Critical Review of the Dewey-Bode Applied Philosophy of Education, Part II: Corporal and Intellect Socialization

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I. The Functional Dimensions of Public Instructional Education

I previously presented the two dimensions of functionality in public instructional education [Wells (2012a)][1]. These are: (1) the learner-as-a-free-person; and (2) the learner-as-member-of-Society. Within each of these dimensions there are twelve functions of public instructional education defining the complete set of 24 Objects required of public instructional education by the social contract of the American Republic [Wells (2012a), chaps. 6-9]. Part II reviews Dewey-Bode in regard to six of these in the social dimension for corporal and intellect education.

Schooling for the first dimension pertains to the education of the individual in regard to knowledge and skills needful or useful for the individual's achievement of well-being and happiness in living his life. Schooling for the second dimension pertains to an education directed at cultivating and preparing the learner with knowledge and skills needful or useful for successful participation in his Society as a full citizen of his civil Community. All human beings begin life as social outlaws, i.e., without Self-made rules of mutual Obligation or cognizance of mutually reciprocal Duties. Public schooling is tasked with assisting in providing experiences designed to cultivate the child's Self-development of those practical rules of mutual Obligation and ideas of civic Duties by which he is integrated into the Society in which he lives insofar as its moral customs, folkways, and social contract are concerned.

One of the merits of the Dewey-Bode applied philosophy is that it was the first work of its kind to explicitly recognize that these two dimensions exist, are not mutually antagonistic in public education, and that both dimensions of learning are necessary for the general welfare of a Society. The doctrine thus called for attention to be paid to both in the institution of education. In America's colonial days the overall institution covered both dimensions but did so through two separate institutions. Education of the learner-as-a-free-person was provided by an extensive system of apprenticeship, either through home-apprenticeship or trade-apprenticeship. Education of the learner-as-member-of-Society was covered by a combination of schooling and church. Schooling was a public institution in Puritan New England, typically was a parochial school institution in the Middle Colonies, and was provided by private education, primarily home schooling, in the Southern Colonies. Regional differences in attitudes toward schooling persisted until well into the nineteenth century [Cubberley (1919), pp. 61-81]. It is not surprising regional differences in attitudes produced regional differences in the depth and breadth of results. Tocqueville commented on this in part I of his *Democracy in America*. He wrote,

> In New England every citizen receives the elementary notions of human knowledge; he is taught, moreover, the doctrines and evidences of his religion, the history of his country, and the leading features of its Constitution. In the states of Connecticut and Massachusetts, it is extremely rare to find a man imperfectly acquainted with all these things, and a person wholly ignorant of them is quite a phenomenon. . . .
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> What I have said of New England must not, however, be applied to the whole Union without distinction; as we advance toward the West or the South, the instruction of the people diminishes. In the states that border on the Gulf of Mexico a certain number of

[1] The author's prior works are posted on the Wells Laboratory website and are accessible free of charge at the following web address: http://www.mrc.uidaho.edu/~rwells/techdocs/.

> individuals may be found, as in France, who are devoid even of the rudiments of instruction. But there is not a single district in the United States sunk in complete ignorance [Tocqueville (1836), pp. 315-316].

It was not adequately recognized by the Americans that their system of apprenticeship was an integral and, for most, virtually the only education institution addressing the first dimension of the learner. The Economy Revolution that began in mid-eighteenth century America after the French and Indian War destroyed the apprenticeship system and wiped out nearly *all* the educational functions in this dimension of the learner in the Colonies and the United States [Wells (2013c), pp. 147-152, 162-176]. The loss was slow to be recognized. As its effects came to be felt, the first nineteenth century education reform movement, led by Horace Mann, sought to make up for its lack by trying to move the lost functions into the objects of public schooling. The reform, however, was haphazard and was not carried out scientifically or to an adequate degree of success. Even the educational objectives were not very well developed by this first reform movement, nor was the nature of the linkage between these objectives and the American economy adequately understood.

It is beyond reasonable doubt that Dewey glimpsed the nature of the shortcomings in these reforms. It is likewise beyond reasonable doubt that he was aware the Economy Revolution had taken place. In an 1899 lecture he said,

> The change [in the social environment of the United States] that comes first to mind, the one that overshadows and even controls all the others, is the industrial one – the application of science resulting in the great inventions that have utilized the forces of nature on a vast and inexpensive scale: the growth of a world-wide market as the object of production, of vast manufacturing centers to supply this market, of cheap and rapid means of communication and distribution between all its parts. Even as to its feebler beginnings, this change is not much more than a century old; in many of its most important aspects it falls within the short span of those now living. One can hardly believe there has been a revolution in all of history so rapid, so extensive, so complete. . . .
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> Back of the factory system lies the household and neighborhood system. Those of us who are here today need go back only one, two, or at most three generations to find a time when the household was practically the center in which were carried on, or about which was clustered, all the typical forms of industrial occupation. . . . The entire industrial process stood revealed, from the production on the farm of the raw materials till the finished article was actually put to use. Not only this, but practically every member of the household had his own share of the work. The children, as they gained in strength and capacity, were gradually initiated into the mysteries of the several processes. It was a matter of immediate and personal concern, even to the point of actual participation.
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> We cannot overlook the factors of discipline and of character-building involved in this: training to habits of order and of industry, and in the idea of responsibility, of obligation to do something, to produce something, in the world. . . . Personalities which became effective in action were bred and tested in the medium of action. Again, we cannot overlook the importance for educational purposes of the close and intimate acquaintances got with nature at first hand, with real things and materials, with the actual processes of their manipulation, and the knowledge of their social necessities and uses. . . . No number of object-lessons for the sake of giving information can afford even the shadow of a substitute for an acquaintance with the plants and animals of the farm and garden, acquired through actual living among them and caring for them. No training of the sense-organs in school, introduced for the sake of training, can begin to compete with the alertness and fullness of sense-life that comes through daily intimacy and interest in familiar occupations. [Dewey (1915), pp. 7-8]

Ignoring the homely reference to "the farm and garden" as merely a specific example of a not-

uncommon situation still current in Dewey's day, this overall assessment is historically accurate enough. Dewey's remark about the beneficial effects of practical training is fully congruent with the mental physics of human Nature. To its credit, the Progressive Education Movement (PEM) embraced the spirit of his remark. There were inadequacies and outright errors of implementation in the twentieth century, but no error in supposing education in the first dimension of the learner was socially necessary. If the broader socio-economic environment does not provide for it then it is necessary *ipso facto* for it to be provided as part of public education. Dewey thought the socio-economic conditions in the United States made it extremely unlikely that restoring outside-the-school education institutions existing prior to the Economy Revolution could succeed:

> At present, concentration in industry and division of labor have practically eliminated household and neighborhood occupations – at least for educative purposes. But it is useless to bemoan the departure of the good old days of children's modesty, reverence, and implicit obedience if we expect merely by bemoaning and by exhortation to bring them back; it is radical conditions which have changed, and only an equally radical change in education suffices. We must recognize our compensations – the increase in toleration, in breadth of social judgment, the larger acquaintance with human nature, the sharpened alertness in reading the signs of character and interpreting social situations, greater accuracy of adaptation to differing personalities, contact with greater commercial activities. . . . Yet there is a real problem: how shall we retain these advantages and yet introduce into the school something representing the other side of life – occupations which exact personal responsibilities and which train the child with relation to the physical realities of life? [*ibid*., pg. 8]

It is beyond reasonable doubt that the Progressive Education Movement did try to solve this real problem. The intent was true and the aim was valid. Poor planning, inadequate understanding of human Nature, educologist Taylorism, and a fundamental error of designing the institution to fit the unrealistic idol of Plato's *Politeía* (as discussed in Part I) were responsible for the PEM's failures and for its most egregious enormities. I discuss this dimension of Dewey-Bode in Part IV of this series.

In this Part and the next, the focus is given to the second dimension of the learner. There is no reasonable doubt that Dewey and Bode both saw this dimension as a necessary focus for public instructional education. Dewey wrote,

> We have seen that a community or social group sustains itself through continuous self-renewal, and that this renewal takes place by means of the educational growth of the immature members of the group. By various agencies, unintentional and designed, a society transforms uninitiated and seemingly alien beings into robust trustees of its own resources and ideals. Education is thus a fostering, a nurturing, a cultivating process. All of these words mean that it implies attention to the **conditions of growth**. . . . In this chapter we are concerned with the general features of the *way* in which a social group brings up its immature members into its own social form.
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> Since what is required is a transformation of the quality of experience till it partakes in the interests, purposes, and ideas current in the social group, the problem is evidently not one of mere physical forming. Things can be physically transported in space; they may be bodily conveyed. Beliefs and aspirations cannot be physically extracted and inserted. How then are they communicated? Given the impossibility of direct contagion or literal inculcation, our problem is to discover the method by which the young assimilate the point of view of the old, or the older bring the young into like-mindedness with themselves. [Dewey (1916), pp. 11-12]

Again, the problem to be solved here is actual, the aim is true, and a relationship to the mental physics of learning is clear. However, in this case the Progressive Education Movement roundly

failed to carry out reforms that served this aim in Dewey-Bode. In part this was due to reliance on a speculative and, as it turned out, incorrect set of psychological hypotheses. In part it was due to a great under-appreciation of complexities that attend the phenomenon of educational Self-development in human beings. But in the major part, the failure is laid at the door of presumptive educologist Taylorism, an objectively invalid and inadequate sociology, and a thorough-going lack of effort to incorporate into the education institution lessons that could cultivate and grow learner knowledge and skill pertaining to the mores and folkways of American Society. Indeed, the reforms that were instituted in the name of Deweyan "democracy" were antithetical to those mores and folkways prevailing in broader American Society. The error here is laid at the door of the PEM's unjustifiable commitment to social reconstructionism. It is not granted to agents of public instructional education to undertake any reconstruction of the Society whose institution it is, much less to attempt to steer it toward the ant-like communism of Plato's *Politeía*. Hubris, prejudice, and ignorement of the basic tenet of Dewey-Bode stated above, with attending failure to recognize the incompatibility of the idol with the precept, were principal factors that steered the PEM into adult egocentrism and the institution of deontologically unethical methods.

II. The Mental Physics of Mores and Folkways in a Society

The first dimension is necessitated by the Self-determining free agency of human beings. Specifically, every human being constructs a practical manifold of rules, in response to actual events he experiences, such that this manifold contains practical tenets and maxims the person holds-to-be-binding as practical *Obligations-to-himself* [Wells (2012b), pp. 61-79]. These Self-constructed rules are subjective and personal, and their construction constitutes the foundations of a personal and idiosyncratic moral code each human being Self-constructs in response to actual stimulations and provocations motivating the development of his objective personal experience. Every person has his own notions and feelings of "right and wrong" and "good and evil" that he uses in making determinations of his actions and opinions. At the lowest levels of detail no two people make identical Self-determinations of this sort, but at the level of a Society we find a limited number of similar exhibitions from one person to the next that reflect self-determinations of similar tenets. There is a distribution distinguishing minor differences among these, but when these minor differences are ignored we arrive at what are called the folkways of the Society. A still smaller subset of such exhibitions, principally involving interactions between multiple individuals, have an additional distinguishing feature, namely, that the commission of some actions provoke strong expressions of disapproval and disapprobation from most other members of the Society. Their reactions reflect what are called the mores of the Society.

A person's *cognizance* of objects and situations that are connected to these subjective practical rules (via his process of judgmentation) involves those concepts the person eventually comes to understand as *Duties-to-Self* in regard to his person and in regard to his situation. The earliest action exhibitions of acquired habits by small children are exhibitions of practical rules of this kind. In time, as children acquire greater depth of experiences in their interactions with others (especially with other children), we see them gradually begin to exhibit truly cooperative actions in their interpersonal interactions with others. More specifically, the cooperations to which I refer exhibit in individual actions an orientation toward achieving *mutually congruent* aims. Of these, some come to be anticipated and expected behaviors of a special class such that: if one individual omits or transgresses the expected behavior then this provokes reactions of disapprobation by others. These actions reflect the development of a new class of practical rules and a new class of Object-concepts. The rules are constructed as practical tenets of *mutual* Obligation. The Object-concepts are constructed as ideas of *reciprocal* Duties. The ground for the possibility of their development is *congruence with prior rules of Obligation-to-Self and ideas of Duties-to-Self*.

These are the tenets of Obligation and ideas of Duty typically *called* moral Obligations and Duties. Mutual Obligations, and the ideas of reciprocal Duties they give rise to, are not innate.

Their origin lies in earlier Obligations-to-Self. Their development is properly regarded as an *extension* that an individual constructs when he comes to understand that his own Duties-to-Self can be better and more expediently served through civic cooperation with others. Kant taught,

> [Duties to ourselves] are not taken in judicial regard because justice is regarded only with relationship to other people. . . . By way of introduction, it should be noted that no part of morals has been more defectively treated than this of Duties to oneself. Nobody has framed a correct concept of such Duties; it has been deemed a trifle and believed that once a man has fulfilled all his Duties he may finally also think about himself. In this portion, therefore, all philosophical morals are false. . . . Far from these Duties being the lowest, they actually take first rank and are the most important of all [Kant (*c*. 1784-85), pp. 340-341].

Kant himself, we should note, did not successfully "frame a correct concept of such Duties" because he committed the error of slipping back into habits of ontology-centered speculation in regard to a vague notion he called "humanity." There seems to be a certain irony in this because Kant committed the very error he had strongly warned others about in his discussion of the transcendental dialectic of pure Reason in *Critique of Pure Reason*. Long established habits of thinking, like other habits, are impressively diehard. Kant's error came from subtly divorcing the grounds of Self-determination from the person who determines and lodging it with a specious *noumenon* he called "humanity." This is a symptom of what Palmquist has correctly termed "Kant's theocentric orientation" [Palmquist (2000), pp. 7-13].

However, Kant did not err in all aspects of his practical theory. More to the point for our present discussion, the last sentence quoted above is Critically correct and is a part of the Critical doctrine of deontological ethics. It is possible to build a *science* of ethics. Kant tells us,

> The science of the rules of how man ought to behave is practical philosophy, and the science of the rules of his actual behavior is anthropology; these two sciences closely cohere, and the moral cannot subsist without anthropology for one must know of the Subject[2] whether he is also in a position to accomplish what is required of him that he should do. . . . So practical philosophy is practical not by its form but by its Object. It is a doctrine of doing. . . . Practical philosophy, like logic, does not deal with any particular kinds of objects-of-practices but with free acts as such regardless of all objects-of-practices. The practical rules, which say what is to occur, are threefold: rules of skill, rules of prudence, and rules of *Sittlichkeit*[3]. [Kant (*c*. 1784-85), pp. 244-245]

By undoing Kant's ontology-centered mistake and adhering strictly to epistemological acroams of Critical metaphysics proper, his speculative excess is set aside and development of a proper Critical anthropology is achievable through the doctrine of mental physics [Wells (2009)].

