of the Propaedia. Mr. Adler explains to the student that one can begin with any one of the ten parts, really any one of the 189 divisions, but many are likely to begin with Part One, "Matter and energy," for the same reason that Mr. Adler probably put it at the beginning, namely

because our scientific world view makes this field seem to describe the most elemental stuff of the world within which we, and our scientific world view, exist. The student will find the knowledge pertaining to "Matter and energy" organized in three divisions: I. Atoms: atomic nuclei and elementary particles; II. Energy, radiation, and the states and transformation of matter; and III. The universe: galaxies, stars, the solar system. The sequence between these divisions is authoritative: Advances in our understanding of atomic nuclei and elementary particles provide the conceptual tools for advancing our understanding of energy, radiation, and the states and transformation of matter, developments in which provide, in turn, the basis for clarifying the universe: galaxies, stars, the solar system. Students with particular curiosities may not begin at the start of this outline, but most in search of an understanding of the whole field, in search, that is, of what the editors call education, will probably make their start with Division I. This they will find divided into two sections: 111. The atomic nucleus; elementary particles; and 112. The structure and properties of atoms. The sequence here is again authoritative: Knowledge about the atomic nucleus and elementary particles provides the scientific foundation for current knowledge about the structure and properties of atoms. The basic problem that the student who tries to follow the outline will encounter is that this authoritative order is at odds with the pedagogical order.

Nothing in the outline or the headnotes to it warns the beginning student against trying to follow it as it is printed in the Propaedia. Whoever does so will be sent first to a long article on the "Nucleus, atomic." To be sure, within the system of knowledge now possessed about matter and energy, nuclear physics

is the authoritative foundation of it all, but for the curious, intelligent layman seeking to educate himself about the field, an extremely compact summary statement of our current knowledge about the atomic nucleus, written entirely in the authoritative voice, is simply not a feasible point at which to begin his study. This is not to say that the bulk of the article is so esoteric that it can never be comprehended by the curious, intelligent layman, but rather to say that it presumes too much for him to comprehend it as a useful beginning, as his introduction to the field.

How, then, is the beginning student to make an intelligible beginning with respect to the atom. Well, he might plow bravely, reading through the article as best he can, following out cross references as he comes to them. In this case, as he goes along he will be sent off to a number of equally incomprehensible articles, but if he keeps up, near the very end he will come to a cross reference to the article on "Atomic structure," and if he follows out that reference, he will have come to what pedagogically is the proper beginning. Or, if not a plower, after becoming bogged down in "Nucleus, atomic," he might go back to the outline, use it to find the other major articles in Section 111, and, finding those equally impossible to assimilate, then conclude that the entire section is, as a beginning, simply too hard; then, if persistent, he might go on to Section 112, and, following its opening reference, try the article on "Atomic structure": If he does all that, he also will have come to the pedagogical beginning. Now it is quite possible that one way or another quite a number of curious, intelligent laymen will get to the pedagogical beginning in their attempts to study "Matter and energy," but it is even more probable that many more will become daunted and will give up along the way, deceived by the

authoritative order imposed by the Propaedia into believing that the whole matter is beyond their ken.

From the pedagogical point of view, a much better outline of knowledge than the one found in the Propaedia could have been developed. To make it more educative, what is needed is not a completely different outline than the one given, but rather a different ordering of the parts in the given outline, a pedagogical ordering in place of the authoritative. Functionally, this could be done well without even changing the form and order in which the outline itself is printed by the pedagogically astute use of headnotes. As it stands, the outline has a valuable function: In its present authoritative form, it enables the reference user to locate a particular topic in an overall, authoritative schema of the field within which it falls. There is no need to sacrifice this function, however, for the editors have included headnotes to each part, division, and section, but as they stand, these headnotes are redundant in the extreme: All the information they impart can be garnered fully as quickly by scanning the table of contents or the main tabular headings in the outlines. They simply restate in dull, declarative sentences what is stated in the outline, and in no way do they enhance the educative function of the Propaedia. Insofar as the authoritative ordering in the Propaedia creates an unnecessary illusion of difficulty by starting students off with what is fundamental but far from elementary, the Propaedia is a miseducative instrument; yet it would have been very simple to use the headnotes to suggest to readers a good pedagogical order that they could follow in their pursuit of education. It is significant that the editors did not so use the headnotes. If they had been truly committed to thinking through how they could best make the Propaedia an effective educative instrument, surely they would have asked skilled educators in the

various fields to write the headnotes, not dumbly restating what the outlines state, but giving the curious, intelligent layman in search of understanding some direct advice on how best to use the outlines as a guide to systematic reading. Thus, it would seem, even with this part of the whole, which the editors perceived as the essential part in making the encyclopedia serve its educative function, they missed an obvious opportunity to shape the actual text they produced with the educative function clearly in mind. The educative function would take care of itself, they seem to have thought, provided, they could get their new reference encyclopedia, with its novel system of topical and alphabetical access, before potential readers.

