

Education, Science, and Government

in Marc-Antoine Jullien's Educational Thought

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Abstract

The purpose of this study is to situate Marc-Antoine Jullien's educational thought in the historical context of 19th century French thought on education, science, and government, and further clarify its characteristics. Jullien is well known as the "Father of Comparative Education," but few studies have focused on his own educational ideas. Jullien's educational thought was deeply influenced by Ideologues' ideas about the science of man, who were very influential in early 19th century France. They believed that one of the purposes of the science of man was to rationalize the government of the state. Furthermore, members of the Society for Elementary Instruction, many of whom were thinkers influenced by Ideologues, such as Joseph-Marie de Gérando and Maine de Biran, attempted to carry out the Ideologues' task of rationalizing political government by making education a science. The science of education conceived by Jullien, one of its main members, inherited the Society's political tendencies and shared the same purpose. Jullien's educational thought is characterized by the close association between his science of education and government techniques. Education and government are both technologies aimed at human happiness. In the art of time management, central to Jullien's educational ideas, governmental techniques in the administrative, military, and commercial spheres were transformed into educational methods. In Jullien's science of education, education and government became interchangeable because they were both rooted in the same technological knowledge basis.

Key words: Marc-Antoine Jullien, science of education, government

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Introduction

The purpose of this study is to provide a means of placing Marc-Antoine Jullien's (1775–1848) educational thought in the context of the history of ideas of his time and to reevaluate its significance. In the field of history of education, Jullien is regarded as the “Father of Comparative Education” who brought empirical scientific methods to the study of comparative education. However, such an evaluation is limited if we consider the entirety of his educational thought, which is not limited to comparative education theory.

To renew such an evaluation, this study attempts to grasp the overall picture of his educational thought and characterize it in relation to the intellectual context in France at the dawn of the modern educational system. This context is theories and practices of “Ideologues,” a group of thinkers who were very influential in France at that time. In the intellectual currents they formed, the three subjects of “education,” “science,” and “government” were intertwined with each other and formed an important subject for academic examination. Jullien's educational thought can be understood as inheriting and deepening the awareness of such issues in a unique way.

In this study, the intellectual linkages between education, science, and government at the time are first clarified through an examination of the discourses of Ideologues. Second, we show that the “science of education,” which is at the core of Jullien's educational thought, has aspects that inherit Ideologues' awareness of the issues. Third, through an examination of the concepts of “man,” “happiness,” and “time,” which are central to Jullien's educational thought, the characteristics of his science of education, which links education, science, and government on the same knowledge plane, are clarified.

1. Examination of Previous Studies

Studies on Jullien in the field of the history of educational thought have accumulated, to a certain extent, within the framework of studies on the history of comparative education since the mid-20th century. However, it is only in relatively recent years that his main works, *General Essay on Physical, Moral and Intellectual Education* [EE] (first published in 1808. Hereafter called *General Essay on Education*) and *Essay on Method Designed to Regulate the Use of Time, the First Way of Being Happy* [EEM] (first published in the same year. Hereafter called *Essay on the Use of Time*), have received

attention. Those who were among the first to appreciate Jullien's educational ideas and contributed to their restoration were the sociologist Hess and the educational researcher Illiade, who was involved in the reprinting of *Essay on the Use of Time*¹. They attempted to find in Jullien's writings the germ of today's educational and academic themes ("ethnosociology," "informal education," etc.). However, such an evaluation cannot be historically contextualized, and its validity is open to questioning.