The phrase "ought to" in the previous quote requires scrutiny because it raises the question: "Ought to" according to whose judgment and opinion? What *you* think you ought to do in a given situation and what *I* think you ought to do can be, and sometimes are, two quite different things. A science of moral philosophy – ethics – must have an Object for its doctrine. If it is to be a *natural* science, this Object can be nothing else than a common social-natural Object of a natural phenomenon. For our present context, this Object is Society regarded as an environment in which human beings coexist in ongoing interpersonal transactions and intercourses with one another. What a person "ought to" do in such an environment can have no other objective reference point than the social contract the Society's members have mutually agreed to as the basis for and the

[2] By 'Subject' Kant means the particular human being as the agent of his own actions.
[3] This word translates into English as "morality" but carries the connotation of 'that which is *able to be made* moral.' If 'moralize-ability' was a word in the English language it would be the appropriate translation for *Sittlichkeit* in this quote. *Sittlichkeit* is one of the technical terms in the Critical Philosophy.

foundation of their mutual association in a body politic [Wells (2012b)]. Kant tended to over-generalize his expectations for moral philosophy, and this overgeneralization created a number of irresolvable issues for his doctrine. An objectively valid social-natural science of moral customs is possible if Kant's error of overgeneralization is avoided, and it is avoided by keeping the theory of phenomena of moral customs grounded in the social atoms of all social-natural phenomena – i.e., grounded in the mental physics of the human being in his character of *homo noumenon*[4].

An interesting finding of this science is its vindication of a famous conclusion arrived at by Aristotle. Specifically, Aristotle concluded that

> Moral or ethical virtue is the product of habit and has indeed derived its name, with a slight variation of form, from that word. And therefore it is clear that none of the moral virtues is engendered in us by nature, for no natural property can be altered by habit. . . . The virtues we acquire by doing the things that we shall have to do when we have learned it. . . . Again, the actions from or through which any virtue is produced are the same as those through which it is destroyed . . . [Just] as you will become a good builder from building well, so you will become a bad one from building badly. Were this not so there would be no need for teachers of the arts . . . The same then is true of the virtues. It is by taking part in transactions with our fellow-men that some of us become just and others become unjust . . . In a word, our moral dispositions are formed as a result of the corresponding activities. Hence it is incumbent on us to control the quality of our dispositions. It is therefore not of small moment whether we are trained from childhood in one set of habits or another; on the contrary it is of very great, or rather of supreme, importance. [Aristotle (*c*. 4th century BC), $1103^{a}15$-$1103^{b}26$]

Put rather more succinctly, the mores and folkways of a Society are acquired maxims, and if they are to be transmitted to the young they must be taught through immediate experience gained in actual practice. Dewey argues to this same conclusion. A controlled environment where lessons of this sort are imparted by teachers is a school and the learning which schooling of this sort evokes is an education in the dimension of the learner-as-member-of-Society.

III. Mini-Community and Moral Customs in the American Republic

It is one of the marvels of history that a civilization as factious and frequently bellicose as the thirteen American Colonies of 1776 could have coalesced to form a civil Community by 1790. Not only were the thirteen colonies frequently in uncivic competition with one another – uncivic enough that the fledgling United States was by 1787 in serious jeopardy of disintegrating into civil war between the new states – but even within the individual colonies there were serious conflicts between different mini-Communities. Perhaps the most serious of these divisions was that between Piedmont region settlers vs. the older mini-Communities of the Tidewater region of the South and the eastern Pennsylvania establishment. There were others – religious, political, and commercial – as well. Yet by 1789 all thirteen states had agreed to be governed by a common Constitution and to respect a limited number of accepted civil rights, for the sake of which individuals and states alienated some of their *natural* liberties in exchange for broad *civil* liberties in conducting their own affairs.

One can fairly ask: (1) What natural liberties were alienated?; (2) What civil liberties were pledged in compensation?; and (3) What civil rights were agreed to? These are questions that are easy to ask and notoriously difficult to answer. A search of historical documents – charters, constitutions, letters exchanged between America's revolutionary leaders, books, and political writings – does not reveal a single unified body of opinion or written statement in detailed answer

[4] "being-an-intelligence." This paper makes use of Critical technical terms (such as '*homo noumenon*'). I advise the reader to refer to Wells (2013a) for proper technical real-explanations of these Critical terms.

to *any* of these questions (other than in a few explicit cases involving explicit instances of historical enormities). Other than rights to "life, liberty, and the pursuit of happiness" pronounced in the Declaration of Independence, one is hard pressed to find written evidence of what the American Republicans thought they had all agreed to. If this be a failing, it is one indictable of people everywhere and throughout history. Mill wrote,

> There is a limit to the legitimate interference of collective opinion with individual independence; and to find that limit, and maintain it against encroachment, is as indispensable to a good condition of human affairs as protection against political despotism. But though this proposition is not likely to be contested in general terms, the practical question, where to place the limit – how to make the fitting adjustment between individual independence and social control – is a subject on which nearly everything remains to be done. All that makes existence valuable to anyone depends on the enforcement of restraints on the actions of other people. Some rules of conduct must be imposed, by law in the first place and by opinion on many things which are not fit subjects for the operation of law. What these rules should be is the principal question of human affairs; but if we except a few of the most obvious cases, it is one of those which least progress has been made on resolving. No two ages, and scarcely any two countries, have decided it alike; and the decision of one age or country is a wonder to another. Yet the people of any given age and country no more suspect any difficulty in it than if it were a subject on which mankind has always been agreed. The rules which obtain among themselves appear to them self-evident and self-justifying. This all but universal illusion is one of the examples of the magical influence of custom, which is not only, as the proverb says, a second nature but is continually mistaken for the first. The effect of custom, in preventing any misgiving respecting the rules of conduct which mankind impose on one another, is all the more complete because the subject is one on which it is not generally considered necessary that reasons should be given, either by one person to others, or by each to himself. [Mill (1859), pp. 4-5]

The empirical facts are: (1) in every Society, moral customs do not spring forth all at once or in final form; rather, these slowly emerge as people co-discover practical maxims of peaceful coexistence with one another; and (2) there are next to no examples in the history of Western civilizations where rigid codification of moral customs has not led to eventual civil war or the disintegration and fall of the Society that imposed them. One arguable counterexample is ancient Sparta, with its Laws of Lycurgus, that endured for around a millennium. Here it is strongly arguable that the stability of Spartan Society rested on the immediate threat of a deadly and ever-present danger attending the situation where a scant thirty thousand Spartans held in subjugation and slavery an alien people (the Helots) who outnumbered them by ten to one. Every aspect of the harsh Spartan code was aimed at protecting themselves against a Helot revolt. Every other city-state in ancient Helena praised the Spartans as being the most moral Society in Greece and in the same breath thanked their gods that they themselves were not Spartans. Santayana wrote,

> Not only are the various satisfactions which morals are meant to secure aesthetic in the last analysis, but when the conscience is formed and right principles acquire an immediate authority, our attitude to these principles becomes aesthetic also. Honor, truthfulness, and cleanliness are obvious examples. When the absence of these virtues causes an instinctive disgust . . . the reaction is essentially aesthetic because it is not based on reflection and benevolence, but on constitutional sensitiveness. This aesthetic sensitiveness is, however, properly enough called moral because it is the effect of conscientious training and is more powerful for good in society than laborious virtue because it is much more constant and catching. . . . But this tendency of representative principles to become independent powers and acquire intrinsic value is sometimes mischievous. It is the foundation of conflicts between sentiment and justice, between intuitive and utilitarian morals. Every human reform is the reassertion of the primary interests of man against the authority of general

> principles which have ceased to represent those interests fairly, but which still obtain the idolatrous veneration of mankind. Nor are chivalry and religion alone liable to fall into this moral superstition. It arises wherever an abstract good is substituted for its concrete equivalent. [Santayana (1896), pg. 21]

I often find Santayana demonstrates an uncanny knack for laying his hand squarely upon findings and conclusions deducible from basic Critical principles only after much labor. He has done so here in speaking of aesthetic judgments that arise from moral training. The process of practical Reason knows no objects and feels no feelings. The process of determining judgment feels no feelings and knows no systematic natural laws. Affective perceptions are adjudicated by the process of aesthetical reflective judgment, and reflective judgment is the bridge between the knowledge of objects in the manifold of concepts and the knowledge of practical laws in the manifold of rules. The affective sense which we call *conscience* is the product of aesthetical reflective judgment, and this means that at root all opinions regarding morality are subjective judgments of taste, i.e., "feelings of what ought to be or not-be" and "a sense of good vs. evil."

One thing about which the American Republicans commonly agreed was that, as Thoreau later put it, "that government is best which governs least." But at the same time, the Americans abhorred anarchy and recognized the need for good and just government. Tocqueville wrote,

> I have already observed that the principle of the sovereignty of the people governs the whole political system of the Anglo-Americans. . . . In the nations by which the sovereignty of the people is recognized, every individual has an equal share of power and participates equally in the government of the state. Why, then, does he obey society, and what are the natural limits of this obedience? Every individual is always supposed to be as well informed, as virtuous, and as strong as any of his fellow citizens. He obeys society, not because he is less capable than any other of governing himself, but because he acknowledges the utility of an association with his fellow men and he knows no such association can exist without a regulating force. He is a subject in all that concerns the duties of citizens to each other; he is free . . . for all that concerns himself. Hence arises the maxim, that everyone is the best and sole judge of his own private interests, and that society has no right to control a man's actions unless they are prejudicial to the common weal or unless the common weal demands his help. This doctrine is universally admitted in the United States. [Tocqueville (1836), pp. 64-65]

There was a peculiar genius of outcome in the evolution of governance in colonial New England and its system of towns. Although the general government in every colony, and the governments of the states after 1776, set themselves on the ancient road of rulership and oligarchy, the towns of New England long maintained their local autonomy from the state, the king of England, the British Parliament, and the general government of the United States after 1790. Political power there was decentralized and, as Tocqueville observed in detail when he visited New England, each citizen had "an equal share of power and participated equally in the government":

> Municipal independence in the United States is . . . a natural consequence of this very principle of the sovereignty of the people. All the American republics recognize it more or less, but circumstances have peculiarly favored its growth in New England. In this part of the Union political life had its origin in the townships; and it may almost be said that each of them originally formed an independent nation. . . . They did not receive their powers from the central authority but, on the contrary, they gave up a portion of their independence to the state. This is an important distinction . . . The townships are generally subordinate to the state only in those interests which I shall term *social*, as they are common to all the others. They are independent in all that concerns themselves alone; and among the inhabitants of New England I believe that not a man is to be found who would acknowledge that the state has any right to interfere in their town affairs. . . . There are

> certain social duties, however, that they are bound to fulfill. If the state is in need of money, a town cannot withhold the supplies; if the state projects a road, a town cannot refuse to let it cross its territory; if a police regulation is made by the state, it must be enforced by the town; if a uniform system of public instruction is enacted, every town is bound to establish the schools which the law ordains. [*ibid*., pp. 65-66]

I label this institution of governance ingenious because it most effectively deals with the most difficult challenging factor in any Society – namely, the existence of mini-Communities within the Community-of-the-whole. The new United States had no need to *codify* a national system of moral customs – or even, for that matter, to *have* such a system – because *all moral customs are local* and immediately concern *only* the people associated in the local mini-Community. All social contracts are civil conventions made by and between real people. When an attempt is made to level the convent through abstract "ought to" laws reaching too deeply into personal matters, its codification necessitates the introduction of the fiction of abstract people – people "as one thinks they *ought* to be" – and at that moment the imposer's personal moral opinions are introduced into the leveling codification. Unless these are deontological and agreed to *by* ***every*** *citizen the code affects*, this can only violate the social contract, lead to eventual moral secession by members of the Society, and bring about the breakdown of the overall Society. Tocqueville keenly noted,

> In America not only do municipal bodies exist, but they are kept alive and supported by town spirit. The township of New England possesses two advantages which strongly excite the interest of mankind: namely, independence and authority. Its sphere is limited, indeed; but within that sphere its action is unrestrained. This independence alone gives it a real importance which its extent and population would not ensure.
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> It is to be remembered, too, that the affections of men generally turn towards power. Patriotism is not a durable good in a conquered nation. The New Englander is attached to his township not so much because he was born to it, but because it is a free and strong community, of which he is a member, and which deserves the care spent in managing it. In Europe the absence of local public spirit is a frequent subject of regret to those who are in power; everyone agrees that there is no surer guarantee of order and tranquility, and yet nothing is more difficult to create. . . . Yet without power and independence a town may contain good subjects, but it can have no active citizens. Another important fact is that the township of New England is so constituted as to excite the warmest of human affections without arousing the ambitious passions of the heart of man. . . . Even the state is only a second-rate community . . . In the American township power has been distributed with admirable skill for the purpose of interesting the greatest possible number of persons in the common weal. [*ibid*., pp. 66-67]

Tocqueville wrote these words before the American industrial revolution and the migration of a large portion of the population to the cities was far underway. But, as I have previously noted in Wells (2013c), the industrial revolution was merely a second phase of the Economy Revolution that began after the French and Indian War in the mid-eighteenth century. What I call *the method of Tocqueville governance of a Republic* just described faced several serious challenges that in combination eventually overwhelmed its continuation and separated the citizens from their sovereignty. First, New England Republicanism was locally situated in America. As one traveled further south and west, governance was by degrees increasingly oligarchic and patterned along European models, reaching its closest similarity to Old World monarchy in the planter aristocracy of the Southern colonies. Second, the economic environment of *civic* free enterprise characteristic of American life prior to the Economy Revolution was allowed to give way to a system of *uncivic* free enterprise. This change was the principal enormity of the Economy Revolution and has held sway continuously to this day. Third, the rise of national political parties, beginning in the 1820s and continuing during the so-called 'Age of Jackson,' brought the usurpation of local autonomy and power by centralized state governments. Fourth, the weapon of *rulership-seeking* political

parties in America has been non-consensus democracy, which imposes in principle a despotic *rule of the majority* over the interests and Duties-to-Self of the minority. I say this rule of the majority is only a rule-in-principle because in fact non-consensus democracy leads to dictatorial rule of a *minority* over the majority. This is an inherent enormity of democracy the Framers of the Constitution tried unsuccessfully to forestall [Farrand (1911)]. Mill pointed out:

> It has been seen that the dangers incident in a representative democracy are of two kinds: danger of a low grade of intelligence in the representative body, and in the popular opinion which controls it; and danger of class legislation on the part of the numerical majority, these being all composed of the same class. . . . A completely equal democracy, in a nation in which a single class composes the numerical majority, cannot be divested of certain evils; but those evils are greatly aggravated by the fact that the democracies which at present exist are not equal, but systematically unequal in favor of the predominant class. Two very different ideas are usually confounded under the name democracy. The pure idea of democracy, according to its definition, is the government of the whole people by the whole people, equally represented. Democracy as commonly conceived and hitherto practiced is the government of the whole people by a mere majority of the people, exclusively represented. The former is synonymous with the equality of all citizens; the latter, strangely confounded with it, is a government of privilege in favor of the numerical majority, who alone possess practically any voice in the State. This is the inevitable consequence of the manner in which the votes are now taken, to the complete disenfranchisement of minorities.
>
> The confusion here is great, but it is so easily cleared up that one would suppose the slightest indication would be sufficient to place the matter in its true light . . . It would be so but for the power of habit, owing to which the simplest idea, if unfamiliar, has as great difficulty making its way to the mind as a far more complicated one. That the minority must yield to the majority, the smaller number to the greater, is a familiar idea; and accordingly men think there is no necessity for using their minds further, and it does not occur to them that there is any medium between allowing the smaller number to be equally powerful with the greater, and blotting out the smaller number altogether . . .
>
> The injustice and violation of principle are not less flagrant because those who suffer by them are a minority; for there is not equal suffrage where every single individual does not count for as much as any other single individual in the community. But it is not only a minority who suffer. Democracy, thus constituted, does not even attain its ostensible object, that of giving the powers of government in all cases to the numerical majority. It does something very different: it gives them to a majority of the majority, who may be and often are but a minority of the whole. . . . Any minority left out [of governing], either purposely or by the play of the machinery, gives the power not to the majority but to a minority in some other part of the scale. [Mill (1861), pp. 75-77]

The idol of Plato's *Politeía* prescribed in the Dewey-Bode doctrine does not pretend to be even the non-consensus democracy Mill describes here. It is the monarchy-oligarchy form of government instituting a system for antisocial rule of a subjugated majority by a privileged class. Hence, the social reconstructionism attempted by the PEM was an enormity of first rank and a violation of the social contract of the American Republic. This does not mean *non*-reconstructionist PEM reforms were necessarily injurious to American Society. The pertinent questions are: In what ways did the doctrine hinder violation of the Republican contract? and, In what ways did it aid and abet its violation? Insofar as it hinders violation it provides for the functions educating the learner-as-member-of-Society; insofar as it aids and abets violation it is antisocial and in violation of American civil rights; insofar as it neither hinders nor aids and abets violation, it is derelict of the Duty of the institution of public education to fulfill its mission of serving as part of the justice system. That is the context for this review of the Dewey-Bode doctrine.