In sum, then, it is very hard to find traces of the editors' educative goal in the actual text of the new Britannica. Were they never to have mentioned the educative function, there are no features of the 15th edition that would not make good sense with respect to the reference function. In the statement of editorial policy that they set for the 15th edition, they deal with five matters: "Readability by, and intelligibility to, the curious, intelligent layman . . . ; integration and coherence . . . ; controlled fragmentation and duplication . . . ; objectivity and neutrality . . . ; topical as well as alphabetical accessibility. . ." (Propaedia, ix:1). What they say with respect to all five matters would make sound policy were they committed to creating an encyclopedia that was to serve only the reference function. The only time in the statement that they mention the educative function is in discussing the matter of accessibility: "By combining topical and alphabetical accessibility, the new Britannica will function more effectively as an educational instrument

and an ordered statement of learning to be read and studied as well as a reference tool containing information so organized that it can be easily 'looked up'" (Propaedia, xv:2). It is curious that the recognition of the educative function should come here, for accessibility, while not a matter wholly irrelevant to the educator, is not his prime concern. In contrast, accessibility is one of the central concerns for the makers of reference works.

What this suggests about the character of the new Britannica's proclaimed educative function perhaps explains why the senior editors did not take firm enough control of the editorial process to make this function have an actual effect on the text itself. That the educative function was seen basically as a problem of accessibility suggests that all along, the designers of the new Britannica were thinking, not as educators, but as makers of reference encyclopedias. It suggests that the intention to make the 15th edition serve as an educative instrument did not really precede the design of it, shaping the creation of it in all its details, in a complex tension with the reference function. It suggests that the design of the 15th edition was worked out as a novel solution to an age-old problem that has always beset the makers of reference encyclopedias, and on working it out, the makers of the new Britannica concluded that this new solution to the problem of accessibility was so significant that it converted a standard work of reference into something that, in addition, could properly be called an educative instrument. Instead of having a commitment to the potential educative function of the encyclopedia fundamentally change the form and content of what goes into the encyclopedia, one has the assertion that a new solution to the problem of accessibility in the encyclopedia ought to change our perception of what is, and is not, an educative instrument.

I do not believe that the 15th edition of the Encyclopedia Britannica is pedagogically strong enough to make this change in our perception. As a reference encyclopedia, I am convinced that the 15th edition is a considerable improvement on the 14th edition, but as an educative instrument, I do not think it is a great advance. It is still basically a reference encyclopedia, albeit with a sense of the whole a bit more clearly manifested in it than in its predecessor. It will serve as an educative instrument, only for those its predecessor served as an educative instrument, namely for that curious type endowed with the knack for extracting an education from reference works.

It is unfortunate that the new Britannica is not better as an educative instrument, for it is of great importance that a truly educative encyclopedia be developed. The editors of the 15th edition, when all is said and done, do not seem to have thought deeply about their educative intention. I say this with great hesitation, for I greatly respect the educational commitments and accomplishments of men such as Robert M. Hutchins and Mortimer J. Adler. But what they say in the prefatory materials to the new Britannica does not reflect a profound insight into the problems of enkyklios paideia. The definition of education that they give--Hutchins: "that understanding which alone deserves to go by the word education"--begs the question; it evades coming to grips with the very situation that makes it so important that somebody create anew a truly educative encyclopedia. The situation is bluntly that the world has ceased to know what it means by the word 'education'. Hutchins shows himself a part of that world when he enunciates a definition of education that is so vague it can mean anything to anyone. Preece shows himself a part of that world when he respectfully repeats that definition. And Adler shows

himself a part of that world when he goes to considerable lengths to minimize the degree to which his Outline of Knowledge can be seen to reflect a commitment to a particular set of organizing principles.

There is a tremendous need for an effectively educative encyclopedia, one that reflects a true, detailed, and moving vision of what one must master in order to be an educated person, in its fullest sense, in the contemporary world, and one that puts that cultural substance before the willing student in a way that he can master. Should such an educative encyclopedia appear, it will be immediately recognized as such, for people will immediately start reading and studying it with avidity because they will find it essential in their attempt to answer their deepest and most pressing questions. Of the new Britannica, one can only say, this isn't it, this isn't it! I fear it is unlikely that such an educative encyclopedia--a contemporary enkyklios paideia--will soon appear. But as a step toward reducing that improbability, I want to try, in a sequel to this essay, through historical reflection, to grasp the essence of enkyklios paideia and to speculate on what a contemporary encyclopedia that effectively embodies it might be like.

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