

## **Articles**

### **The Founders of Industrial Arts in the US**

Patrick N. Foster

Although technology education in the United States may be regarded as having been founded in the early twentieth century as *industrial arts*, the historical roots of the field have been traced back much further. At the same time, it seems clear that the founding of industrial arts in the US was less an extension of any one of those roots than it was a philosophical convergence of them.

Perhaps the two educators who had the greatest influence on the genesis of what is now known as technology education were Lois Coffey Mossman (1877-1944) and Frederick Gordon Bonser (1875-1931), faculty members at Teachers College, Columbia University. This paper will argue that histories of the field have incorrectly overemphasized Bonser and ignored Mossman. The historical record strongly suggests that the contributions of Mossman and Bonser to the field of technology education should be viewed as collaborative.

Bonser has not been treated biographically in nearly a quarter-century; Mossman apparently never has been. This paper will attempt to provide brief, parallel biographies of Bonser and Mossman, at once synthesizing published and unpublished information about them and opening dialogue about conflicting source information.

This information is related to the degree to which Bonser and Mossman influenced the “social-industrial theory” of industrial arts, relative to the contributions of Russell, and to the nature of Mossman’s contribution to the founding of industrial arts.

#### **Context**

Histories of American industrial arts and technology education often begin between the stone age and ancient Sparta (e.g., Barlow, 1967; Hostetter, 1974; Snyder, 1992), then proceed to furnish a litany of educator-heroes, first European, eventually American. Many of these heroes are well-known in the history of education. Kirkwood (1994) identified Comenius, Rousseau, Pestalozzi, Froebel, Herbart, Sheldon, and Dewey (see p. 76-78) as having had influence

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on those recognized as founders of American industrial arts and technology education.

In many histories of industrial arts, the progression of the ideal of cultural industrial education, exemplified by the works of Basedow, Comenius, and others, is often presented simultaneously with the concurrent history of tool instruction and related historical figures such as Della Vos and Runkle (e.g., Anderson, 1926, p. 155; Nelson, 1981; etc.), sometimes promoting a false impression of a single movement.

In fact, at least three distinct conceptions of industrial education are often indiscriminately homogenized and presented as the “early history” of the field. One justified industrial education psychopedagogically, as a teaching method. Pestalozzi and Sheldon, for example, were advocates of “object teaching” (Mossman, 1924, p. 3).

Programs of tool instruction for children and young adults have also been included in the history of industrial arts (e.g., Barella & Wright, 1981) and technology education (e.g., Snyder, 1992). Manual-training programs of the late nineteenth century, such as those of Runkle, Woodward, and Adler, have been presented as direct descendants of those of object-teaching or cultural-industrial nature.<sup>1</sup> Whereas in practice, late twentieth-century industrial arts programs may have had “their roots in the manual training movement of the latter part of the nineteenth century” (Lindbeck, 1972, p. 27), statements such as “the first industrial arts programs in America were known as *manual training* classes” (Scobey, 1968, p. 4) point to the field’s confusion relative to its historical roots.

Finally, the history of *cultural industrial education*, of which modern American technology education is professedly based, has also been a implicit constituent of many histories of the field. The rationale for cultural industrial education was that children needed to learn about technologies of the home and of commercial industry to understand their increasingly technological world. According to Anderson (1926),

...this conception of industrial education is represented in a work by Professors F.G. Bonser and L.C. Mossman of Teachers College entitled *Industrial Arts for Elementary Schools*. ...In this recent move in the field of cultural industrial education history is repeating itself...[cultural industrial education] was advocated by Rabelais in the sixteenth, by Comenius in the seventeenth, and by Basedow in

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<sup>1</sup> Although there are undeniably cultural aspects to the curricula of Woodward (cf. Zuga, 1980, 1994; Lewis, 1994) and Adler, it should be considered that these programs were probably not representative of the times, and that both are usually regarded as having been based upon the “Russian system” of tool instruction displayed in the US in 1876 (see Barlow, 1967).

the eighteenth century (p. 223-224).<sup>2</sup>

Columbia University Teachers College faculty members Bonser and Mossman (1923) used the term “manual training” to identify the prevailing interpretation of industrial education in the 1920s. In *Industrial Arts for Elementary Schools* they listed “these prominent inadequacies in manual training:”

Want of relationship of the work to life...Failure to provide for the individuality of the child...Lack of motivation...[and] Placing the emphasis upon the product as the objective, rather than upon the growth of the child (p. 479).