Two prior studies that are closely related to this study's interest in reading Jullien's educational thought in relation to the intellectual context of education, science, and government at the time are as follows. The first is Delieuvin's study which exhaustively traced Jullien's writings in the field of education through a comprehensive survey². Delieuvin's study contains many important implications for this study, including Jullien's relationship with the Society for Elementary Instruction, which is discussed below. In particular, it is worth noting that Delieuvin points out that Jullien conceived of his science of education in line with the "techniques of government." However, when discussing the science of education, Delieuvin seems to have underestimated *Essay on the Use of Time* and *General Essay on Education* in comparison to Jullien's comparative education theory and his *Essence of Pestalozzi's educational method (Esprit de la méthode d'éducation de Pestalozzi, 1812)*. Consequently, the relationship between the science of education and government is yet to be thematized in relation to the entirety of Jullien's educational thought. As is discussed below, *Essay on the Use of Time* is a work that cannot be ignored if we consider "time" as an essential element in Jullien's science of education.

Second, it is important to note Lejeune's study that clarified the political implications inherent in Jullien's educational thought³. He focuses on the extreme emphasis on "efficiency" in Jullien's educational thought and the techniques of "control" as a means of increasing efficiency. According to Lejeune, these techniques of control, developed based on the model of techniques of government in the military and industrial spheres, are "a terrifying system of total supervision" comparable to Bentham's Panopticon. He finds in Jullien's educational thought a historical model for what Michel Foucault called "discipline," namely, the modern techniques of power that are found in the administrative, military, industrial, and educational spheres. According to him,

¹ R. Hess, *La pratique du journal. L'enquête au quotidien*, Paris, Anthropos, 1998. M. A. Jullien, *Essai sur l'emploi du temps*, édité et présenté par K. Illade, Paris, Economica/Anthoropos, 2006.

² M. C. Delieuvin, *Marc-Antoine Jullien, de Paris, 1775-1848*, Paris, Harmattan, 2003. See pp. 274-279 for Jullien's science of education, and Ch. 5 for the Society for Elementary Instruction. For a discussion on the overlap between the Society and Jullien's concerns, see pp. 223 and following.

³ P. Lejeune, "Marc-Antoine Jullien: Controlling Time," in A. Baggerman, R. M. Dekker, and M. J. Mascuch (eds.), *Controlling Time and Shaping the Self*, Leiden, Brill, 2011, pp. 95-120.

Jullien's educational thought, which was overlooked by Foucault, can be evaluated as a powerful complement to Foucault's argument. Lejeune's study is thought-provoking, but his argument seems to be drawn exclusively from a direct collation of Jullien's *General Essay on the Use of Time* and Foucault's *Discipline and Punish*, without much consideration for the historical context in which Jullien's educational thought is situated. For example, Foucault refers to the "mutual method" introduced in France during the first half of the 19th century as a model for discipline techniques, but Lejeune pays little attention to the fact that Jullien was deeply involved in introducing this method to France.

This study seeks to characterize Jullien's educational thought by referring to the intellectual context of education, science, and government in which his thinking was situated. From a historical perspective, this attempt clarifies the political implications of Jullien's educational thought, which Lejeune analyzed by relying on Foucault. Simultaneously, this study complements Delieuvin's work in that it attempts to thematically clarify the internal linkage between the science of education and government in the context of Jullien's educational thought, which is not limited to comparative education theory.

2. The Relationship between Education, Science, and Government in Ideologues' Sphere of Thoughts

This section examines the intellectual context of Jullien's ideas. Jullien was strongly influenced by Ideologues, who were highly influential in the French intellectual world of his time. They regarded the three subjects of education, science, and government as the central objects of their thinking. Jullien inherited this trend of thought. In the following section, we examine how these three subjects relate to each other in the context of the history of ideas of the time.

2.1. Science and Government

Enlightenment thinkers of the 18th century, following the example of Newton's revolution in the natural sciences, sought to establish the exact sciences of man and society. Such knowledge, collectively called the "science of man," was a unified intellectual enterprise that spanned fields such as the science of government, medicine and public health, political economy, the theory of progress, analysis of the human mind,

and social statistics⁴.