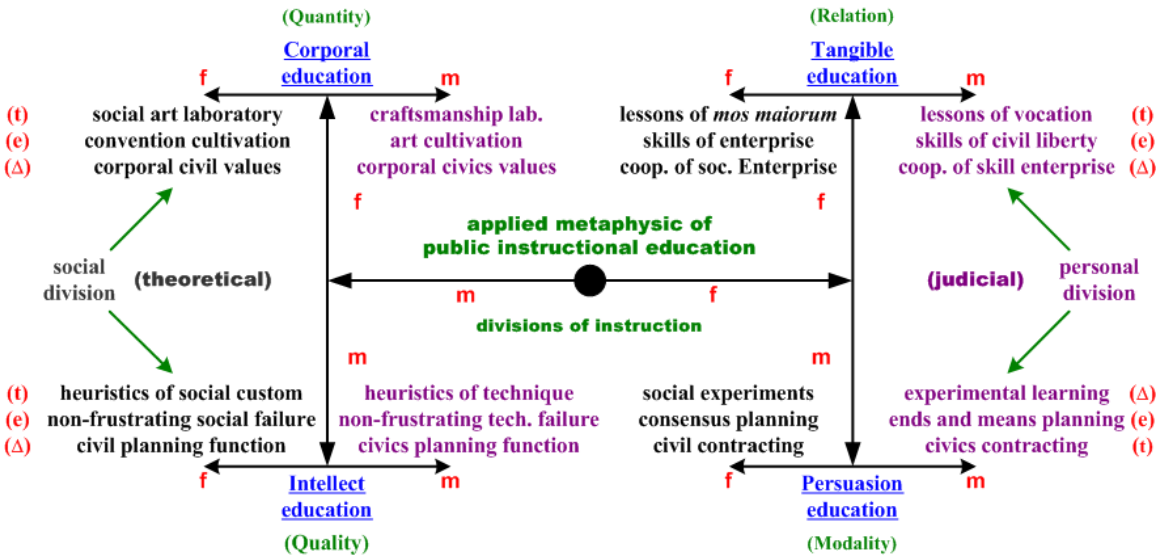

Figure 1: Third level analytic representation (3LAR) of the instructional functions in the applied metaphysic of public instructional education. The personal division pertains to the dimension of the learner-as-a-free-person. The social division pertains to the dimension of the learner-as-member-of-Society. The social division is understood from the theoretical Standpoint of Critical metaphysics proper; the personal division is understood from the judicial Standpoint. The twenty-four functions depicted in this figure are synthetic functional *momenta* of instruction understanding more specific curricular and pedagogical factors of instruction. f = form of, m = matter of representation. See text below for t, e, and Δ.

IV. Instructional Functions in the Social Dimension of the Learner

It seems to me that to say, "An empirical science of education is a systematic doctrine of applied epistemology," is an almost trivially evident proposition. A Critical review of the Dewey-Bode doctrine in the context just stated above amounts to evaluating its propositions and maxims in relationship to necessary instructional functions of public education. These functions have been deduced previously in Wells (2012a) and are summarized in figure 1. In Parts II and III, the pertinent instructional functions are those addressing the dimension of the learner-as-member-of-Society, and these twelve functions are those depicted in the social dimension of the figure.

Naturally, Dewey and Bode could not work from the basis of figure 1's 3LAR representation. They neither understood Kantian metaphysics nor did they work from the basis of some other explicit and scientific metaphysic. Consequently, the precepts of Dewey-Bode are congruent with some of these Critical functions, incongruent with some of them, and in no real relationship at all with still others. Figure 1 provides the objective standard for assessing the precepts of Dewey-Bode and gauging its valid, invalid, and partially valid implications. In the next section I begin this assessment. This section reviews the standard.

After a little reflection, it is perhaps obvious enough that the Critical functions are functional abstractions – i.e. that they are more general concepts containing under them spheres of more detailed concepts. To say that the applied metaphysic contains a "social art laboratory" function does not state what specific curricular elements or pedagogical methods stand under the concept. The metaphysic does not specify the science but merely: sets the context for it; limits the scope of its empirical interpretations and rational hypotheses; and sets boundaries for its speculations. This is the proper role for the applied metaphysic of any empirical science. Building the science itself is tasked to the scientist because every natural science has for its Object delimited phenomena of Nature. The metaphysic sets out the scope of objective validity for scientific concept-making. As Kant put it,

> When one wishes to present any knowledge as science, one must first know how to determine accurately the differences which no other science has in common with it, and so belong exclusively to it; otherwise the boundaries of all sciences run into one another and none of them can be thoroughly handled according to its nature. [Kant (1783), 4: 265]

One knows how to make these determinations when, and only when, a Critical *applied* metaphysic for the science in question has been deduced and developed.[5] Wells (2012a) does this for a social-natural empirical science of public education.[6] When Kant says "handled according to its nature" in the foregoing quote, he means by "its nature" the Critically delimited scope of natural phenomena to be explained by the doctrine of the empirical science. The metaphysic is not the empirical science itself but, rather, provides the epistemological foundations, upon which the science is to be raised, and rules of self-discipline its practitioners (the scientists) must impose on themselves. The so-called "primitives" of a science are not true primitives; they are epistemology-grounded Objects, identified by its applied metaphysic, giving the science its scope-in-Reality.

There is a methodological danger the scientist can all too easily fall victim to in *applying* his applied metaphysic (regardless of whether his metaphysic – "way of looking at the world" – is Critical or merely a jumble of pseudo-metaphysical prejudices; *no* science is *ever* developed without some metaphysic or, more often, metaphysical prejudices underpinning its "primitives" [7]). Bacon pointed out and warned us of this danger in the days of the dawn of modern science:

> There are and can exist but two ways of investigating and discovering truth. The one hurries on rapidly from the senses and particulars to the most general axioms, and from them, as principles and their supposed indisputable truths, derives and discovers the intermediate axioms. This is the way now in use. The other constructs its axioms from the senses and particulars by ascending continually and gradually till it finally arrives at the most general axioms, which is the true but unattempted way. . . . Each of these two ways begins from the senses and particulars and ends in the greatest generalities. But they are immeasurably different; for the one merely touches cursorily the limits of experiments and particulars, while the other runs duly and regularly through them – the one from the very outset lays down some abstract and useless generalities, the other gradually rises to those principles which are really the most common in nature. [Bacon (1620), pp. 15-16]

Bacon almost got this right. His error was that there are not two but, rather, three "ways": the two he identifies and a third he did not. The third way is the synthesis of the other two. One can go "from the senses and particulars to general" principles (Bacon's "axioms"), and this is more or less the method of rationalism. One can also "construct the axioms by ascending continuously and gradually," and this is the method of empiricism in its more or less "chemically pure" practice. The first tends to fall victim to what Bacon called "idols" of speculation. The other tends to be misguided by preliminary metaphysical prejudices and, in a manner of speaking, does not know which direction "ascending" is in because it does not have any concepts of where it is going (and, practically speaking, is also a rather plodding and inefficient method). Bacon presumes what we can call a "linear progression" model of science, but Kuhn correctly pointed out that actual science is never practiced this way in general. Actual science is *iterative*: general principles are postulated and then these principles are *tested* by additional empirical particulars to see if these

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[5] There are many scholars who think or suppose Kant's *Prolegomena* is a *Reader's Digest* summary of the Critical metaphysics-proper he presented in *Critique of Pure Reason*. This is not true and the supposition tends to season its English translations rather like seasoning a sweet cake with vinegar. The topic of the *Prolegomena* is how to correctly develop an *applied* metaphysic for a particular empirical science.

[6] Critical methodology for developing an applied metaphysic is presented in Wells (2011).

[7] Pointing this out was one of Kuhn's contributions to understanding the practices of science [Kuhn (1970), pp. 16-17].

additional phenomena do in fact: cohere with the postulates; gainsay them; or lead to new ones. The general postulates provide a direction for research; the research investigations then test whether or not the postulates are taking the science along a fecund pathway to discovering deeper causative explanations. Feynman remarked,

> In general we look for a new law by the following process. First we guess it. Then we compute the consequences of the guess to see what would be implied if this law that we guessed is right. Then we compare the result of the computation to nature, with experiment or experience, compare it directly to observation, to see if it works. If it disagrees with experiment it is wrong. In that simple statement is the key to science. . . . These are obvious remarks, so when I say 'if it disagrees with experiment it is wrong,' I mean after the experiment has been checked, the calculations have been checked, and the thing has been rubbed back and forth a few times to make sure the consequences are logical consequences from the guess, and that in fact it disagrees with a very carefully checked experiment.
>
> This will give you a somewhat wrong impression of science. It suggests that we keep on guessing possibilities and comparing them with experiment, and this is to put experiment in a rather weak position. In fact experimenters have a certain individual character. They like to do experiments even if nobody has guessed yet, and they very often do their experiments in a region in which people know the theorist has not made any guesses. . . . In this way experiment can produce unexpected results, and that starts us guessing again. [Feynman (1965), pp. 156-157]

We have here the *synthesis* of rationalism and empiricism, and this is the Critical method of science. This methodological doctrine applies with equal force to the development of an applied metaphysic, where it is called *Palmquist's schema* [Wells (2011)].

The applied metaphysic of public instructional education derives its functions of education from a set of specifying concepts and a system of axioms deduced from acroams of Critical meta-

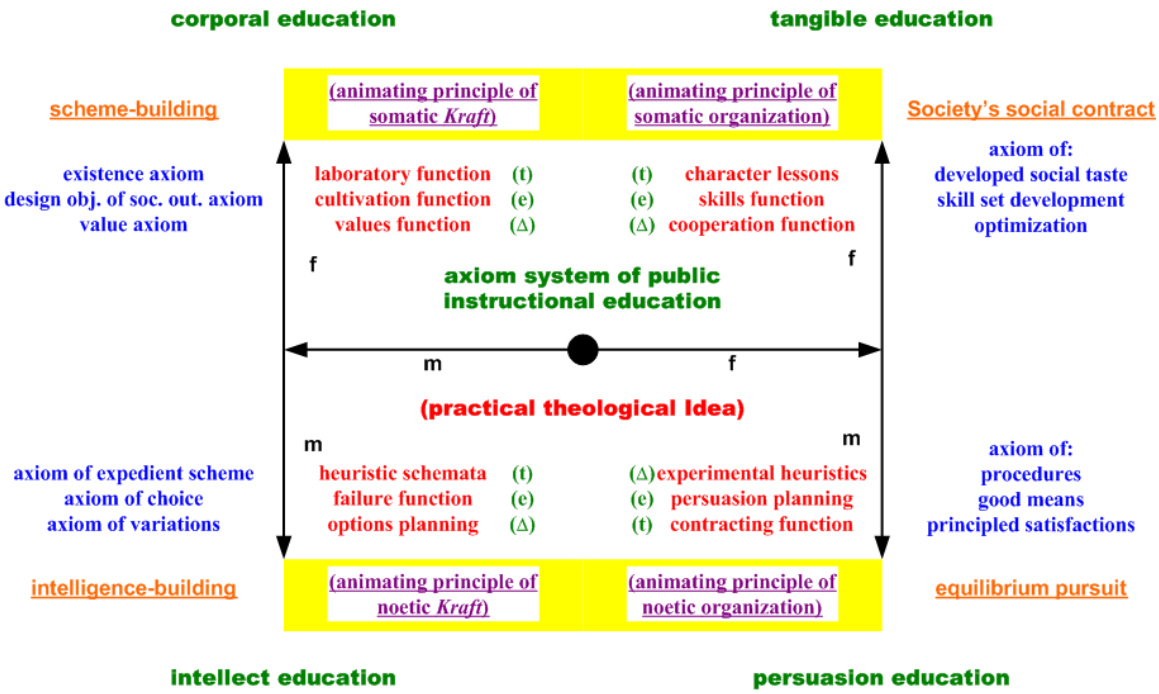

Figure 2: Second level analytic representation (2LAR) of the axiom system of the applied metaphysic of public instructional education. The figure also identifies the four specifying concepts of the metaphysic: scheme-building; intelligence-building; Society's social contract; and equilibrium pursuit.

physics-proper. These axioms and their deductions are explained in Wells (2012a), chapters six through nine. Figure 2 presents a summary of the axiom system at the second level of analytic representation (2LAR) alongside the general education functions that understand the dimensional functions of the learner in the 3LAR presented in figure 1. Four specifying concepts specialize the headings of the 2LAR such that the metaphysic is specialized for public education science. The structure of the metaphysic follows Kant's general representation structure of: (1) Quantity = specifying concept of scheme-building; (2) Quality = specifying concept of intelligence-building; (3) Relation = specifying concept of a Society's social contract; and (4) Modality = specifying concept of equilibrium pursuit. The meanings of the specifying concepts are explained in the Wells (2012a) citation.

Standing under each heading are three synthetic functionals for the Critical science. These pertain to the three standpoints of any Critical science: (t) the theoretical (rational) standpoint of science; (e) the empirical standpoint of science; and (Δ) synthesis of the rational and empirical, which forms the Critical bridge between the mathematical Objects of a science doctrine and the phenomenal objects that comprise its scientific topics. These functionals are defined by meta-physical axioms derived from the acroams of Kant's Critical metaphysics-proper. Thus the overall structure is deduced according to the method explained in Wells (2011). Chapters six through nine of Wells (2012a) illustrate a specific application of this method to the problem of organizing an empirical science of public instructional education.

In a civil Community each learner is simultaneously a free agent who self-determines his own actions *and* a member (or future member) of a Society with which he has chosen to associate himself. These are two additional specifying concepts peculiar to a social-natural science (e.g., sociology, political science, leadership, economics, public instructional education, deontological ethics, Enterprise management and administration, &etc). That these specifying concepts pertain to the individual is a consequence of the fact that the "social atoms" of any social-natural science are individual human beings[8]. So it is that the applied metaphysic contains a total of twenty-four educational functions rather than only twelve ($4 \times 3 \times 2$).