Bonser and Mossman, along with Teachers College Dean James E. Russell, and many others never considered in histories of industrial arts, developed a comprehensive system of industrial education which, although never implemented on a large scale, has been the theoretical basis for technology education for most of the past seventy years.

### **Before their Paths Crossed**

Before they taught at Teachers College, both Bonser and Mossman were elementary schoolteachers. Mossman had some background in the industrial arts; Bonser almost certainly did not.

*Frederick Gordon Bonser.* Bonser’s upbringing and family background epitomize romantic notions of American “rugged individualism.” Aaron Bonser migrated to Illinois with his relatives in a covered wagon. Frederick, his first son, was born in a log cabin on June 14, 1875.

Despite his early education in the rigors of frontier life, Bonser was hardly a proponent of individualism in education. He recognized inherent strengths in collectivism among students. Later he and Mossman would write that in industrial arts, “there are definite values in group cooperation. Exchanges of ideas are profitable, and division of work in a problem of common interest results in the achievement of much more in both quantity and variety in a given time than one could accomplish alone” (Bonser and Mossman, 1923, p. 38).

Nonetheless, Bonser at times displayed “his father’s sturdy pioneering attitude toward life’s problems” (Bawden, 1950, p. 26). In response to “there being no high school near his home,” he went to live with an uncle 160 miles away, where he completed the full four years of high school in two years (Bawden,

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<sup>2</sup>Not all of these names are familiar to technology educators. For further discussions of Rabelais (1495-1553) and Basedow (1723-1790), see Graves (1910, 1914), Anderson (1926), and Bennett (1926).

1950, p. 27-28). Upon graduating in 1895, he immediately enrolled in the University of Illinois. But two years into the course of his bachelor's degree, he left to teach at a nearby rural school, and later at two schools in Washington (Phipps, 1935). He fought a serious illness for some time toward the end of the century, but returned to the university in 1899, and received a Bachelor of Science in psychology in 1901 and a master's degree the following year (Luetkemeyer and McPherson, 1975, p. 260).

*Lois Coffey Mossman.* Unfortunately, available biographic information on Mossman is limited to records, usually either difficult or impossible to obtain, of events in some cases a century old.<sup>3</sup> Her contemporaries are no longer living; anecdotal observations and quotations with which to enliven a recounting of her life do not seem to exist.

Anna Coffey, called "Lois" most or all of her life, was born October 13, 1877, to Adolphus and Susan Francis (Frances?) Coffey, in Newark, Indiana, a tiny village in Beech Creek Township. Her father was a minister, and the family appears to have moved from Newark within a few years of her birth. By her 18th birthday she had secured a teaching certificate and was teaching at a "country school" in Pottawotomie County, Kansas. Her certificate was listed as "grade 2."

The following school year, 1897-1898, she taught at the Wamego, Kansas, school, for \$40 per month. She then spent two years studying at the Kansas State Normal School in Emporia, where she was awarded an elementary diploma in 1900. A straight-A student whose best subject was spelling, Coffey apparently had no formal training in industrial arts.

She continued to teach in Kansas until 1902, when she was named principal of the Las Vegas, New Mexico, High School.

By then, Bonser had regained his health and was appointed professor of education at the State Normal School in Cheney, Washington (Mossman, 1931). After three years, he resigned this position to begin work on his doctorate at Columbia University in New York. Before he completed his first year there, he left to accept the position of professor of education and director of the training school at Western Illinois State Normal School in Macomb (Luetkemeyer & McPherson, 1975, p. 260).