The ideals of this science were taken over by Ideologues, heirs of the Enlightenment, at the turn of the century, following the French Revolution. The leading thinker, Antoine Nicolas Condorcet (1743–1794), formulated the idea of the science of man as a science “whose object is the man itself, whose direct aim is the happiness of man” with the same level of exactness as the natural sciences through the observation of facts and use of precise language⁵. He further gave this science the character of “science of government” to rationalize the political conduct of a state.

Inheriting Condorcet's ideas, Ideologues who gathered at the end of the Revolutionary period in the second department of the French Academy, the “Moral and Political Sciences,” linked the idea of the science of man for the rationalization of government to the task of reorganizing the state of France and its social order after the Revolution. Tanaka characterizes the “science of society” promoted by Ideologues as follows. First, this science limits its object of study to observable phenomena and derives laws from the relationships among these phenomena. Second, as Condorcet applied his probability theory to the science of man, the laws are expressed by “a system of knowledge that can be manipulated by the intellectual elite of the time.” Third, the scientific cognitions of society make government a “technology”⁶. The Ideologues' science of man was situated within an intellectual horizon called “social art,” a technological level of knowledge that mediated between theories of various sciences and practices of government aimed at human happiness and the improvement of society.

For Ideologues, the basis of rationality was the “observation of facts” and “analysis,” a method of deconstructing and reconstructing phenomena. Their emphasis on observation and analysis was inherited from 18th century French thinker Étienne Bonnot de Condillac (1714–1780), whose philosophy of sensationalism had the greatest influence on Ideologues. According to Sakagami, Ideologues extensively applied observation and analysis to the scientific cognition and rational government of man and society. Their efforts were devoted to the development of observation techniques in diverse areas, such as anthropological surveys, population studies, poverty surveys for public assistance, public health, and the medical and physiological sciences. The techniques of observation were embodied, among other things, in the creation of

⁴ See S. Oki, “Sūgaku to Syakai Kaikaku no Yūtopia” (Mathematics and the Utopia of Social Reform), in O. Kanamori (ed.), *Kagaku Shisōshi (History of Scientific Thought)*, Keisō Shobō, 2020, pp. 130-135.

⁵ *Discours prononcés dans l'académie française, le jeudi XXI février M.DCC.LXXXII, à la réception de M. le Condorcet*, Paris, Demonville, 1782, p. 6.

⁶ T. Takuji, *Hinkon to Kyōwakoku (Poverty and Republic)*, Junbun Syoin, 2006, pp. 62-65.

observation and questionnaire tables for the methodical collection and analysis of facts⁷. *Statistical Questions for Travelers (1813)* prepared by Constantin François Chassebœuf Volney (1757–1820) is a representative example. This questionnaire is a compilation of questions related to the natural, political, and economic conditions necessary to ascertain a state's situation. One of the motivations for this was the conviction that “all truth, especially in Government, is only the result of a long experience, that is, of many facts well seen and judiciously compared [...] what we call principles of Government are only summary facts, only summaries of particular facts.”⁸ Here, we find the belief of Ideologues that the observation of facts underpins the rationality of government.

2.2. Education and Government

It is important to note that the above intellectual trends in the science of man and government also had a significant impact on the field of education at the time. Noteworthy in this regard is the Society for Elementary Instruction (*Société pour l'instruction élémentaire*), founded in 1815 by a group of French liberal philanthropists. The Society attracted many intellectuals influenced by Ideologues. Its members included the philosopher Joseph-Marie Degérando (1772–1842), chemist Jean-Antoine Chaptal (1756–1832) who had directed a census as minister of the interior, philosopher Maine de Biran (1766–1824), and Jullien. With the support of the government, the primary mission of the Society was to promote popular and primary education in France by introducing the “mutual method” (also called the Monitorial System), which originated in England.