The danger of misapplication I spoke of earlier is a tendency to fall into habits of thinking (dogma) according to either Bacon's "first way" (giving exaggerated priority to rationalism) or his "second way" (giving exaggerated priority to empiricism). In the extreme, the latter tends to lead to bits of isolated and limited snippets of doctrine comprising a mere natural history (the ancient Egyptians provide a good example of this). Frustration with the limited fecundity of such a doctrine has historically led many times to scientific communities over-swinging in the other direction and falling into the error of Bacon's "first way." The positivism movement of the 19th century gave way in the early 20th century to a rationalism with a tendency, especially notable in astrophysics, to favor habituated practices of constructing hypostatized mathematical fantasies of mere speculation. It also produced "social sciences" but no social-natural science. Bacon characterized this sort of speculative rubbish as idolatry for what he called the "idols of the den":

> XLII. The idols of the den are those of each individual; for everybody . . . has his own individual den or cavern, which intercepts and corrupts the light of nature, either from his

[8] I use the metaphorical phrase "social atom" in a Greek context rather than a physics-like context. Under Critical epistemology it is forbidden to posit any real-division of an individual human being, e.g. 'mind and body' or 'body and soul' or '*res cogitans* and *res extensa*.' What is givable to actual experience is only the individual human being as an organic mind-body whole. While it is permissible to posit merely logical, i.e. *mathematical,* divisions for the purpose of organizing a doctrine, these logical divisions must *never* be mis-taken for *real* divisions. To do so is to commit a fundamental epistemological error. This is why the mental physics model of being-a-human-being has three logical divisions: *nous* (mind-phenomena), *soma* (body-phenomena), and *psyche* (the animating principles of thorough-going *nous-soma* reciprocity).

> own peculiar and singular disposition, or from his education and intercourse with others, or from his reading and the authority acquired by those whom he reverences and admires, or from the different impressions produced on his mind as it happens to be preoccupied and predisposed, or equable and tranquil, and the like [Bacon (1620), pg. 21]. . . .
>
> LIII. The idols of the den derive their origin from the peculiar nature of each individual's mind and body, and also from education, habit, and accident; and although they be various and manifold, yet we will treat of some that require the greatest caution and exert the greatest power of polluting the understanding. [*ibid*., pg. 28] . . .
>
> LVIII. Let such, therefore, be our precautions in contemplations, that we may ward off and expel the idols of the den, which mostly owe their birth either to some predominant pursuit, or, secondly, to an excess in synthesis and analysis, or, thirdly, to a party zeal in favor of certain ages [in history], or, fourthly, to the extent and narrowness of the subject. In general, he who contemplates nature should suspect whatever particularly takes and fixes his understanding, and should use so much the more caution to preserve it equable and unprejudiced. [*ibid*., pp. 30-31]

PEM educologists exhibited wondrously stubborn adherences to idols of the den, and many of their idols have been enshrined in present day teacher education in all of America's colleges of education. This is not education science and can be likened to later Greek Neo-Platonism. It is a danger that must be avoided in applying the applied metaphysic of public instructional education.

V. The Dewey-Bode Doctrine in Regard to Corporal Education

Mental physics teaches that all real meanings begin at the level of practical sensorimotor schemes. Conceptual cognizance is erected on top of these non-cognitive schemes through the interplay of imagination and the processes of reflective, determining, and practical judgment in the synthesis of judgmentation. Object cognition obtains its reality in understanding by means of practical schemes of motoregulatory expression. This theorem is validated by psychological findings from the work of Piaget *et al*. in the 1970s [Piaget (1974)]. Figure 3 illustrates the information synthesis flow for cognizance (*Kenntnis*) in judgmentation.

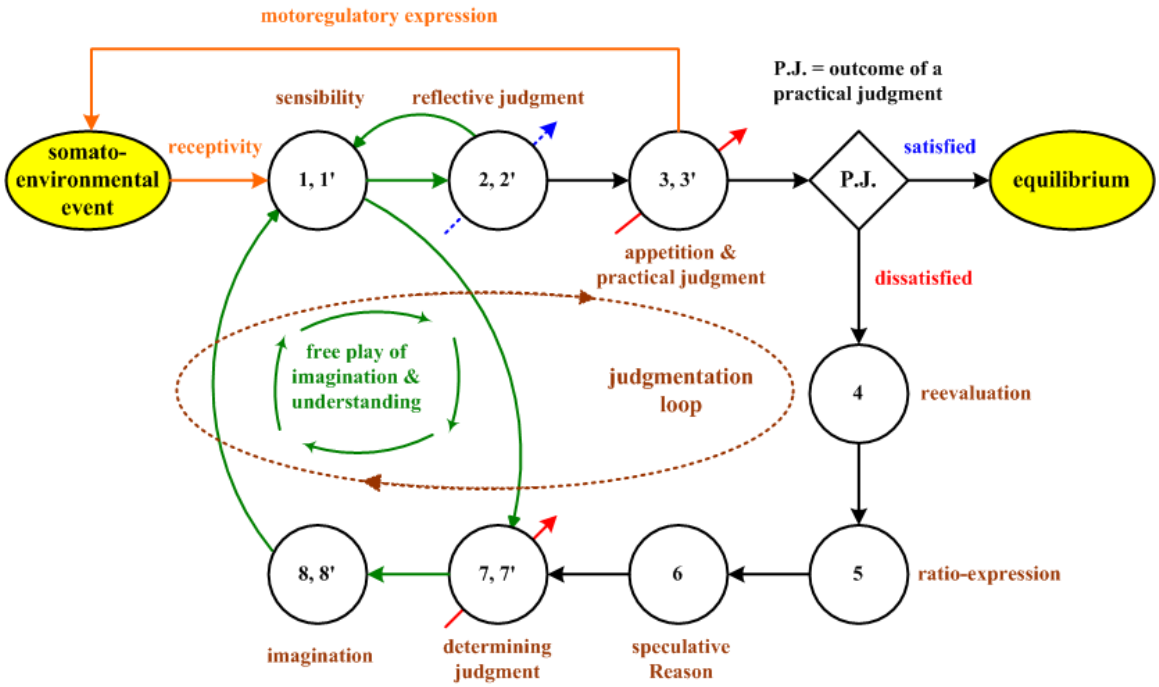

Figure 3: Information synthesis flow process during judgmentation [Wells (2012b), pp. 228-231].

The synthesis process illustrated in figure 3 is discussed in more detail in Wells (2012b), pp. 228-231. This process is the root of the phenomenon of ***active learning***. Active learning has been an instructional paradigm in education since Pestalozzi introduced it in 1820, and here we have an element of Dewey-Bode that is to be retained in future education reforms and requires significant improvement in teaching methodology and curriculum structure if its full benefit is to be realized. The PEM did try, with limited success, to devise and incorporate active learning methodology in its 20th century reforms. The 'project method' introduced by Kilpatrick is an example [Ravitch (2000), pp. 178-183]. The degree of success the active learning methods introduced in the 20th century had was limited primarily by four factors. The first was reliance upon a set of inadequate psychological speculations promoted by Thorndike and others that failed to correctly understand the mental physics of learning. The second was the PEM's over-focus on job training rather than on teaching pupils and students *methods by which they can self-develop their own heuristics and schemes of problem-solving* ***skills***. The third was rigid Taylorite administrative and organizational structure in public schools that hinders the adoption of active learning methodologies severely enough to cripple the method. The fourth was the PEM's overall lack of understanding of what sorts of lessons the Duties of public instructional education require under a social contract.

Dewey was severely critical of the still-standard institution of schooling that in his view made it a practical necessity to rely almost exclusively on lecturing and textbooks. He said,

> Some years ago I was looking about the school supply stores in the city, trying to find desks and chairs which seemed thoroughly suitable from all points of view – artistic, hygienic, and educational – to the needs of the children. We had a good deal of difficulty finding what we needed, and finally one dealer, more intelligent than the rest, made this remark: "I am afraid we have not what you want. You want something at which the children may work; these are all for listening." That tells the story of traditional education. . . . [If] we put before the mind's eye the ordinary schoolroom . . . we can reconstruct the only educational activity that can possibly go on in such a place. It is all made "for listening" – because simply studying lessons out of a book is only another kind of listening; . . . The attitude of listening means, comparatively speaking, passivity, absorption; that there are certain ready-made materials which are there, which have been prepared by the school superintendent, the board, the teacher, and of which the child is to take in as much as possible in the least possible time.
>
> There is very little place in the traditional schoolroom for the child to work. The work-shop, the laboratory, the materials, the tools with which the child may construct, create, and actively inquire, and even the requisite space, have been for the most part lacking. . . .
>
> I may have exaggerated somewhat in order to make plain the typical points of the old education: its passivity of attitude, its mechanical massing of children, its uniformity of curriculum and method. It may be summed up by stating that the center of gravity is outside the child. It is in the teacher, the text-book, anywhere and everywhere you please except in the immediate instincts and activities of the child himself. [Dewey (1915), pp. 15-16]

There is no '*may* have exaggerated' here. Dewey *did* exaggerate. There is truth in what Dewey says, but there is also supposition and presumption unrelated to whether or not active learning is possible in a school setting. Dewey was not himself a public school teacher, did not teach in his own experimental elementary school at the University of Chicago, and overlooked or omitted to mention ordinary teaching tactics such as in-class exercises and out-of-class homework. His description is more appropriate to a college lecture hall than to an elementary school classroom. He was a college professor and had no elementary school teaching experience.

Dewey's remarks contain the seeds of what came to be called a 'child-centered education' that was predicated upon differentiated curricula intended to steer pupils into caste-oriented roles and

occupations preselected for them by public school agents to serve a Society organized according to Plato's *Politeía* doctrine. Dewey confounded two different aims as if they were necessarily connected. One was the aim of effective teaching, the other the social utility of public education. In fact these ideas are not connected *unless instructional methodology connects them*. *All* acts of educational Self-development are active. If a child learns *anything* some active learning occurred. The task of active learning methodologies is to ensure that what the pupil learns is what the educational aims intend for him to learn. Dewey's remark about the "immediate instincts of the child" betray the influence of a faulty psychology-of-learning model. *Instinct*, properly understood as a mental phenomenon and a *momentum* of Quantity in practical judgment [Wells (2009), chap. 11, pp. 416-419], has nothing to do with the learning environment of an elementary school pupil.[9]

By 1900 so-called 'practical' courses in manual training for boys and sewing, cooking, etc. for girls was being introduced into elementary school curricula [Cubberley (1919), pp. 324-328]. This innovation did not come from the Progressive Education Movement and was driven by another reform movement called the manual training movement. This movement had its origins with the craft unions and enjoyed fairly wide public support from parents. A principal idealistic element for the movement was to try to replace some of what was lost when the apprenticeship system had collapsed in the Economy Revolution. Hence, the movement had for its aim job skill training but was resisted by "traditional" educators (as Dewey called them) on the grounds that there are a lot of different kinds of craft jobs and it was not practical for a school to teach them all. Dewey by and large favored the introduction of such courses but he noted that job training *per se* was not the proper motivation for their introduction. He said,

> We must conceive of work in wood and metal, of weaving, sewing, and cooking, as methods of life, not as distinct studies. We must conceive of them in their social significance, as types of the processes by which society keeps itself going, as agencies for bringing home to the child some of the primal necessities of communal life . . . in short, as instrumentalities through which the school itself shall be made a genuine form of active community life instead of a place set apart in which to learn lessons. [Dewey (1915), pp. 8-9]

Rather obviously, what the pupil does in, e.g., woodshop primarily involves active learning activities. However, one can only look at this curricular element as a 'method of life' if one presumes that an economy and the occupations that make it up are *static*, i.e., that "the jobs of tomorrow" will be no different from "the jobs of today." Dewey-Bode is inconsistent here: It opposes placing 'the center of gravity outside the child' in one breath, and then in the next extols viewing these classes as 'types of the processes by which society keeps itself going' – which is to place the purpose of the instruction 'outside the child' and vest it in the abstractions of a Society model, a gender-role model, and a macro-economy model. There is a wholesome-sounding quality to the phrases 'bringing home to the child some of the primal necessities of life' and making the school 'a genuine form of active community life' until one considers that these noble-sounding phrases are so gossamer as to be without practical meaning. What 'social significance' does a metal shop class 'bring home' to a man whose eventual job is to tote pig iron or pick cotton or balance ledgers? Is skill at table-making a 'primal necessity of life'? None and no.

The applied metaphysic of public instructional education does call for active and practical

[9] There are lengthy discussions of the idea of "instinct" and its Critical real definition presented in Wells (2006). The interested reader can consult this source using the subject index ("instinct" entries) as a guide. The Wells (2009) citation given here provides a more encapsulated summary of the Critical term. Dewey uses the word "instinct" as an undefined primitive. Its real definition is that it is the singular *momentum* (function) of Quantity in practical judgment of the manifold of rules by the process of practical Reason.

instruction and it does have a social dimension. Corporal education (see figure 1) is directed at guiding and assisting the learner in the development of his ***manifold of rules*** through exercises in which he must mobilize his currently existing repertoire of practical schemes[10], develop his abilities to adapt existing sensorimotor schemes to assimilate more complex Objects, and learn how to coordinate divers schemes with one another to synthesize more complex ones[11]. It is true, as Kant said, that all *conceptual* knowledge begins with experience, but *experience* begins with non-cognitive practical actions and *intelligence* is developed by structuring ever more robust coordinated schemes of practical equilibration [Piaget (1975)]. Scheme-building is the specifying concept for the *momenta* of corporal education in figure 1. *All* active learning exercises target corporal educational Self-development and the synthesis of practical schemes.

Is the focus of the functions of corporal education in the dimension of the learner-as-member-of-Society 'inside' or 'outside' the child? The short answer is: *all twenty-four* functions shown in figure 2 are focused on the learner, and therefore *all* of them are focused 'inside the child.' *Subject matter* (the topical matter of a class or course in a curriculum) targets external Relations between the learner and his environment, but the functions of education target internal Relations in the learner. Effective *instruction* is the transitive Relation, i.e., it is the synthesis of subject-matter and the formal functions to provide the 'continuity' Dewey-Bode doctrine holds-to-be necessary.

The three corporal functions in the social dimension are: (1) the social art laboratory function; (2) the convention cultivation function; and (3) the corporal civil values function. It cannot be overstressed that these functions are *not* distinct courses but, rather, constitute active learning components *to be built into* the various courses and classes in a curriculum. Before the learner is capable of understanding objective concepts, foundations for the development of this cognizance is laid by his development of non-cognitive practical action schemes. The learner constructs these in his manifold of practical rules through the actions of his process of practical Reason. Only after practical schemes are developed can intellective schemes come to conceptualization. As Piaget stated this in *The Grasp of Consciousness*,

> Each chapter has shown that cognizance (or the act of becoming conscious) of an action scheme transforms [the scheme] into a concept and therefore that cognizance consists basically in a conceptualization. . . . As has been shown in this book, cognizance is always triggered by the fact that automatic regulations . . . are no longer sufficient. New means must therefore be sought through a more active adjustment; this constitutes the source of thought-out choices, which presupposes consciousness. . . . Considered first from the point of view of the material action . . . the general law that seems to emerge from our findings is that cognizance proceeds from the periphery to the center – these terms being defined as a function of the path of a given behavior. This behavior begins with pursuit of a goal, hence the first two observable features, which can be termed peripheral because they are linked to the triggering of the action and to the point of its application: consciousness of what this goal is – in other words, awareness of the general direction of the action needed to attain it (intention) – and cognizance of its result, either failure or success. . . . These two aspects of immediate action are conscious in every deliberate activity, while the fact that the scheme that assigns a goal to the action immediately triggers off the means of effecting it . . . may remain unconscious . . . Thus cognizance, starting from the periphery (goals and results) moves in the direction of the central regions of the action in order to reach its internal

[10] "Mobilize" is a Piagetian technical term meaning to make a sensorimotor scheme capable of being used as a sub-scheme in forming more complex capabilities: "Assimilation, after having proceeded . . . by nearly rigid schemes . . . will henceforth engender more mobile schemes, capable of various involvements and in which we shall find the functional equivalent of the qualitative concepts and of the quantitative relationships peculiar to reflective intelligence." [Piaget (1952), pg. 149]

[11] Learning how to coordinate divers schemes means developing schemes that are applied to the formation of schemes. This type of learning, like the others, also begins in the manifold of rules in practical Reason.