About three years before Coffey and Bonser were both hired at Macomb, she enrolled in summer classes there. During the summer of 1903, she resigned her Las Vegas principalship to become an English teacher at the Macomb High School. During the following two summers she continued to study at Kansas State Normal School at Emporia, receiving a Latin diploma after completing her final course in June, 1905. In 1906 Coffey accepted the position of critic

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<sup>3</sup>Copies of records used here are in the possession of the author.

teacher at the Western Illinois State Normal School's training school. It was likely there that she first met Frederick Gordon Bonser, himself also new to the school. They would work together until Bonser's death twenty-six years later.

### **Bonser and Coffey at Macomb, 1906-1910**

Before Bonser met Lois Coffey, he had never published an article about elementary education, home economics, or industrial arts (see Bonser, 1932). But despite the fact that Bonser's most commonly cited work was written with Mossman, Bonser has received virtually all of the attention for the ideas in the book.

Their work together began at Western Illinois State Normal School in Macomb, Illinois, in 1906. Lois Coffey was one of the most demanding teachers at the school—but at the same time a very respected one. “Thou shall not cut classes,” students warned in the school's 1910 yearbook, “for thou wilt be caught by Coffey” (Western Illinois State Normal School, 1910, p. 66).

At Macomb, Coffey repeatedly emphasized that the integration of school subjects could be achieved through practical classroom activities. For example, in illustrating this belief to prospective teachers, she discussed the use of poems in a lesson in agriculture. She then went on to meaningfully connect the study with arithmetic, geometry, reading, art, geography, nature study, physics, and botany (Coffey, 1909).

In addition to aligning the school's practical work with the traditional curriculum, Coffey emphasized the need for students to design their own projects. When learning about clothing, some students designed and made their own shirtwaists; when learning about shelter, students planned and drew houses. (“On the ground floor,” 1907, p. 123).

But while this new conception of industrial education was being formed at Macomb, Bonser announced that he had been appointed to the faculty at Teachers College in New York.<sup>4</sup> Coffey reported this in the January 20, 1909 edition of the school's *Western Courier*, which she edited. Two months later she mentioned that Bonser had severed his ties with the school, apparently to work on his dissertation. In reporting these events, Coffey gave no indication that she too would be leaving for New York in the Fall.

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<sup>4</sup>Although a full discussion is beyond the scope of this paper, the magnitude of Bonser's career move should be briefly mentioned. In addition to his appointment as the head of the newly formed department of industrial education at Teachers College—by far the largest college of education on the continent—the deal Bonser struck with Russell concurrently made him the Director of the College's laboratory school, “with the power to appoint and remove its teachers” (“Facts Relative,” 1910, p. 132). His pre-negotiated second-year salary was \$2875, considerable when compared to Coffey's instructor salary of \$1200 that same year. Had he not accepted the Teachers College appointments, his popularity at Macomb was such, Hicken (1970) ventured, that “he might have become the next president of Western Illinois Normal” (p. 52).

Coffey left Macomb shortly before school started in late September 1910. Her destination was also Teachers College, where she would complete her bachelor's degree. Hicken (1970) characterized Coffey's departure from the school as "regrettable, and a blow to Western's reputation as a normal school" (p. 53). Although the faculty and students at Macomb hoped that she would return in 1911, Coffey was hired as an instructor of industrial arts at Teachers College.

Mossman was both a faculty member (serving as instructor and assistant and associate professor) and a student (earning the A.B., A.M., and Ph.D. degrees) at Teachers College. It should not be overlooked that, as Gordon (1990) recounts, during this time

At coeducational colleges and universities, many male faculty, administrators, and students viewed women's higher education as an unwelcome threat to the social order. And at women's colleges, administrators proclaimed their own and their institutions' adherence to traditional gender roles (p. 189).