The Society's activities stemmed from a philanthropic concern for the poor who had yet to benefit from education. However, this attitude toward the people was ambivalent and intertwined with the political situation of the time. A speech by the Society's founder, Degérando, at the time of its inauguration clearly shows the Society's view of popular education. He said, “Far from us, undoubtedly, the absurd idea to want to convert the children of the craftsman, of the ploughman, into as many scholars, people of letters, philosophers; to want to give them a kind and a degree of knowledge which, by making their condition unbearable to them, would only inspire them the need to leave it!” [JE1: 23-24]. For the Society, the dissemination of knowledge is justified in terms of the advancement of civilization or the promotion of industry. However, the Society aimed to

⁷ T. Sakagami, “Kansatsu no Gijutsu, Tōchi no Gihō” (Techniques of Observation and Government), in T. Sakagami (ed.), *Tōchi Gihō no Kindai (Modernity in Government Techniques)*, Dōbunkan, 1997, pp. 21-50.

⁸ [Volney, C. F. C.], *Questions de statistique à l'usage des voyageurs*, Paris, Courcier, 1813, p. 4.

fix the social status of the people and maintain social order, that is, to prevent revolution, by having the lower classes acquire knowledge and morals appropriate to their economic status. Here, we observe a glimpse into the political objective based on the bourgeois position of this Society, which is to achieve a class-based distribution of human resources within the state through education.

The mutual method was an appropriate pedagogy for this purpose. This method enables the rapid and reliable transmission of knowledge and the infusion of obedient and diligent morals through a system of graded classes according to ability, and a detailed system of commands and rules to which students are subjected. Furthermore, it provides the economic advantage of allowing the supervision of a large number of students by a single teacher by employing the best students as assistant teachers⁹. In *Discipline and Punish*, Foucault considers the mutual method introduced by the Society as an educational model of discipline techniques through an order that permeates the details of the body, space, and time. Behind the introduction of this method in France lay the political intention of the Society regarding popular education.

It is noteworthy that education, seen as an act of government to distribute human resources within the state, was considered to have to be rationalized by scientific knowledge. Referring to the Society's statutes [JE1: 33-40], it was aware of the task of conducting empirical scientific research on education, including the collection and comparative analysis of educational methods in other countries, the verification of educational methods in experimental schools, and the improvement of educational methods based on experiments. A speech by Degérando published in the Society's *Journal of Education* clearly shows his intention to create a science of education. He argues that the methods of "observation" and "mathematical analysis," which have brought about a breakthrough in the modern natural sciences, should be applied to studies of education. What is required today is to "establish between sciences and teaching methods this alliance [...] which must make the second benefit from the conquests obtained by the first" and to "gather, in order to compare, descriptions of various methods used or proposed; to submit them to the control of experiment, to the tests of a philanthropic analysis." [JE14: 264-265] His attempt to create the science of education by the methods of natural sciences is an extension of Ideologues' idea of the science of man. In another text, Degérando argued that "the Science of Man is also a natural science, a science of observation." The science of man should be established as a "natural science"

⁹ For more information on the mutual method, see K. Eiji, *Furansu Syotō Kyōikushi (History of French Elementary Instruction)*, Mie Daigaku Syuppankai, 2014, Ch. 4, Sect. 2.

that relies on the observation of facts¹⁰. This attempt to create a science of education is a reproduction of Ideologues' idea of the science of man, which aims to rationalize the government, in the phase of the problem of the relationship between education and science.

3. Political Implications of Jullien's Science of Education

It was Jullien who gave the clearest form to the Society for Elementary Instruction's plan to create a science of education. In this section, Jullien's vision of the "science of education" is placed in the context of scientific and governmental knowledge of the time.

Jullien, who participated in the Society from its inception and served on its expert committee for studies of educational methods, wrote *Sketch and Preliminary Views of a Work on Comparative Education* [EV] (hereafter called *Comparative Education*), originally published in the *Journal of Education* from 1816 to 1817. His comparative education is an attempt to transform education into an empirical and positive science or "science of education" by means of gathering, observing, and comparing facts.