> mechanism: recognition of the means employed, reasons for their selection or their modification en route, and the like. [Piaget (1974), pp. 332-334]

Piaget's empirical conclusion is congruent with theorems of the mental physics of learning. Thus it is congruent as to both empirical implications, arrived at through observation and experiment, and theoretical expectations arrived at by Critical analysis of basic epistemological requirements.

Before a learner is able to *conceive* conceptual knowledge he must first *achieve* sensorimotor knowledge, which is non-cognitive, non-conscious, and thoroughly practical. This is to say he must *build a transformable action scheme or accommodate one of his existing action schemes* to assimilate a new objective goal. This can only be accomplished through concrete actions, i.e., active learning in its strictest sense. Hence this act of educational Self-development is called a *corporal* education because it occurs prior to objective cognizance. It is important to fully note that this extends well beyond simple actions (such as throwing a ball or skipping rope) to take in learning that presents in appearance as the learning of abstract knowledge (e.g., understanding a theorem of mathematics). This was a point speculatively argued by Lakatos in his most famous book, *Proofs and Refutations* [Lakatos (1974)], where he uses dialog to present illustrations of active participation by a fictional class of students proving and disproving mathematics theorems. It is an empirical finding reported in Piaget (1975). Its rational ground comes from its deducibility as a theorem of mental physics.

The metaphysical axioms of corporal education were deduced in Wells (2012a), pp. 182-188. The social art laboratory function is deduced from the **existence axiom: *there are actual physical expressions of behavior that are educational activities for promoting Progress in the physical power of a human being***. The specifying concept (scheme-building) asserts: *learning by doing is necessary for the possibility of learning in general*. In the social dimension of the learner, social team-building skills become the context of the axiom, and from this the social art function follows [*ibid*., pp. 189-190]. The function is *inclusion in the curriculum of physical exercises that are designed to teach the learner how to employ the physical capacities of his body in building sensorimotor schemes by which he can master interpersonal relationship skills involving his ability to accommodate his social intercourse expressions to divers mini-Communities and assimilate the normal habitual social intercourse expressions of divers mini-Communities he can reasonably expect to encounter in life*. So-called "body language expression" is one example.

Dewey appears to have had some grasp of this function of education. He said,

> A society is a number of people held together because they are working along common lines, in a common spirit, and with reference to common aims. The common needs and aims demand a growing interchange of thought and growing unity of sympathetic feeling. The radical reason the present school cannot organize itself as a natural social unit is because just this element of common and productive activity is absent. . . . The mere absorption of facts and truth is so exclusively individual an affair that it tends very naturally to pass into selfishness. . . . Where school work consists in simply learning lessons, mutual assistance, instead of being the most natural form of cooperation and association, becomes a clandestine effort to relieve one's neighbor of his proper duties. Where active work is going on all this is changed. Helping others, instead of being a form of charity which impoverishes the recipient, is simply an aid in setting free their powers and furthering the impulse of the one helped. A spirit of free communication, of interchange of ideas, suggestions, results, both successes and failures of previous experiences, becomes the dominating note of the recitation. So far as emulation enters in, it is in the comparison of individuals . . . with reference to the quality of work done – the genuine community standard of value. In an informal but pervasive way, the school life organizes itself on a social basis. [Dewey (1915), pg. 9]

It is important to note that Dewey did *not* say that such social-active learning could or should wholly replace individual lesson-learning. A group of individually-unskilled people will be an unskilled group unlikely to be able to accomplish anything productive. The social art laboratory does not replace the craftsmanship laboratory function in the dimension of the learner-as-a-free-person; it supplements it. Study groups, capstone team-project science fairs and contests, and class rituals (e.g. flag raising ceremonies, Pledge of Allegiance class recitations, pep rallies) are more or less obvious examples of instantiations of the social art laboratory function if the expectations for these activities are properly designed, structured and communicated to the learners. Educators could learn a great deal by studying the teaching methods of All-Star team Little League coaches and sportsmanship exhibitions of the Little League players at Williamsport. As a well known athletics aphorism puts it, "there is no 'me' in 'team'."

Dewey does err in his statement that a school "cannot organize itself into a natural social unit." He should have said "does not organize itself into a mirror-Society of its parent Society." In point of fact, schoolchildren *do* organize themselves into "natural social units" (mini-Communities) and do so spontaneously from the socializing effects of their interactions. The issue is that the Society they organize is only loosely bound to the parent Society and modern American school practices take few proactive steps to guide and develop the childish mini-Communities as they form. If the childish mini-Societies, once formed, are persecuted by adult agents of the school and parent Community, what is set up is a state-of-nature condition between children and adults in which the adult authority figures assume the role of subjugating rulers and drive some fraction of the child population into forming a Toynbee proletariat within the larger Society. *It is impossible* for agents to externally *impose* moral Obligations. These can *only* be carefully *cultivated* in the child.

The convention cultivation function derives from the **design-objective-of-social-outcomes axiom**: ***the objective of corporal empirical education is to orient and guide the learner's educational Self-development of his manifold of rules to produce a common system of meaning implications for laws of social intercourse that lead to congruent moral customs of behaviors and maxims of Enterprise for which actual agreement to the laws of this system by every citizen in the Community is made possible*** [Wells (2012a), pp. 183-187]. One of the most readily observable features of childish behavior in the early years is *the phenomenon of moral realism*. Piaget very effectively documented this phenomenon in Piaget (1932) and a Critical discussion of the phenomenon is provided in chapter five of Wells (2012b). Observation of adult behaviors indicates that moral realism is never entirely abolished even in adults. Rather, one finds a re-staging of behavioral moral realism at increasingly sophisticated levels as the person ages [Wells (2012b), pp. 122-133]. The **convention cultivation function** calls for *inclusion in the curriculum of designed physical exercises that exploit the phenomenon of moral realism in such a way that the learner Self-develops Society-desired notions of behavioral conventions in the exercise of his civil liberties and in carrying out his personal enterprises*. The functional aim is to produce and cultivate what we earlier saw Santayana call the aesthetic sensitiveness of conscience insofar as it pertains to the moral customs of the Society. The conventional Object here is the social contract.

The Dewey-Bode doctrine says very little that is of constructive use in regard this function. Bode perambulates around moral education in chapter four of Bode (1922) but never quite comes to grips with it. He does criticize the "old education" for failing to adequately address it, but he does not put forth anything specific about what "progressivism" could or should do differently. Bode (1927) is more or less silent on the topic. Dewey did little better. He touched upon the place of moral education in Dewey (1916), pp. 385-392, but had no positive doctrine. He vaguely asserted his opinion that if "learning is the accompaniment of continuous activities and occupations which have a social aim and utilize the materials of typical social situations" and "the school becomes itself a form of social life, a miniature community and one in close interaction with other modes of associated experience beyond school walls" [Dewey (1916), pg. 392] then

the "problem of moral education" would either somehow be solved or solve itself. He says not one word about *how* this is to be accomplished and presents no evidence in support of his opinion. Bode was leery of introducing specific moral lessons out of concern that this might be contrary to the progressive evolution of Society. Both men presume ontology-centered ethics and neither recognized that all mutual Obligation and reciprocal Duty begins with Obligation- and Duty-to-Self. There is an undercurrent of social reconstruction in both men's speculations but, as I said earlier, authority is not granted to agents of public education to reconstruct the Society which owns the institution of education. I can only conclude that Dewey-Bode does not address this function of public education in any meaningful way. It is a hole in the doctrine and this omission undermines the social contract justification for establishment of *public* education institutes.

The corporal **civil values function** is deduced from the **value axiom:** ***Corporal social education is effected through physical activities designed to provoke and orient the learner's development of a social value system congruent with the social contract of his Society*** [Wells (2012a), pp. 187-188]. The corresponding function in the social dimension of the learner is *the suite of designed corporal exercises in scheme-building that produces a value structure within the learner according to which his expectations of civil Obligations is congruent with the social contract of his Society*. In mental physics the term "value" has very specific technical meaning. A ***value*** is the form of an affective perception of a desire presented in an aesthetic Relation of sense of interest[12] and understood from the judicial Standpoint of Critical epistemology. A *value system* is the form of the manifold of practical rules of self-organizing transformations, through adaptation, in relationship to which values constitute conditions for the person to assert these practical rules.

A person's value system is not innate[13]. He constructs his personal value system in response to experienced events by means of the cycle of judgmentation (see figure 3). A *social* value system is that part of the person's value system for which the Object of his actions is his idea of his personal society. The aim of the educative function is to induce the individual to make *his* social value system congruent with the mores and folkways of his parent Society. Again, an individual's value system cannot be imposed on him by any outside agent. The power to determine his value system belongs to him, to him alone, and no power on earth can change this. If a Society wishes to have its members share a common value system of moral customs then its institutions must effectively *seduce* the learner into making its system his own.

Dewey-Bode does not miss realizing that 'values' and 'interests' are key factors in education, nor do they miss the linkage between these and morals in a Society. The doctrine does contain a number of things congruent with and endorsed by mental physics and Critical epistemology. At the same time, it suffers from its unconscious ontology-centered metaphysic, which frustrates Dewey's and Bode's attempts to provide 'value' and 'interest' with usable real-explanations from which positive doctrine can be developed and by which notions of value and interest can be given a teachable focus. Dewey did not provide real-explanations of 'value' and 'interest' but, rather, he

[12] 'Sense of interest' is also a specific technical term in mental physics. It refers to the three fundamental functions of Relation in aesthetical reflective judgment by which representations of desires are presented in judgments of taste [Wells (2009), chap. 8]. An *interest* is an anticipation of a satisfaction or dissatisfaction combined with the representation of the *Existenz* of some object of desire (see Kant (1790), 5: 204). *Sense* is the capacity to present sensations. A *particular* sense-of-interest is the form given to an anticipated desire by its aesthetical connection with a sensuous presentation of imaginative apprehension.

[13] For example, 'courage' usually makes most people's lists of values and is usually regarded as a 'virtue.' But courage is not innate. It is a learned behavior (as also is cowardice) originating from the value system the individual self-constructs in his manifold of practical rules. If you observe the coaches of Little League teams at Williamsport, you can catch the coaches in the act of *teaching* courage to the boys. You will have to be alert because the instructional act is often as brief as a coach saying to a player, "Keep your head up." Carefully watch how the player reacts when his coach says this to him. These lessons are *corporal*.

gave illustrations and examples where he attempted to explain his ideas. In fairness to Dewey, he could hardly have done otherwise because he had no Critical metaphysic from which to proceed.

Dewey (1916), pp. 255-258, provides a discussion of two of his major principles of education. These can be adequately enough described as:

1. a principle concerning the nature of effective (or real) standards of value; here he correctly notes there is a significant difference between 'symbolic valuation' and 'appreciative valuation'; and
2. a principle holding that imagination plays a part in appreciative realizations in the understanding of values.

Through these principles he correctly ties the development of 'interests' and 'values' to pupils' actual experiences. Much of what he writes is congruent with the Critical theory of validation, valuation, and value [Wells (2009), chap. 10]. On the other hand, Dewey attempts to tie his explanations to notions of 'intrinsic' and 'extrinsic' values. Critically, these are not values at all but rather associations of objects with experiences of satisfactions and dissatisfactions in equilibrium. The theory runs a risk here of falling into false conclusions and inferences and, in fact, it does. It loses contact between 'value' and the object said to be valued as he begins to speak of objectified value in employing objects and falls into a specious pseudo-metaphysical argument concerning objects that are "appreciated for themselves." What he is attempting to do is forge a direct link between the notions of value, interest and curricular subject-matter, but in doing so, he loses touch with the Critical foundation.

In regard to principle 1 above, Dewey wrote,

> Every adult has acquired, in the course of his prior experience and education, certain measures of the worth of various sorts of experience. He has learned to look upon qualities like honesty, amiability, perseverance, loyalty, as moral goods; upon certain classics of literature, painting, music, as aesthetic values, and so on. Not only this, but he has learned certain rules for these values . . . These principles are so important as standards of judging the worth of new experiences that parents and instructors are always tending to teach them directly to the young. They overlook the danger that standards so taught will be *merely* symbolic; that is, largely conventional and verbal. In reality, working as distinct from professed standards depend upon what an individual has himself specifically appreciated to be deeply significant in concrete situations. . . . The appeal actually made to him in his own personal realization fixes his attitude much more deeply than what he has been taught as the proper thing to say; his habitual disposition thus fixed forms his real 'norm' of valuation [Dewey (1916), pp. 255-256]

Mental physics teaches that Dewey is correct in what he says here. What he states about the link between teaching and the learner's value system has an importance that can hardly be overstated. Critically, what he calls "certain rules for these values" and "standards of judging the worth of new experiences" subsist in the manifold of rules and in the acts of practical judgment by which the impetuous desirations of reflective judgment are compared to the developed rule structure the individual has built up in his manifold of rules. Dewey's 'rules' and 'standards' are non-objective and are non-conscious. Hence, no *symbolic* understanding of them can precede their practical establishment in the manifold of rules, and this establishment is at root corporeal, i.e. is built out of motoregulatory expressions and the effect of outcomes of the expressed actions in aesthetical reflective judgment. Civil values – that is, common rules of behavior and conduct endorsed by the individual's Society and Community – can only be taught and learned by beginning with what some in recent years have rather romantically called "the theater of the body." This is corporal education and no first appeal to symbolism or intellection is effective without this base, upon which is *later* built the concepts that make these values communicable.

In regard to principle 2 above, Dewey wrote,

> Appreciative realizations are to be distinguished from symbolic or representative experiences. They are not to be distinguished from the work of the intellect or understanding. Only a personal response involving imagination can possibly procure realization of even pure "facts." [*ibid*., pg. 257]

Dewey is correct here so far as he goes. He does not quite have a correct understanding of the phenomenon of imagination or its function in cognition, but he does have a qualitative insight that is correct according to Critical metaphysics. He does not recognize the crucial way in which the process of imagination interacts reciprocally with the processes of reflective and determining judgment, but he does implicitly recognize that these processes do interact.[14] He goes on to say,

> An adequate recognition of the play of imagination as the medium of realization of every kind of thing which lies beyond the scope of direct physical response is the sole way of escape from mechanical methods in teaching. The emphasis put in this book . . . upon activity will be misleading if it is not recognized that the imagination is as much a normal and integral part of human activity as is muscular movement. The educative value of manual activities and of laboratory exercises, as well as of play, depends upon the extent in which they aid in bringing about a sensing of the *meaning* of what is going on. . . . Their utilitarian value in forming habits of skill to be used for tangible results is important, but not when isolated from the appreciative side. Were it not for the accompanying play of imagination, there would be no road from a direct activity to representative knowledge; for it is by imagination that symbols are translated over into a direct meaning and integrated with a narrower activity so as to expand and enrich it. [*ibid*., pg. 258]

This statement might have been torn directly from the pages of *Principles of Mental Physics* or *The Critical Philosophy and the Phenomenon of Mind*. The general welfare of the United States would have fared far better if Dewey, Bode, and the PEM had followed up with a sound formulation of the civil values function and the other five functions of corporal education; but this does not detract from the validity of what Dewey wrote here.