After being hired at Teachers College, Coffey was confronted with the pay and prestige gaps suffered by female employees of the College. Despite the fact that "women philanthropists" founded Teachers College, "under the influence of the men who subsequently led the College it focused mainly on men for professional leadership in the nation's schools" (Thomas, 1988, p. 3). Thomas' research revealed that, while there were always more women than men employed as faculty members at Teachers College during the time of Mossman's tenure, women consistently held posts of lower prestige and almost always were paid less than men who held the same rank. At most universities of the time, "the percentage of women teachers decreased dramatically as the pay and prestige rose" (Schwarz, 1986, p. 57)

### **Bonser and Mossman at Teachers College**

Soon after Bonser began teaching in New York, he and Russell issued a pamphlet entitled *Industrial Education*, which outlined the "social-industrial theory" of industrial arts. Mossman began her thirty-year teaching career at Teachers College the following year. She continued to write and speak about industrial arts, co-authoring *Industrial Arts for Elementary Schools* with Bonser in 1923. But while Bonser and Russell are remembered for their contributions to the founding of industrial arts and technology education, she has all but been forgotten.

*Russell, Bonser, and the "industrial-social theory."* Although its constituent parts had been published a few years earlier, Russell and Bonser's *Industrial Education* appeared in 1914. It consisted of one essay by each author, on

the topic of reforming elementary education to include industrial arts. Smith (1981) referred to Russell's plan as "revolutionary" (p. 196); Lewis (1994) wrote that it "set curricular boundaries for the subject [industrial arts]" (p. 15); Bawden (1950), Hoots (1974), Martin and Luetkemeyer (1979) and other historians have attested to Russell's influence on the development of general-education industrial arts. But upon inspection it becomes clear that Russell's ideas probably originated with Bonser, and with Mossman as well.

In his apparently unpublished "A History of Industrial Arts in Teachers College, to May, 1926" Bonser (1926) observed that in 1892, five years after Teachers College was founded as an industrial education school, the following were the industrial arts course offerings: two courses in mechanical drawing; four in woodworking; one in woodcarving; and a "departmental conference" (p. 1). Each year from that time until Bonser and Mossman arrived at Teachers College in 1910, at least one, and as many as six new courses were added. Nearly all were technical in nature, although a few were methodological. There is little indication that social issues were considered a primary concern in industrial education at Teachers College before 1910.

Sometime between 1906 and 1909, Russell visited the Western Illinois State Normal School at Macomb, where Bonser was the director of, and Mossman a teacher at, the Training School (see Phipps, 1935; McPherson, 1972). Unlike the Teachers College conception of industrial arts, the elementary industrial arts curriculum at Macomb was not organized around tools or materials. In the third grade in 1909, all but one of the 25 industrial arts activities were divided evenly under the headings "History" and "Geography" (Phipps, 1935, p. 94). They included the "making of igloos by using clay, salt, and flour," for example, in a unit on Eskimos.

Two actions of Russell in 1909 demand attention. After visiting Macomb, he effected a "drastic and rapid reorganization" of the manual subjects at Teachers College (Toepfer, 1966, p. 194). Also that year, Russell (1909) wrote his well-known "The School and Industrial Life," originally published in *Educational Review*, and later reprinted and distributed by Teachers College.

Russell discussed the development of the two papers<sup>5</sup> which comprised *Industrial Education* when he eulogized Bonser in 1931. He carefully described how, long before Bonser was appointed at Teachers College, he developed the theory outlined in the paper. Once the philosophy was disseminated, it needed to be put into practice. "And there," he said pointedly, "is where Professor Bonser came into the picture" (1931, p. 11). Russell reminded the audience that Bonser did not finish his paper until 1912. In short, Russell did not credit Bon-

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<sup>5</sup>"The School and Industrial Life," Russell (1909), and Bonser's (1911) "Fundamental Values in Industrial Education."