Education, like all other sciences and arts, is composed of facts and observations. It was therefore necessary to form, for this science, as was done for other branches of our knowledge, collections of facts and observations, arranged in analytical tables, which would allow them to be brought together and compared, in order to deduce from them certain principles, determined rules, so that education could become an almost positive science. [EV: 13]

Jullien attempted to create an itemized list of observations and questions to observe the educational situation in Switzerland, which he saw as a microcosm of Europe. Here we find the embodiment of the Society's idea of the science of education, as well as the inheritance of Ideologues' interest in the "techniques of observation," as represented by Volnay's questionnaire.

The purpose of comparative education was political. With the upheavals and wars that swept Europe since the Revolutionary period in mind, Jullien sees the purpose of comparative education as "to provide prompt and safe means of regenerating and

¹⁰ J. M. Degérando, *Considérations sur les diverses méthodes à suivre dans l'observation des peuples sauvages*, daté du 28 fructidor an VIII, Société des observateurs de l'homme, 1800, p. 2.

improving public and private education, in all conditions of society, and thus of strengthening religious, moral, and social bonds, which have been loosened and almost dissolved in most states.” A comparison of the educational situation of states contributes to “the reform and improvement of education as the basis of the social edifice” [EV: 7-10] through the creation of comparative tables to diagnose the degree of progress of each state's educational system, its strengths and weaknesses, and its transplantable elements across national borders. These political purposes of comparative education show that the “positive science” of education is inseparably linked to the rationalization of government.

In texts other than *Comparative Education*, Jullien refers to his theory of education as a science of education. It is difficult to determine whether Jullien provided a clear explanation for this concept. However, the science of education is a concept that characterizes the entirety of Jullien's educational thought, not just his comparative education theory. In the following, the basic ideas of his science of education are extracted from his texts and situated within the intellectual context of education, science, and government at the time.

Jullien characterizes his own ideas of education as “the science of formation of man” through “development of faculties,” or “the art of making men good, virtuous, enlightened, [... that is] education, which is the science of happiness and virtue.” [EEM: 13-16] It is clear that the science of education, with its focus on man and human happiness, is situated in the genealogy of Ideologues' science of man as a science that has man as its object and human happiness as its direct aim. Indeed, Jullien himself also calls his science of education “the first and fundamental science, so intimately linked with all the others, and especially with the science of man.” [EEM: 17]

Thus, the science of education will inevitably be strongly associated with governmental problems. The premise of Jullien's theory of education, which is directed primarily toward the education of children of the state's upper classes, is based on the idea of “the art of forming men, or education, the art of making men happy, or politics” [EE: 22]; that is, a perspective that overlaps the two realms of education and government. This perspective is embodied in the affirmation of educational courses according to two social statuses: “lower classes” and “upper classes.” The lower classes need to be educated toward “moral habits and labor.” However, the upper classes, who are responsible for orienting and civilizing society as a whole, must be given a different kind of education than the laboring classes, namely, an education directed toward the whole man. For Jullien, the distribution of human resources through a hierarchical educational series is nothing less than the most important basis for the good governance of a state [EE: 22-23]. This view of education is based on the same political conception as the

Society for Elementary Instruction's view of popular education.

Jullien's science of education can thus be understood as an attempt to place education within the technological realm of knowledge between the Ideologues' science of man and government. Sharing political concerns with the Society for Elementary Instruction, his science of education was conceived as useful for rationalizing government.

4. Technological Characteristics of Jullien's Science of Education: Man, Happiness, and Time

In this section, the science of education developed in Jullien's two main works, *General Essay on the Education* and *Essay on the Use of Time*, is examined to grasp his logic of the combination of the science of education and government techniques. In doing so, the characteristics of technological educational knowledge that characterize Jullien's science of education as a whole is identified. The three basic elements of the science of education formulated by Jullien can be used as a guide. "Education, the science of cultivation and development of our faculties, can be considered from three points of view: 1. its subject, the Man; 2. its goal, the Happiness; 3. its instrument, the Time." [EV: 21] In the following, after analyzing the technological characteristics that characterize his science of education from his discourses on "man" and "happiness," the basis of his science of education from the perspective of the third element, "time," which mediates between the science of education and techniques of government, is clarified.