VI. The Dewey-Bode Doctrine in Regard to Intellect Education

Intellect education is that part of public instructional education having for its objective the achievement of Progress[15] in the intellectual power of the learner. Intellectual power of a person subsists in his capacities of knowledge, intelligence, and judgment. It does not pertain to *what* a person knows but, rather, what he can *do* with what he knows. The specifying concept of intellect education is *intelligence-building*. Within the general context of mental physics, ***intelligence*** is the capacity for adaptation of mental structures (manifolds of concepts and of rules). ***Intelligence-building*** is the construction of mental schemes for how to effectively adapt knowledge to uses.

For example, a person who merely memorizes various facts of mathematics – let us say the addition table – is able to regurgitate the facts memorized but is unable to *use* mathematics to solve problems. Many schoolchildren (and adults) dislike "word problems" because these require the would-be problem-solver to do more than regurgitate a fact. An equation does not come with a user's manual saying, "use me here and here, but not there or for that." If you memorize the

[14] In a short paper I cannot go into the many technical details covering the mathematics of mental physics. Pending your own detailed study of the science of mental physics [Wells (2009)], the brief statements I make in this paper concerning what Critical metaphysics and mental physics tell us will have to do for this paper. I do wish to point out that these statements are theorems, not opinions.

[15] Progress is an Object subsisting in increasing the kinds and amounts of objective good people deem possible to make actual. Order is an Object subsisting in the preservation of the degree of all kinds and amounts of objective good people deem to already actually exist.

addition table (or learn how to punch the buttons of a calculator), you can tell me 3 + 5 = 8. But if *all* you have done is memorize the table, you do not know how or when to *use* arithmetic. You have a limited amount of mathematics knowledge but no mathematics intelligence. I am sorry to tell you that most people, including many math teachers, do not know what mathematics is[16] and exhibit little or no mathematics intelligence. They confuse the symbols of mathematics with mathematics *per se*.

Long before I retired as an engineering professor, I had become alarmed by how many students I met who could solve a straight-up math problem if I gave them one but were helplessly unable to figure out for themselves how to *apply* their knowledge of mathematical facts to the solution of even relatively simple engineering problems. This has *nothing* to do with how "smart" a person is and has *everything* to do with institutional failure in early mathematics education. To continue with the example of the addition table, you can try to memorize all 100 entries in that table; however, if you instead learn three rather simple mental schemes you can *produce* all 100 entries in that table without needing to memorize very much of anything. You also acquire a basic mathematical skill that is used to learn how to produce the multiplication table, invent vectors and complex numbers, and, generally, understand "higher math." Knowing *how* the mathematical facts are obtained, you become able to determine how additional mathematical facts might be obtained. The regularities and patterns of mathematics become clearer and more distinct in understanding.[17] You *develop* your mathematics intelligence. If all you do is memorize factoids, you do not develop your intelligence one whit[18].

The thesis that intelligence-building is a principal objective of education is unlikely either to be surprising or newsworthy to experienced teachers although the tradition in teacher-training has favored the notions of "thinking" or "reasoning" to the exclusion of the notion of "intelligence" in describing what it is the teacher is seeking to achieve through instruction. In part this has been due to metaphysical prejudices, popularly held during the Progressive Education Movement, that "intelligence" was some sort of innate 'faculty' and a pupil's 'capacity of intelligence' was set by factors such as ethnic background or socio-economic caste. This prejudice, and the support it was given by flawed psychological speculations, was the principal excuse for the introduction of "intelligence quotient" testing early in the 20th century. IQ testing, in turn, was used to 'justify' tracking pupils into curricular "tracks" of inferior educational quality. This was and still is one of the greatest enormities perpetrated by PEM reforms in violation of America's social contract. Intelligence, in the Critical sense, is indeed innate in human beings but it is a great error to regard it as a "faculty" in the connotation that so-called faculty psychology or the pseudo-science of phrenology used the term. ***Faculty*** in Critical metaphysics is *the form of an ability insofar as the ability is represented in an idea of organization*. Faculty represents how that ability is exhibited in experience. Faculties are *learned, constructed, and structured* in educational Self-development.

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[16] Mathematics is knowledge through the construction of concepts. In its communicable expression, we can properly say mathematics is exhibited as a language for saying things precisely and in such a way that we can deduce consequences from what we say. The word itself derives from a Greek verb meaning 'to learn, to become aware.' An equation is a mathematical expression, but so are figures 1, 2 and 3 in this paper.

[17] A famous mathematician once remarked that all mathematics statements are tautologies reducible to the statement that 0 = 0. This is true but not very helpful. All mathematics essentially consists of layers of patterns and regularities found to be true of mathematical Objects. A pattern *of* mathematics patterns is usually called a *theorem*.

[18] The Critique of American public instructional education returned a score of ***zero*** in all six functions of intellect education in figure 1. The *institution* does little to build the learner's intelligence. In recent years I have become curious about how large the fraction of cases is in which a pupil who is labeled by school officials as being "autistic" is nothing of the kind. I am uncomfortably suspicious that it is a very large fraction. Our system is so instituted that any pupil so mal-diagnosed is subjected to years in a school environment systematically practicing what I can in good conscience only call psychological child abuse.

Although "intelligence-building" is not a term that appears explicitly in Dewey-Bode, the idea is implicit within Dewey's theory of pedagogy [Dewey (1910)] and Bode's doctrine of "training in thinking" [Bode (1922), chap. 7]. This theory is neither complete nor adequate for reduction to practice, but it did at least provide some extermination of harmful vermin in pre-PEM education theory and it did affirm that "thinking" can be improved through instruction. Bode wrote,

> At the present time it requires no extended argument to justify the importance of training in thinking. The sentiment against the memoriter method[19] of learning is fairly unanimous. In some cases the reaction has perhaps gone to seed, but at all events it is evidently in the ascendency. [Bode (1922), pg. 126]

The word "thinking" is put to so many multifarious usages in psychology that it is technically meaningless. Psychologists differ one to another in their understandings of the term. This has led to a multiplicity of special terms, e.g. 'critical thinking', that are introduced to provide more specifiable contexts delimiting some specific characteristics or appearances a psychologist is attempting to study[20]. Terms like 'critical thinking' therefore have to be regarded as *one* word, critical-thinking, with the root idea, "thinking," left as an undefined primitive lodged within it. This being so, what did Dewey and Bode mean by the word "thinking"?

First, it is important to note that Dewey did *not* define thinking-in-general. Rather, he set out pragmatic descriptions of exhibitions for a special case that he named *reflective thinking*:

> [Reflective thinking], for the purposes of this inquiry, is defined accordingly as *that operation in which present facts suggest other facts (or truths) in such a way as to induce belief in the latter upon the ground or warrant of the former*. [Dewey (1910), pg. 8]

He then went on to describe the idea of a "complete reflective thought" in terms of five particular phases:

1. experiencing uncertainty or hesitation by encountering a problem that blocks ongoing activity;
2. locating and defining the problem in order to direct inquiry toward its solution;
3. conducting investigation and research into the problem to gather the evidence needed to solve it;
4. mentally constructing hypotheses that suggest actions that might resolve the problem and considering the consequences of taking such actions; and
5. selecting and testing the hypothesis most likely to bring about the desired consequences.

This is clearly not a description of a mental process of thinking but it is a prescription for an abstract scheme of reasoning Dewey holds to be a proper Object for the education of a learner. This Object mathematically comes under the heading of intellect education.

It is not uncommon for educologists to regard Dewey's *How We Think* as a psychological theory or even as an original, if only partial, theory of mind. It is neither. Dewey did not develop a new theory of mind and, as chapter 2 of *How We Think* clearly shows, he worked from a meta-physic of mind that had been popular for centuries and did not depart in any significant way from the ontology-centered theory in Aristotle's *On Psyche* [Aristotle (*c*. 335-322 BC a)][21].

Bode closely follows Dewey but compresses Dewey's five phases into four. Bode tells us,

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[19] learning by memorization. Despite Bode's expressed optimism, the "memoriter sentiment" is not nearly as dead and buried in instructional education today as he implies here. It is still a canker in education.
[20] For example, 'critical thinking' denotes "a cognitive strategy consisting largely of continual checking and testing of possible solutions to guide one's work" [Reber & Reber (20010].
[21] Aristotle's title, *Περι Ψυχης*, has been traditionally translated as both *De Anima* and *On the Soul*.

> We may, therefore, distinguish four fundamental traits or phases of the thinking process, viz.,
>
> Problem,
> Suggestion,
> Scrutiny and Explanation,
> Prediction and Verification.
>
> It is necessary to add a warning at once that this analysis must not be taken too rigidly or without allowance for complexities. [Bode (1922), pp. 112-113]

Dewey wrapped a great many words around his description, but when all is said and done this concise description Bode provides is the operational description of what Dewey and Bode *used* the term "reflective thinking" (abbreviated to "thinking") to mean.

The Critical real-explanation of thinking is: *thinking is cognition through concepts*. There is a great deal contained in this concise statement and understanding of these details must be left to a study of mental physics [Wells (2009)] and the Critical Philosophy [Wells (2006)]. The key point that concerns us here is that thinking is a complex process co-involving sensible apprehension and the processes of reflective and determining judgment. *Cognition* is an act of conscious objective representation. The process of thinking is regulated by the process of Reason by means of judgmentation in reasoning. A specific act of thinking culminates in a *meaning implication*. Bode's description above is just one specific example of a high-level and very abstract *scheme* for arriving at meaning implications. As such, it is inadequate for deducing instructional functions of pedagogy although it is a great improvement over the so-called "five formal steps" of Herbartian pseudo-psychology that were current in Dewey's and Bode's early days[22].

The simpler acts of cognition in thinking can achieve understanding merely through the local free play of sensibility, reflective judgment, and determining judgment. These are sufficient for initial conceptualizations. Intelligence-building, in contrast, requires *extensions* of meanings understood by the Object-concepts. This, in its turn, brings into play the processes of practical Reason and ratio-expression through pure speculative Reason. It is at this point where practical scheme-building schemes come into the picture. Dewey-Bode did recognize the import meanings carry for instruction even though the doctrine did not quite give it the central import it actually holds in good pedagogy. Bode wrote,

> The outstanding characteristic of the behavior of conscious beings is that fact that past experience is utilized by them for the sake of making new adjustments. As a result of certain things happening, things are invested with meanings that they did not have before. We learn from experience that clouds mean rain, that quinine will cure fever, that eggs and crockery are fragile; and we vary our behavior accordingly. The change in behavior comes about because the objects concerned have undergone a certain transformation. They have become signs or symbols of consequences. To say that a thing has acquired meaning is to say that it now points to some further thing . . . and in proportion as things can be so used they become instrumentalities for our purposes. [*ibid*., pg. 105]

What Bode (and, earlier, Dewey) writes here is congruent with the doctrine of mental physics. Furthermore, what he says of 'meanings' is also empirically supported by psychological findings reported by Piaget and Garcia (1987). The teacher's problem is the problem of finding how to provide stimulations for the learner such that he effects the 'transformations' Bode speaks of.

Here the Dewey-Bode doctrine's misfocus upon "reflective thinking" at the expense of a focus on intelligence-building introduces serious shortfalls in its outcomes. Dewey (1910) undertakes

[22] Bode very roundly hauled some important defects in the Herbartian method into the light in Bode (1922).

only a treatment of logical reasoning modeled upon his understanding of how a physical-natural scientist proceeds in his investigations. While this is training in 'critical thinking' skills, it suffers from the weakness that all logical ratiocination begins from a basis of presuppositions that comprise the material premises of logico-mathematical deduction. This means that the reasoner's system of metaphysics, which he uses to establish these material premises, must necessarily come under examination for its objective validity. Correct yet patently absurd logical inferences follow from absurd or objectively invalid material premises, which is why formal logic doctrine declares that it is a doctrine of 'truth-values' rather than a doctrine of truth. Lewis Carroll's writings delight in expressing this fact by lampooning divers absurdities that, from the viewpoint of formal logic, are perfectly correct deductions. I suspect that Carroll's stories could be made to serve as a very effective vehicle for introducing young children to metaphysics and logic. Dewey-Bode does not provide for an education in metaphysics and, by this omission, indirectly and incorrectly imputes to it a lack of practical importance. It likewise does not provide for training in formal logic.

Any doctrine holding that proper thinking not only can but must exclude affectivity as a factor in reasoning is an incorrect doctrine. Dewey-Bode does not exclude the affectivity factor but it also does not correctly understand it. In Dewey's day emotion psychology was in its nascent state. The principal theory existing at the time was the James-Lange theory of emotions, which has its valid points but falls far short of being an adequate treatment of the topic. Mental physics tells us that acts of affective judgment (in the process of reflective judgment) are the original source of Object-concepts and produce inferences of ideation, induction, and analogy in judgments of Relation by determining judgment [Wells (2009), pp. 210-213]. Deweyan functions that would fall under the heading of intelligence-building cannot succeed if these functions of education neglect to develop what has recently been termed "emotional intelligence" in the learner:

> Generally, we have described emotional intelligence as the ability to perceive and express emotions, to understand and use them, and to manage emotions so as to foster personal growth . . . More formally, however, we define emotional intelligence by the specific competencies it encompasses, including the ability to perceive, appraise, and express emotions accurately; the ability to access and generate feelings when they facilitate cognition; the ability to understand affect-laden information and make use of emotional knowledge; and the ability to regulate emotions to produce emotional and intellectual growth and well-being. [Salovey *et al*. (2000), pg. 506]

"Emotional intelligence" was not a term in anyone's dictionary in 1910 nor is that term entirely correct insofar as the mental physics of judgmentation operates. Nonetheless, Dewey did come to the edge of discovering the three general functions of intelligence-building in intellect education: the heuristics function; the non-frustrating failure function; and the planning function. I will say that he did appear to have some foresight of these functions even if the doctrine itself did not develop them to a point of practical application. Dewey's theorizing illustrates by example a very old *dictum* of natural science first stated by Aristotle:

> In all sciences that are concerned with principles or causes or elements, it is acquaintance with these that constitutes knowledge or understanding. For we conceive ourselves to know about a thing when we are acquainted with its ultimate causes and first principles, and have got down to its elements. Obviously, then, in the study of nature too, our first object must be to establish principles.
>
> Now the path of investigation must lie from what is more immediately cognizable and clear to us to what is clearer and more intimately cognizable in its own nature; for it is not the same thing to be directly accessible to our cognition and to be intrinsically intelligible. Hence, in advancing to that which is intrinsically more luminous and by its nature accessible to deeper knowledge, we must start from what is more immediately within our cognition, though in its own nature less fully accessible to understanding. [Aristotle (335-

322 BC b), 184[a]10-184[a]25]

Dewey's theorizing provided a first look at the surface of intelligence-building. He wrote,