ser with any of the ideas in “The School and Industrial Life.” Apparently, this statement, along with several other factors, has caused some historians (e.g., Sredl, 1964; Martin & Luetkemeyer, 1979) to conclude that Bonser’s work was a reworking of Russell’s. These factors include the similarities between the two articles and the fact that Russell’s paper apparently was completed before Bonser’s was begun. But as McPherson (1972) pointed out, many of the ideas in Russell’s papers had existed in Bonser’s writings since at least 1904—the year Russell claimed to have begun devising his theory. Bonser had been enrolled at Teachers College as a student in 1905-06 (Phipps, 1935); and as previously mentioned, Russell traveled to Macomb, Illinois (about 900 miles from New York City) to visit Bonser sometime during the latter’s tenure there. Additionally, a 1902 letter to Russell from Edwin Dexter of the University of Illinois at Urbana, suggests that Bonser and Russell met in the summer of 1901 (Dexter, 1902).

Based on evidence and argument in McPherson’s 1972 biography of Bonser, especially on pages 175-177, it may be suggested that Russell got many of the ideas in “The School and Industrial Life” from Bonser.

And it seems certain that Bonser got many of *his* ideas from Lois Coffey.

### **Lois Coffey Mossman and the Founding of Industrial Arts**

By 1908, Lois Coffey had begun to attract attention for her work from the state department of education in Illinois. While at Macomb, Coffey, probably aided by several other teachers, set up the first “general shop,” in which students alternated through experiences in shopwork, drawing, and home economics. This eventually led to the integration of manual training, drawing, and home economics into “industrial arts,” a term Coffey was using by 1909. William E. Warner’s interpretation of the “general shop” would later revolutionize industrial arts, and Warner would later credit Bonser with the general shop theory (see Gemmill, 1979).

In earlier years, Bonser had viewed manual training for elementary students as a means of self-expression. But Coffey’s integrated study of industrial arts clearly had promise as social education—which was absent from contemporary elementary schools. Coffey’s lengthy curriculum for industrial arts in the seventh and eighth grades, accompanied by an editorial by Bonser, was published in December 1909 by Western Illinois Normal School.

*Well-known works.* The culmination of Bonser and Coffey’s industrial arts curriculum work heretofore, *The Speyer School Curriculum*, was published in 1913. “The significance of this new approach to education was manifested by the continued demand and sale of the publication long after the Speyer School [itself] was discontinued,” Luetkemeyer and McPherson (1975) wrote, adding that “the publication passed through several reprints” (p. 261). Coffey was

married that summer to Niles Roy Mossman and apparently left teaching for three years. She was reappointed at Teachers College in 1916.

After she returned, Mossman and Bonser produced what would become their best-known work, *Industrial Arts for Elementary Schools*. The book was clearly the culmination of many years of development.

Having focused increasingly on the elementary grades at Macomb, Bonser and Mossman began to systematize the study of industrial arts in the elementary school at Teachers College. Although they did not use the term “general education,” they repeatedly referred to industrial arts as being essential to every child’s schooling. If all citizens “must know how to read, write, and use the general process of number,” they reasoned, “is there not also a body of knowledge relative to the industrial arts which is of common value to all(?)” (Bonser and Mossman, 1923, p. 20).

But that body of knowledge is so large that it must be limited before it can be taught, they said. The important determinant of what is appropriate for study, they suggested, was the degree of association the technology in question had with the “common needs of life. ...By this standard, industries devoted to the production of food, clothing, and shelter would stand at the top of the list” (p. 22). In short, industrial arts was a study of societies and their essential technologies.

*The “famous” definition.* As the realization and crystallization of work Mossman and Bonser had been doing for years before the book appeared, *Industrial Arts for Elementary Schools* contained a definition for “industrial arts” which Bawden suggested was “more widely and authoritatively quoted than any other in the history of the movement” (1950, p. 38). The definition was characterized later by Lux as “famous” and “widely accepted” (1981, p. 211), and by Brown (1977) as the “only definition of industrial arts rendered thus far because most, if not all, industrial arts definitions since are simply a variation of the original” (p. 2):

Industrial arts is a study of the changes made by man in the forms of materials to increase their values, and of the problems of life related to these changes (Bonser & Mossman, 1923, p. 5).