4.1. Man and Happiness: Theory and Practice in the Science of Education

First, man as the object of education is examined. For Jullien, man is considered on two levels: the individual and the species being. As the individual, the totality of man is composed of three elements: "the heart" or "soul," which governs moral faculties, the "mind," which governs intellectual faculties, and the "body." The individual, however, is necessarily bound to "mankind" as the species being by the principle of "sociability" inherent in human nature [cf. EE: 459]. "The man is a naturally social being. The society is almost as necessary to him as breathing" [EEM: 40]. Therefore, sociability is considered the fourth element that constitutes man.

To grasp Jullien's understanding of man more precisely, we must examine the second element of education—happiness—as the purpose of education. Happiness,

which is also the purpose of man, is considered in relation to two levels of man: the individual and mankind. Happiness on the individual level is brought about by the “perfect harmony” of the three excellences of “physical force and health, the elevation of the soul, or morality, and the cultivation of the mind, or instruction,” as result of the development of the three faculties of the heart, mind, and body [EE: 44-45]. Physical force and health, which provide vitality to human activity, instruction, which wisely directs this activity, and morality, which provides good value to the whole, are mutually supportive and work together to form a happy man. The happiness of man, through the natural sociability of man, is also oriented toward the happiness of mankind as a whole. “No man can create his private happiness except as contribution to the happiness of others.” [EE: 44] Individual happiness cannot be achieved in a solitary life or through egoistic activities since the principle of sociability in human nature necessarily brings together “preservation of the individual” and “preservation of the public,” or “private interests” and “interests of mankind as a whole.” [EEM: 40] A happy man is useful to human society. Thus, along with the fulfillment of individual happiness, education also aims at “the improvement of human conditions” and “the extension of all kinds of pleasure to more and more people,” which is “the goal of the species as a whole.” [EEM: 413]

Jullien's reflections on man and happiness are not new. What is remarkable about Jullien's educational thought is its form, an eclectic synthesis of past thinkers' ideas. His texts are built upon countless references to the writings of the great thinkers of the Enlightenment, including Bacon, Locke, Rousseau, and Condillac, as well as to the works of Ideologues, his contemporaries.

He declared in the preface to *General Essay on Education* that many great writers have already made useful reflections on education [EE: 15-16]. “It would be presumptuous to want to present absolutely new ideas today on such a hackneyed subject.” However, even great thinkers can make errors. They have been so intent on exploring the theoretical “speculation” of education that they have neglected to apply it to “practice.” Jullien's task is to bridge this gap.

The author [Jullien] must endeavor to reproduce in a simple and methodical order, so as to give them [truths] a greater degree of evidence, to make them more easily practicable, truths presented until now in isolation or confusedly, with too little scope, sequence and clarity, whose connection and importance do not seem to have been sufficiently grasped, and whose practice has been constantly neglected. [EE: 16-17]

Rejecting abstract theoretical systems, his science of education is concerned with a technological level of knowledge that bridges “theory” and “practice.” In his view, this was also a demand for useful science. Emphasizing that scientific progress requires the cooperation of two kinds of people, namely, “theorists” and “practitioners,” he diagnoses the era in which he lives as follows: “A happy and clever combination of these two kinds of men, or rather their combined efforts, can alone advance sciences, and, with the help of sciences, morals. Our time is no longer satisfied with systems, theories, abstractions; it wants applications and results.” [EEM: 192] Thus, rather than exploring educational principles theoretically, Jullien’s science of education aims to reorient educational knowledge to a technological level that mediates theory and practice.