> No argument is needed to point out that the educator is concerned with the logical in its practical and vital sense. Argument is perhaps needed to show that the *intellectual . . . end of education is entirely and only the logical in this sense; namely, the formation of careful, alert, and thorough habits of thinking*. [Dewey (1910), pg. 45]

In making this statement, Dewey foresees a scientific finding that was established firmly decades later by the work of Piaget *et al*, namely, that the growth of intelligence in human beings is stage-wise with the later stages being built upon habits developed in the prior stages. Dewey did not foresee in detail what Piaget and his coworkers would later call "the logic of meanings" [Piaget and Garcia (1987)], but he did lay his fingers on what can be called the soul of their findings:

> In truth, the mind at every stage of development has its own logic. The error of the notion that, by appeal to spontaneous tendencies and by multiplication of materials, we may completely dismiss logical considerations lies in overlooking how large a part curiosity, inference, experimenting, and testing already play in the pupil's life. Therefore it under-estimates the *intellectual* factor in the more spontaneous play and work of individuals – the factor that alone is truly educative. Any teacher who is alive to the modes of thought naturally operative in the experience of the normal child . . . will have no difficulty in seeing that the real problem of intellectual education is the transformation of natural powers into expert, tested powers: the transformation of more or less casual curiosity and sporadic suggestion into attitudes of alert, cautious, and thorough inquiry. . . . Discipline of mind is thus, in truth, a result rather than a cause. . . . Discipline represents original native endowment turned, through gradual exercise, into effective power. So far as a mind is disciplined, control of method in a given subject has been attained so that the mind is able to manage itself independently without external tutelage. The aim of modern education is precisely to develop intelligence of this independent and effective type [Dewey (1910), pp. 48-49]

Dewey's phrase, "native endowment turned, through gradual exercise, into effect power," when coupled with his earlier comment about the formation of habits of thinking, foreshadows the heuristics function of intellect education [Wells (2012a), chap. 7]. The axiom here is the **axiom of expedient schemes**: ***for every manifold of Desires presented by reflective judgment there is some practical scheme in the manifold of practical schemes of motoregulatory expression associated with it by which the condition of equilibrium can be satisfied***. This axiom is an axiom of commission – that is, it covers the Quality of what the person will do in order to satisfy his Desires. Educationally, it is the axiom that understands the functions of heuristics (that is, scheme-building schemes) in educational Self-development (heuristics of social custom in the social dimension of the learner, and of technique in the personal dimension of the learner). In the social dimension of the learner, the **heuristics of social custom function** is ***provision in the curriculum of exercises through which the learner practices developing his ability to construct heuristic social procedures applied to his interactions with other people***. It is, I trust, more or less obvious that *public* education is tasked with controlling the environment of learning such that the habits of social interactions and customs the learners develop are those which are congruent with the moral customs of the larger Society within which the learners live and to which the education institution belongs. The PEM reforms of the 20th century failed to institute this function and were distracted from the American social contract by the abstract illusion of the Platonic Society both Dewey and Bode promoted elsewhere in the doctrine. The consequence of this was and continues to be unintentional development of *outlaw* social maxims – i.e., maxims of thinking and behavior antagonistic to civil rights under the American social contract.

The second general function of intellect education is the non-frustrating failure function. In the social dimension of the learner this is the **non-frustrating social failure function: *inclusion in the curriculum of non-frustrating failure experiences involving other people who help the learner to find a solution to a problem***. The metaphysical axiom from which the non-frustrating failure functions are derived is the **axiom of choice: *chosen actions are non-contrary to the actor's value system*** [Wells (2012a), pp. 214-217]. To properly understand this function and its axiomatic basis one must bear in mind two things.

First, the Critical real-explanation of ***failure*** is: (a) from the judicial Standpoint, failure is the perception of lack of congruence between the appearance of a phenomenal object and the appearance of an Object of anticipation; and (b) from the practical Standpoint, failure is perception of lack of congruence between an Object of anticipation and the appearance of an outcome of an action intended to make the anticipated object actual. It is important to clearly distinguish the idea of 'failure' from the ideas of 'deficiency' or 'defect.' Of the eight definitions of 'failure' given in Webster's Unabridged Dictionary (1962), only one of these derives from the Latin verb *fallere:* to belie the expectation of, to disappoint. This is the correct context for the word 'failure.' The other definitions found in Webster's descend from the Latin word *defectio*, which means 'a process of falling short, deficiency.' It is this context that gives birth to negative connotations one often finds being attributed to the idea of 'failure.' A failure is not a defect. Quite to the contrary – and this leads to the second point – *experiences of failures are necessary for intelligence-building*.

The value system of a person subsists in his manifold of practical rules. This is the manifold in which the person builds for himself his repertoire of practical schemes. Objects he consciously associates with *feelings* of value are those for which the application of schemes produces a sense of satisfaction in the outcomes of his actions. Ultimately, the adjudication of *noumenal* satisfaction is the jurisdiction of the process of practical judgment, but the phenomenal *feeling* of satisfaction is judged by the process of aesthetical reflective judgment. The former precedes and has precedence over the latter because the practical judgment validates the action under the master regulation of pure practical Reason – namely, achievement of a condition of equilibrium – and the formula of this master regulation is called *the categorical imperative of pure practical Reason*. It is the supreme *natural* law regulating *all* non-autonomic human behavior.

At root all objective knowledge begins with practical knowledge subsisting in the structure of the manifold of practical rules in practical Reason. The intelligence of a person is extended if and only if there is accommodation of this manifold through which a disequilibration is made to give way to a condition of equilibrium. But the structure of the manifold of rules is not easily changed. Every rule in the practical manifold earned its *Existenz* through the hard trial of experience, and the manifold represents what can properly be called the supreme legislation of Reason. Change in the manifold can occur only if new experience gainsays success in the application of existing rule structure. *But this gainsaying is precisely the experience of a failure of the existing structure*.

Regulation by practical Reason is conservative. Practical rules never undergo accommodation until the person has exhausted all his practical possibilities for restoring his state of equilibrium within his existing rule structure. This is a *theorem* of mental physics for which we have direct empirical support from observations and experiments in developmental psychology. Perhaps the clearest empirical examples are found in what Piaget called the fourth stage of sensorimotor intelligence [Piaget (1952), pp. 210-262]. An infant at this developmental stage, when confronted with a novel object he cannot immediately assimilate in one of his schemes, will run through his repertoire of available schemes *seeking accommodations by which the object can be assimilated* in *each* scheme. Prior to this, he merely seeks *any* workable accommodation. Piaget tells us,

> [W]e can ask what the child will do when confronted by objects or phenomena which are entirely new to him. Such objects could not set in motion . . . the application of familiar

> means to a new end . . . precisely because the child, when confronted by such objects, cannot set himself any definite goal except "understanding" them. . . . We now encounter a very significant behavior pattern which, more than any other, will make us grasp the importance of assimilation through mobile schemes. The child will try, by virtue of a sort of "generalizing assimilation," to make the new object enter into each of his habitual schemes, one by one. In other words, the child will try to "understand" the nature of the new object, and as comprehension is still confused with sensorimotor or practical assimilation, he will limit himself to applying each of his schemes to the object. But in doing this he will not, as in the third stage, set the scheme as the goal and the object as the means. On the contrary, the scheme will be, so to speak, the instrument of comprehension, whereas the object will remain the goal or intention of this comprehension. . . . He will define the object by its use. [Piaget (1952), pg. 253]

Figure 4 and its caption provide a pre-Stage IV illustration. In this case, the child did run through his repertoire of schemes, making only the most minor accommodations to some of them (e.g. his grasping scheme for his fingers and his sucking scheme for his mouth). His behaviors and adaptations cohere with a mathematical principle neural network theorists have known since the early 1960s, namely what is called the **minimum disturbance principle**. This principle states that stable learning in an adaptive system (the baby in this case) occurs through accommodations that make the least change possible in the system's structure. This empirical law of adaptive systems is congruent with the above-noted theorem of mental physics.

The very modest extensions in his practical rule structure implicated by the actions of the baby in figure 4 were provoked by very minor failures he initially encountered in applying his schemes to the doll – initial difficulty in getting a grip on the doll, initially difficulty in adjusting his mouth and lips to fit the doll's head, etc. All these adjustments are merely practical and it should not be assumed that the baby understood "the doll" outside of the practicing of his schemes (this child is pre-stage IV). Stage IV behaviors merely provide the clearest examples of the principle that the practical rule structure is made, by the learner, to be as robust as he is able to accomplish and that changes to it are very conservative – which is another way of explaining what the minimum disturbance principle is saying. The MDP is not unique to any particular stage of development; it is, rather, empirically characteristic of learning behavior in general. Although I have not gathered enough data from observation of college students to go further than hypothetical speculation at this time, I suspect that Piaget's stages are probably re-staged in more complex forms in adult life. I base this on my observations of how college students appear to approach new subject-matters.

Figure 4: Infant during his first encounter with a human-like doll. Notice the expression on the baby's face. Facial expressions of this sort are commonly attributed by psychologists to what are usually called feelings of amazement and wonder (both of which are indicative of cognitive disequilibrium). The infant's behavior immediately after this picture consisted of actions in which he grasped the doll in his hands, brought it to his mouth to suck on its head, and other simple sensorimotor schemes he had already developed in his previous experiences with objects. Except for simple accommodations of his grasping and sucking schemes, there was no evidence in this observation of major accommodation of his rule structure.

Two things are very important if intelligence-building is to take place: (a) there must be an initial failure experience, i.e., that the learner's first effort must be thwarted in some fashion; and (b) soon thereafter the learner must find some accommodation of some scheme that does bring about achievement of an equilibrating satisfaction. The first is necessary because without it the learner has no practical motivation to accommodate the structure of his practical rules. There is an accommodation in his manifold of *concepts*, but the manifold of concepts is concerned with the representation of objective knowledge and in fact is not *immediately* connected with *intelligence*. The second is necessary because an adequately stable and robust accommodation in the structure of practical rules must occur or else no new intellectual capability is produced.

This is what is meant by "non-frustrating" failure. If repeated attempts at accommodation all meet with failure, the behavioral result is what Piaget called "cycle rupture" – the learner simply gives up. This is an act of type-α compensation behavior and it does not produce any extension of intelligence. It is a behavior indicative of the emotional condition psychologists call "frustration."

Here we have the root cause of why simple memorization and rote recitation fails to produce any extension of intelligence. Schemes of memorization bring about changes in the manifold of concepts but do not provoke changes in the manifold of rules. Rote recitation merely substitutes Objects as *materia in qua* for the existing recital scheme with no accommodation to either the manifold of rules or the manifold of concepts. In both cases there is no intelligence-building action undertaken by the learner. Establishment of schemes for extending schemes – intelligence-building schemes – can be tested. In examinations that I administered to engineering students, I always carefully designed into the examination some questions or problems that departed, usually ever so slightly, from the examples the students had previously been exposed to in their reading and homework assignments. I was fair about this: a student could not "blow" the whole exam if he failed to successfully deal with this sort of question. But students who were able during the exam to successfully work out a correct answer thereby demonstrated that part of their learning had included schemes-for-accommodating-schemes – thus demonstrating intelligence-building.[23]

Dewey was fully aware of the key importance of non-frustrating failure experiences although he did not use that term in his writings. He did say,

> When discipline is conceived in intellectual terms (as the habitual power of effective mental attack), it is identified with freedom in its true sense. For freedom of mind means mental power capable of independent exercise, emancipated from the leading strings of others, not mere uninhibited external operation. . . . Direct immediate discharge or expression of an impulsive tendency is fatal to [reflective] thinking. Only when the impulse is thrown back upon itself does reflection ensue. It is, indeed, a stupid error to suppose that arbitrary tasks must be imposed from without in order to furnish the factor of perplexity and difficulty which is the necessary cue to thought. Every vital activity of any depth and range inevitably meets obstacles in the course of its effort to realize itself – a fact that renders a search for artificial or external problems quite superfluous. The difficulties that present themselves within the development of an experience are, however, to be cherished by the educator, not minimized, for they are the natural stimuli to reflective inquiry. Freedom does not consist in keeping up uninterrupted and unimpeded external activity, but in something achieved through conquering, by personal reflection, a way out of the difficulties that prevent an immediate overflow and a spontaneous success. [Dewey (1910), pg. 50]

What he describes here is the essence of the function of non-frustrating failure. Dewey's only minor error here is his focus on 'reflective thinking' rather than construction of practical maxims.

[23] I would like to acknowledge the teacher who taught *me* this lesson when I was a college student. His name is Dr. Benjamin Cooper and at the time he was a physics professor at Iowa State University.

It is a somewhat curious misfocus because Dewey seems to have been aware to at least some degree that underlying practical maxims and habits play a key role in meanings. He tells us,

> The method that emphasizes the psychological and natural, but yet fails to see what an important part of the natural tendencies is constituted at every period of growth by curiosity, inference, and the desire to test, cannot secure a *natural development*. In natural growth each successive stage of activity prepares unconsciously, but thoroughly, the conditions for the manifestation of the next stage . . . There is no ground for *assuming* that "thinking" is a special, isolated natural tendency that will bloom inevitably in due season just because various sense and motor activities have been freely manifested before; or because observation, memory, imagination, and manual skill have been previously exercised without thought. Only when thinking is constantly employed in using the senses and muscles for guidance and application of observations and movements is the way prepared for subsequent higher types of thinking. [*ibid*., pg. 51]

Dewey is correct here up to a point. The pertinent issue he leaves unstated is: How is this exercise of "thinking" accompanying actions to be realized? The answer is: through the learner's ratio-expression and judgmentation triggered by experiences of non-frustrating failure events (figure 3). This is better called "reasoning" instead of "thinking." Dewey's theorizing must be regarded as speculation because he does not cite empirical evidence for his statements. Piaget, however, later made an experimental observation that stands as a vivid illustration of this point [Piaget (1952), pp. 337-338, observation 180] and, when accompanied by his numerous other experimental observations, Piaget put Dewey's speculation on a soundly empirical scientific footing[24].

Dewey also comes to the edge of explicitly stating the third function of intellect education, the planning function. He presents this in a sort of either-or format and, while he does not explicitly use the word "planning," he does grasp the essence of the planning function:

> At present, the notion is current that childhood is almost entirely unreflective – a period of mere sensory, motor, and memory development, while adolescence suddenly brings the manifestation of thought and reason.
>
> Adolescence is not, however, a synonym for magic. Doubtless youth should bring with it an enlargement of the horizon of childhood, a susceptibility to larger concerns and issues, a more generous and a more general standpoint toward nature and social life. This development affords an opportunity for thinking of a more comprehensive and abstract type than [it] has previously obtained. But [reflective] thinking itself remains just what it has been all the time: a matter of following up and testing conclusions suggested by the facts and events of life. . . . Only by making the most of the thought-factor, already active in the experiences of childhood, is there any promise or warrant for the emergence of superior reflective power at adolescence or at any later period.
>
> In any case, *positive habits are being formed:* if not habits of careful looking into things, then habits of hasty, heedless, impatient glancing over the surface; if not habits of consecutively following up the suggestions that occur, then habits of haphazard, grasshopper-like guessing; if not habits of suspending judgment till inferences have been

[24] Until recently it was not uncommon for students studying to become teachers to receive at least some exposure to Piaget's work. On the whole this exposure has been inadequate. The students have studied over-brief synopses of Piaget's findings – synopses that are often inaccurate – but no in-depth study of the body of Piaget's work. American psychology departments have been of little assistance here because Piaget has had an unfriendly reception in the United States by the community of psychologists, who by and large have preferred their own pet mini-theories and hodgepodge of pseudo-metaphysical prejudices. Over the past few years the latest fad in teacher education has swung toward preference of the theories of Vygotsky. While Vygotsky's actual experimental studies have value, the Hegelian underpinning of his speculations makes the rational part of his theory objectively invalid and unsuitable for a science of education.