Although both Bonser and Mossman continued to write and speak about industrial arts, very little is remembered of them after their 1923 book. Bonser died in 1931. He left much work unfinished, although at the time of his death he apparently was not significantly involved in writing about industrial arts.<sup>6</sup>

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<sup>6</sup> Petrina and Volk (1995) suggested that “possibly because of Bonser’s death in 1931, direct connections between industrial arts and social reconstructionists dissolved.” Seemingly, both Bon- (con’t. on next)

After Bonser's death, the Bonser-Mossman conception of industrial arts did not always fare well. As Towers, Lux, and Ray recounted,

Bonser spelled out the major subdivisions of content, such as the activities to provide food, clothing, and shelter, but he did not develop a complete subject matter structure....during the very period when (general industrial education) should have been making a revolutionary response to Dewey-Richards-Bonser thought (1906-1917), the movement to enlist public support for vocational industrial education was being born...what amounted to an ultimatum to conform to the vocational education pressures or face extinction, proved overwhelming...The implementation of the real essence and intent of that movement would need to await a more opportune time (1966, p. 106).

Even in the elementary school, where vocational industrial education was not as large an issue, Bonser's philosophy was at times misconstrued. In elementary school industrial arts, sometime after Bonser's death, "there was a transition toward an arts and crafts and/or handicrafts approach. It is probable that this approach, as well as the 'method of teaching' approach, stemmed from an out-of-context application of the Bonser philosophy" (Hoots, 1974, p. 234). However, Hoots implied that the difficulty may not have been entirely in misapplication. "The manner of presentation utilized by Bonser was somewhat difficult to follow," he said, "and somewhat difficult to implement" (1974, p. 227). If Bonser's theories were not clear to educators, then interpretation was necessary, and, perhaps, misinterpretation was inevitable.

To be fair, it should be suggested that not all of this criticism is warranted. To begin with, a complete subject-matter structure for Bonser and Mossman's industrial arts was developed (Foster, 1995), although Bonser did not complete this task himself. Secondly, the popularity of viewing industrial arts or technology education as a method is unlikely to have been the result of misapplication of the Bonser-Mossman theory. Mossman (e.g., 1924) clearly advocated "object teaching," and there is little to suggest that Bonser opposed it. In fact, in light of Mossman's later works (e.g., 1929, 1938), what Hoots (1974) referred to as the "'method of teaching' approach" (p. 234) may have been exactly what Mossman had intended; at the least, the method view is not an out-of-context interpretation of Bonser and Mossman.

Finally, some industrial arts leaders who succeeded Bonser and Mossman and who claimed to adhere to their philosophy created a false dichotomy between vocational education and the Bonser-Mossman theory of industrial arts.

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ser and Mossman were concerning themselves with broader issues in education by the late 1920s, although each would be considered an industrial arts expert until their respective deaths.

In fact, Bonser and Mossman were both in favor of vocational training for students who had completed industrial arts in elementary school. Despite this, the convention of professional self-segregation between general and comprehensive technology education continues today.

But this is not to suggest that the Bonser-Mossman philosophy was ever studied widely by those in the field. “When the Bonser concept was added to those of manual training and manual arts, confusion resulted. The Bonser plan both clarified and clouded the issues involved....Several inconsistencies developed throughout the years. They became increasingly annoying to teachers and leaders in these fields, especially when the Bonser concept was interjected into the thinking” (Olson, 1963, p. 9-10).

### **Synthesis**

Recent efforts to reclaim parts of the Bonser-Mossman conception of industrial arts, such as those by Zuga (e.g., 1994) and Petrina and Volk (1995; in press) have undoubtedly been hampered by seventy years of the industrial arts profession’s overestimation of Bonser’s personal contributions to the field and its lack of recognition of the contributions of many others, including Mossman. Bonser’s contributions were significant; but by focusing on Bonser and the profession’s difficulties in understanding him and his theories, as outlined above, historians have been able to rationalize the lack of implementation of his ideas (Foster, 1995).