4.2. Time as Instrument: The Art of Time Management and Its Source of Methodological Inspiration

The third element of Jullien’s science of education—time as the “instrument of education”—is what makes explicit its technological character. The formation of a happy man can only be accomplished under technology that effectively uses the finite amount of time given to him. The aim of *Essay on the Use of Time* was to grasp time as an indispensable instrument for education and systematically develop techniques for its use. In this section, how man and happiness are related to the element of time is clarified through an examination of *Essay on the Use of Time*. In doing so, we will be able to grasp Jullien’s logic, linking the science of education and government.

This work develops, so to speak, as a method of self-education in the form of the art of time management, that is, a “method that would make the most of the time.” [EEM: 46] The purpose of time management is to extract useful lessons from past uses of time to develop one’s faculties by collecting, observing, organizing, and analyzing facts of daily life that are usually forgotten as transitory. Through this method, also called “true education” [EEM: 44], which should continue throughout life, “the whole of life” becomes an educational tool [EEM: 32].

This method is based on three principles [EM: 46-53]. First, before any action, one should ask oneself, “What is it beneficial for?” Second, every morning or evening, one should inspect oneself to see how well one has used the day. Finally, one should record the results of one’s inspection in “journals,” rather than simply keeping them in one’s consciousness. Through the recording and reflection of daily life, the art of time management can orient the entirety of one’s life, spanning the past, present, and future, toward “useful actions.” [EEM: 53-55]

A large part of *Essay on the Use of Time* is devoted to the development of a system of journals for recording and analyzing the facts of passing days. Basic journals can be divided into three types [EEM: 197-198]. First, the Analytical Memorandum records events and reflections useful for education [EEM: 226]. Second, the “General Agenda” [EEM: 228-233], which contains six sub-divisions (errands, income and expenditure, personal relations, correspondence, bibliography, and memorandum), each of which is filled out daily. Third is the “Biometer,” which records what 24 hours are used for by entering the amount of time into pre-classified categories of activities.

These journals are conceived as devices that allow for the methodical observation and analysis of the facts of life, which is a type of observation technique. By relying on observation techniques, Ideologues conceived of the science of man that would rationalize government and make people happy. Correspondingly, Jullien's art of time management can be characterized as a useful “science” that makes humans happy through the rationalization of life via techniques of self-observation. “The good use of time is a real science, which needs to be acquired through research, like other human knowledge.” [EEM: 47]

It is noteworthy that the objects and purposes of education, namely, man and happiness, are incorporated into journals through a variety of techniques for observation and analysis. Two techniques developed by Jullien are important.

First, the four elements that constitute human existence (the body, heart, mind, and sociability) are applied as principles in the construction of journals. In the Analytical Memorandum, for example, the observed facts are entered into three accounts, namely, classified in terms of body, heart, and mind [EEM: 59-60]. In the Biometer, the amount of time in a day is allocated to four categories of activities corresponding to the body, heart, mind, and sociability [EEM: 286-287].

Second, quantification techniques allow arithmetic operations to be performed on living conditions. For example, a table called the “Life Curve” [EEM: 451-455], which is recommended for supplementary use, evaluates daily happiness in terms of a numerical value called “degree of happiness” on a scale of 20, and ascertains changes of happiness over a month in the form of a line graph. The Biometer, however, translates the harmony of the four elements necessary for human happiness into the form of an arithmetical equilibrium of allocation of the amount of time to each category. “Using our tablets [Biometer] serves to keep in equilibrium and harmony the different parts of which life is composed, none of which should be neglected.” [EEM: 291]

The goal of the above techniques is to form “the abbreviated table of one's physical, moral and intellectual situation.” The table enables one “to judge whether one is

backward or stationary in one or the other of these three branches, and to restore the progression to one's advantage." [EEM: 6] Thus, in the art of time management, the formation of a happy man, which is the aim of the science of education, is transformed into a technically operable object through observation and analysis techniques. Time as an instrument is the fundamental perspective from which the entire science of education is constructed as technological knowledge.