> tested by the examination of evidence, then habits of credulity alternating with flippant incredulity, belief or unbelief being based, in either case, upon whim, emotion, or accidental circumstances. The only way to achieve traits of carefulness, thoroughness, and continuity . . . is by exercising these traits from the beginning, and by seeing to it that conditions call for their exercise. [Dewey (1910), pp. 51-52]

The planning functions of intellect education (civil planning function in the Society dimension of the learner and civics planning function in the personal dimension of the learner) are deduced from the metaphysical **axiom of variations:** ***learning is based on discoveries of compensations for disturbance factors, these compensations not involving type-α compensation behavior but, on the contrary, those which negate disturbances through a series of scheme adaptations that convert disturbance factors into mere variations dealt with by modifications or variations of the original action scheme*** [Wells (2012a), pp. 221-227]. These new types of compensations are called type-β compensations. Adaptations made by means of type-β compensation behavior begin with specific procedural *schemes* and generalize them into the form of a procedural *schema*, as illustrated by figure 5. Within the schema, factors now treated as variations are inserted as *matter* of the action in "placeholders" reserved for them within the generalized *form* of the scheme. These matters, which are used as Objects of the actions, are structured and understood in the manifold of concepts and conveyed to actual expression by acts of the process of reflective judgment in the representation of the manifold of Desires.

Actions taken by the individual which concern only himself but are congruent with the social contract of his Society are called ***civic*** actions. Those which affect other citizens and which are congruent with the Society's social contract are called ***civil*** actions. This distinction between actions affecting just the individual vs. those affecting the wider Community is the distinguishing mark between the technical adjectives 'civic' and 'civil' and pertain to *civic liberty* vs. *civil rights*.

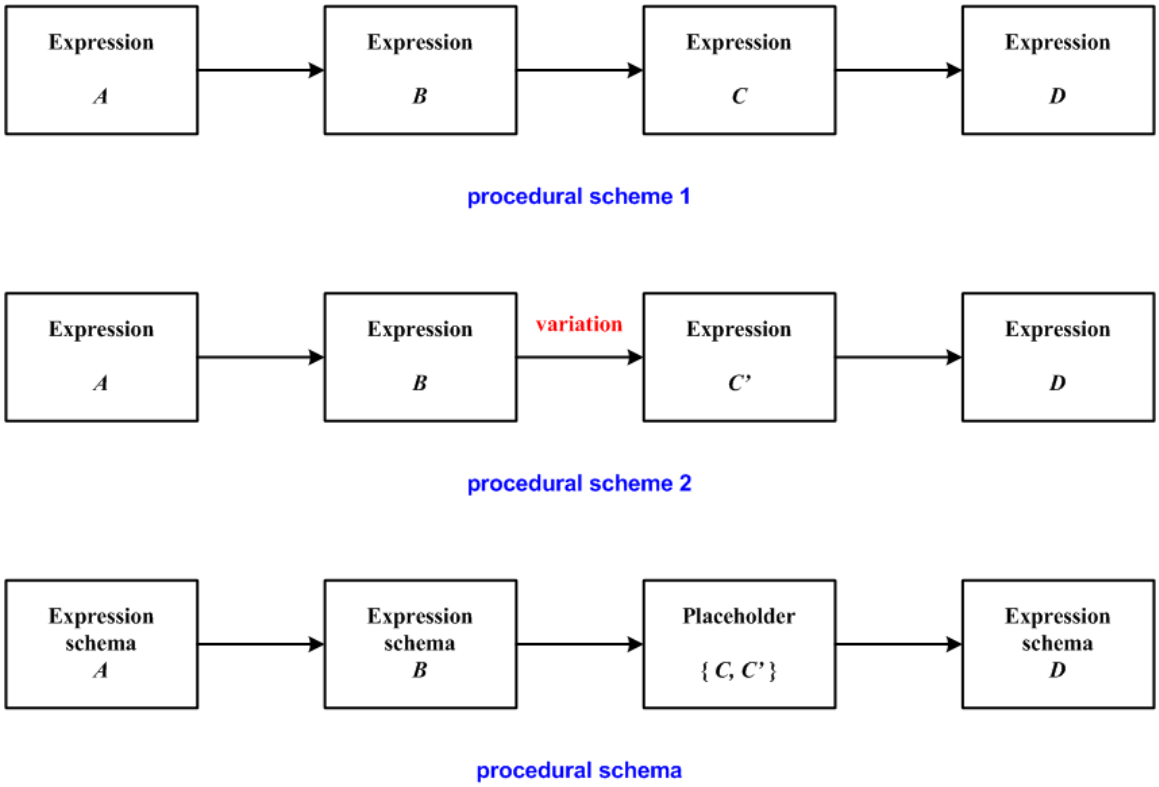

Figure 5: Illustrations of procedural schemes and a procedural schema.

Dewey emphasized critical thinking in analytical terms but the role of *public* instructional education is not explicitly that of producing scientists but, rather, of producing good *citizens*. The latter does in fact require critical thinking, along the lines described by Dewey above, but across a much broader horizon than is typically addressed by a scientist's, businessman's, &etc. Objects of thinking. Put another way, the planning functions address an overarching sweep of applications, more so than might seem to be implied by Dewey's wording. Hutchins expressed this rather well:

> The aim of liberal education is human excellence, both private and public (for man is a political animal). Its object is the excellence of man as man and man as citizen. It regards man as an end, not as a means; and it regards the ends of life, and not the means to it. For this reason it is the education of free men. Other types of education or training treat men as means to some end, or are at best concerned with the means of life, with earning a living, and not with its ends[25].
>
> The substance of liberal education appears to consist in the recognition of basic problems, in knowledge of distinctions and interrelations in subject matter, and in the comprehension of ideas.
>
> Liberal education seeks to clarify the basic problems and to understand the way in which one problem bears upon another. It strives for a grasp of methods by which solutions can be reached and the formulation of standards for testing solutions proposed. The liberally educated man . . . understands that the one problem cannot be solved by the same method as the other, and that the test that he will have to bring to bear upon solutions proposed differs from one problem to the other.
>
> The liberally educated man understands, by understanding the distinctions and interrelations of the basic fields of subject matter, the differences and distinctions between poetry and history, science and philosophy, theoretical and practical science; he understands that the same methods cannot be applied in all these fields; he knows the methods appropriate to each. . . .
>
> The liberally educated man has a mind that can operate well in all fields. He may be a specialist in one field. But he can understand anything important that is said in any field and can see and use the light that it sheds upon his own. The liberally educated man is at home in the world of ideas and in the world of practical affairs, too, because he understands the relation between the two. [Hutchins (1952), pp. 3-4]

Contrary to vulgar political party slogans, liberal education is not "the education of (so-called) liberals" but, rather, education aimed at the *uses* a citizen makes of his civic and civil liberties of action and his understanding of how he must voluntarily *limit* the expression of his *natural* liberties of action when these actions are contrary to the social contract of his Society. The adjective "liberal" derives from the Latin word *liberalis*, "of or pertaining to a free man." Its modern day usages in political rhetoric are nothing but deceptive, *uncivil* political propaganda.

The **civil planning function** of intellect education is ***inclusion in the curriculum of exercises that stimulate the learner's development of procedural schemata applied to social situations***. Dewey's call for an instructional education that leads to the learner's formation of proper *habits* of

[25] Hutchins, like Dewey, did not have the benefit of a correct understanding of Critical metaphysics. The logical division he draws here can be taken, if one wishes, as a division between a "public good" and a "private good" of education. However, the social contract requires as much respect and attention be paid to the learner as an individual as to the learner-as-member-of-Society, and so the slicing up of education in terms of "private good" and "public good" is not only artificial but non-valid. In the Critical 2LAR of public instructional education, the individually specialized functions fall under *tangible* education; Hutchins' 'liberal education' falls under *intellect* education. However, *both* are, simultaneously, public *and* private goods. The *terms* of the social compact mandate for public good, its *conditions* for private good.

'critical thinking' lacks only a clearer specification for how teaching conducts the learner to this achievement. That specification is what the planning functions of intellect education pertain to.

VII. Segue to Part III of the Review

The functions of corporal and intellect education jointly compose the metaphysical *matter* of public instructional education. Here in Part II I have attempted to set out, for the social dimension of the learner, valuable contributions of the Dewey-Bode doctrine, to note major errors in the doctrine, and to point out key sources of these errors. Next the same must be done for the metaphysical functions of *form*, i.e., the functions of tangible and persuasion education. Part III takes up this part of the review for the social dimension of the learner.

VIII. References

Aristotle (4th century BC), *Nicomachean Ethics*. Various English translations exist. For a book that contains the Greek text refer to Cambridge, MA: Harvard University Press (Loeb Classical Library), 1934.

Aristotle (*c*. 335-322 BC a), Περι Ψυχης (*On Psyche*; also translated as *On the Soul* and *De Anima*), Cambridge, MA: Loeb Classical Library, 1957.

Aristotle (*c*. 335-322 BC b), *Physics*, in two volumes, Cambridge, MA: Loeb Classical Library, 1957.

Bacon, Francis (1620), *Novum Organum*, NY: P.F. Collier and Son, 1901.

Bode, Boyd H. (1922), *Fundamentals of Education*, NY: The Macmillan Co.

Bode, Boyd H. (1927), *Modern Educational Theories*, NY: The Macmillan Co.

Cubberley, Ellwood Patterson (1919), *Public Education in the United States: A Study and Interpretation of American Educational History*, Boston, MA: Houghton Mifflin Co.

Dewey, John (1910), *How We Think*, NY: Barnes & Noble, 2005.

Dewey, John (1915), *The School and Society*, 2nd ed., in *The School and Society and The Child and the Curriculum*, pp. 5-65, Digireads.com Publishing, 2010.

Dewey, John (1916), *Democracy and Education*, NY: Barnes and Noble Books, 2005.

Farrand, Max (1911), *The Records of the Federal Convention of 1787*, revised edition in four volumes, New Haven, CT: Yale University Press, 1966.

Feynman, Richard P. (1965), *The Character of Physical Law*, Cambridge, MA: The MIT Press, 21st printing, 1994.

Hutchins, Robert M. (1952), *The Great Conversation*, Chicago, IL: Encyclopædia Britannica, Inc.

Kant, Immanuel (1783), *Prolegomena zu einer jeden künftigen Metaphysik, die als Wissenschaft wird auftreten können*, in *Kant's gesammelte Schriften, Band IV*, pp. 253-383, Berlin: Druck und Verlag von Georg Reimer, 1911.

Kant, Immanuel (*c*. 1784-85), *Moralphilosophie Collins*, in *Kant's gesammelte Schriften*, *Band XXVII*, pp. 237-473, Berlin: Walter de Gruyter & Co., 1974.

Kant, Immanuel (1790), *Kritik der Urtheilskraft*, in *Kant's gesammelte Schriften, Band V*, pp. 165-485, Berlin: Druck und Verlag von Georg Reimer, 1913.

Kuhn, Thomas (1970), *The Structure of Scientific Revolutions*, 2nd ed., Chicago, IL: The University of Chicago Press.

Lakatos, Imre (1974), *Proofs and Refutations*, Cambridge, UK: Cambridge University Press,

1981.

Leibniz, Gottfried Wilhelm (1714), *Monadology*, in *G.W. Leibniz Philosophical Texts*, R.S. Woolhouse and Richard Franks (eds. & trs.), pp. 268-281, Oxford, UK: Oxford University Press, 1998.

Mill, John Stuart (1859), *On Liberty*, Mineola, NY: Dover Publications, 2002.

Mill, John Stuart (1861), *Representative Government*, Whitefish, MT: Kessinger Publications reprint. No date given.

Palmquist, Stephen R. (2000), *Kant's Critical Religion*, Aldershot, England: Ashgate Publishing Ltd.

Pestalozzi, Johann Heinrich (1820), *How Gertrude Teaches Her Children*, 5th ed., Lucy E. Holland and Francis C. Turner (translators), London: Allen & Unwin Ltd., 1915.

Piaget, Jean (1932), *The Moral Judgment of the Child*, NY: The Free Press, 1965.

Piaget, Jean (1952), *The Origins of Intelligence in Children*, Madison, CT: International Universities Press, 1974.

Piaget, Jean (1974), *The Grasp of Consciousness*, Cambridge, MA: Harvard University Press, 1976.

Piaget, Jean (1975), *The Equilibration of Cognitive Structures: The Central Problem of Intellectual Development*, Terrance Brown and Kishore Julian Thampy (tr.), Chicago, IL: The University of Chicago Press, 1985.

Piaget, Jean and Rolando Garcia (1987), *Toward A Logic of Meanings*, Hillsdale, NJ: Lawrence Erlbaum Associates, 1991.

Plato (*c*. 4th century BC), Πολιτεία (commonly mistranslated as *Republic*), in two volumes, Cambridge, MA: Harvard University Press, 1937.

Ravitch, Diane (2000), *Left Back: A Century of Failed School Reforms*, NY: Simon & Schuster.

Reber, Arthur S. and Emily S. Reber (2001), *Dictionary of Psychology*, 3rd ed., London: Penguin Books.

Salovey, Peter, Brian T. Bedell, Jerusha B. Detweiler, and John D. Mayer (2000), "Current directions in emotional intelligence research," in *Handbook of Emotions*, 2nd ed., Michael Lewis and Jeanette M. Haviland-Jones (eds.), chap. 32, pp. 504-520, NY: The Guilford Press.

Santayana, George (1896), *The Sense of Beauty*, NY: Dover Publications, 1955.

Thoreau, Henry David (1849), *Civil Disobedience*, in *Civil Disobedience and Other Essays*, NY: Dover Publications, 1993.

Tocqueville, Alexis de (1836, 1840), *Democracy in America*, parts I (1836) and II (1840), NY: Everyman's Library, 1994.

Wells, Richard B. (2006), *The Critical Philosophy and the Phenomenon of Mind*, available free of charge from the author's web site.

Wells, Richard B. (2009), *The Principles of Mental Physics*, available free of charge from the author's web site. (see footnote 1).

Wells, Richard B. (2011), "On the derivation of an applied metaphysic," available free of charge from the author's web site. (see footnote 1).

Wells, Richard B. (2012a), *Education and Society*, vol. I of *The Idea of Public Education*,

available free of charge from the author's web site. (see footnote 1).

Wells, Richard B. (2012b), *The Idea of the Social Contract*, available free of charge from the author's web site. (see footnote 1).

Wells, Richard B. (2013a), *Wells Glossary of Critical Philosophy and Mental Physics,* 3rd ed., available free of charge from the author's web site (see footnote 1).

Wells, Richard B. (2013b), "Critical review of the Dewey-Bode applied philosophy of education, part I: *Schooling and Society*," available free of charge from the author's web site. (see footnote 1).

Wells, Richard B. (2013c), *Critique of the American Institution of Education*, vol. II of *The Idea of Public Education*, available free of charge from the author's web site (see footnote 1).