Bonser and Mossman had a sound plan for industrial arts. Many plans since—such as the Industrial Arts Curriculum Project, the Jackson’s Mill Industrial Arts Curriculum Theory, and the current Technology for All Americans project—have also been the results of collaborative efforts among educators. But whereas historically the profession has recognized these group efforts as such, it has yet to acknowledge Lois Coffey Mossman as a primary contributor not only to industrial arts, but to modern technology education.

Hoots (1974) suggested the “out-of-context application” of Bonser’s philosophy as an explanation for an incomplete elementary industrial arts program. But perhaps the larger problem of context is the failure to view Bonser—the “founder of industrial arts” (e.g. McPherson, 1976, p. 336)—and Mossman as two educators who acted together to establish what is now known as technology education.

### **Concluding Thoughts**

Lois Coffey Mossman died fifty years ago. What, one may ask, is the purpose of discerning and reporting her contributions to technology education? Much effort has been expended in this study, and undoubtedly much more will

be. What can we hope to gain from looking backwards, other than reason to bemoan the poor treatment of one woman in our history?

And why don't those researchers who desire gender equity in technology education use their resources to identify what can be done to correct the problems facing us in the present, rather than point out unfortunate events of the past?

The flawed logic upon which questions such as these are based assumes we are working with a clean slate—that errors of the past, regrettable as they may be, are of little relevance to us today.

As technology educators, we pride ourselves on our ability to belittle the past. We laugh at the thought of computers without hard drives and banks without automatic-teller machines—even though these conveniences are in their first decade of popular use. Our tutored overconfidence in progress leaves us wont to concern ourselves with 70-year-old theories such as the original concept of industrial arts.

But what would we find if we did?

The founders of industrial arts furnished elementary-school teachers and students with a method of studying industriousness<sup>7</sup> in contemporary society, as well as in societies in other places and times. Industrial arts was to be a study of people—not of transportation or materials or engineering. Its main subdivisions were food, clothing, and shelter, but identifying its content didn't need to involve a pseudoscientific, “totally inclusive, internally-mutually exclusive” periodic table of the technologies.

Industrial arts was explicitly intended to be a unifying force in the elementary-school classroom. It was not meant to be a discrete academic discipline—“quite the contrary, it is rather the most general subject of all in its far-reaching relationship” (Bonser & Mossman, 1923, p. 74). It was not meant to specifically include or exclude boys or girls, although it did unapologetically involve areas traditionally reserved for only one of the sexes, such as construction and sewing.

Finally, industrial arts was an outgrowth of liberal, progressive education and had a vocational purpose. Where appropriate, it was fully intended to lead to specific vocational training after elementary school.

It is not the purpose of this article to compare this original intent—which we still claim as our philosophical base—with the present-day situation. But many of our discrete problems today—infighting over content, lack of female participation and interest at all levels, disagreement over discipline status, and inability to reconcile the field's general and vocational purposes—were ad-

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<sup>7</sup> “Their focus on *industrial* remained the general idea of ‘industriousness’ rather than ‘pertaining to the economic enterprise of industry’” (Zuga, 1994, p. 82).

dressed straightforwardly in the original conception of the field. Is it unreasonable to speculate that the major problems threatening the very existence of technology education—most notably our severe lack of teachers and teacher-preparation opportunities, decreased funding, and difficulty in justifying our importance in the contemporary secondary curriculum—are related to this theory-practice gap as well?

This is not a welcome message which history delivers—and until now, we have been content to kill the messenger. But recently, several historians in the field have begun an attempt to recapture some of its past. There is a sense that history can help clarify the issues we face today.

The founders of industrial arts in the US were concerned with many of these same issues. If we truly want to confront these issues, and if we really embrace the philosophy of industrial arts and technology education, we may need to seek their counsel.

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