Within the technological realm of educational knowledge, in which Jullien's art of time management is situated, the linkage between education, science, and government that this study has traced plays an essential role. Jullien's logic, which intersects these three realms, can be revealed by tracing back to the methodological inspiration for this method. In the concluding section of *Essay on the Use of Time*, he describes the three "methods" that inspired the art of time management [EEM: 337-340].

The first is the "religious and philosophical method." This method, which is tied to the Christian confession and philosophical maxim "Know thyself," makes it possible to "make one go down in the most secret folds of one's conscience and teach one to question, examine and know oneself." This method demonstrates that the art of time management reflects one's inner self.

The second is the "military method." This is the method for command and control that "make move several thousands of individuals as a single body animated by a single soul," that is, a system that quickly delivers orders from the general to the lowest ranks of army and ensures that surveillance and discipline pervade. Journals, such as this system, are also surveillance and disciplinary devices. "None of our actions and even none of our thoughts escape examination." [EEM: 339]

The third method is the "commercial method." This method "contributes to the advancement of societies, by promoting circulation of wealth, which will provide incentives and rewards for work everywhere," specifically with accounting books in mind. The art of time management, which aims to allocate finite time appropriately and maximize educational results obtained from it, is established by considering time as a kind of "fund." Time as a fund should not be consumed only for present needs. Time must be managed as "capital," that is, as resources for generating future benefits [EEM: 60-61].

Of the three methods applied to the art of time management, the military and commercial methods are deeply connected to the problematic government system as a method of managing and operating human populations and resources¹¹. The art of time

¹¹ As symbolized by political economy, which had been a part of the science of man since the mid-18th century,

management combines the techniques of education and government at the methodological level, creating common ground that allows for technological transference between the two realms. The “science” as conceived by Jullien was the name given to the common ground. The following text illustrates this view:

All the sciences have mutual connections and can make advantageous exchanges between themselves. The science of administration especially must be helped by all the others. Administration, in general, and the military art, in particular, which must exert their action and influence directly on groups of men, considered both individually and en masse, are much less foreign than one might be tempted to believe, to the science of education, which acts both on isolated individuals and on a certain number of children gathered together, called to form a family and a small society. The art of educating children, art of leading and governing people, art of commanding an army, and art of administering a country, have between themselves an intimate analogy, and must be directed and applied, according to common principles.¹²

Conclusion

This study places Jullien's educational thought in the intellectual context of early 19th century France and clarifies its characteristics. The science of education conceived by Jullien, who inherited the Ideologues' concern to rationalize government through the science of man, opens up a technological dimension of educational knowledge that mediates between science and government.

The early 19th century marked the beginning of the era of institutionalization and specialization in the modern sciences. Jullien was one of the first to elevate knowledge of education to a science. His science of education, while oriented toward an exacting empirical science that anticipated the 19th century, also included practical techniques that would lead to happiness. Due to this ambivalence, his science of education was based on ideas that originated in areas normally considered foreign to education, such as

political and economic phenomena were not always clearly distinguished scientifically at that time (see T. Tanaka, *Sijō Hinkon Tōchi* (Markets, Poverty, and Government), *Keizaigakushi Kenkyū* (*Journal of the History of Economics*), Vol. 51, No. 1, 2020, p. 21).

¹² M.-A. Jullien, *Esprit de la méthode d'éducation de Pestalozzi*, t.1, Milan, Imprimerie Royale, 1812, pp. XIII-XIV.

government, military affairs, commerce, and religion. This ambiguity, which characterizes Jullien's science of education, may be overlooked if we focus only on his comparative education theory, which advocates "positive science."

Jullien's educational thought, as described above, provides a significant clue to the historical examination of the nature of modern educational knowledge as a "science." To trace the genesis of modern educational knowledge as a science, the question of how to evaluate the ambiguity that Jullien's science of education typically exhibits must be resolved.

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