

# Ideological Representations in Chinese Mathematics Textbooks during the Cultural Revolution Decade

## A Relational Analysis of Selected Textbooks from 1966–1976

SONG A. AN

*Texas A&M University*

MARY MARGARET CAPRARO

*Texas A&M University*

HAIPING HAO

*Texas A&M University*

**A**MONG THE EXISTING STUDIES of mathematics curriculum or textbooks, limited research has focused on the ideological and political content represented in textbooks. The purpose of the current study was to examine how and in what way political and ideological issues were represented in mathematics textbooks in China during the Cultural Revolution era. The Great Proletarian Cultural Revolution (GPCR) or simply called the Cultural Revolution, was a stormy mass movement which led to all-around upheaval in the People's Republic of China from 1966, ending with Mao's death as well as the arrest of the Gang of Four (one of them being Mao's wife) in 1976. All these events resulted in national chaos, economic disarray, even stagnation, together with political cruelty, made quite a number of Chinese people develop a kind of "crisis of faith" (The Central Committee of the Communist Party of China [CCPC], 1981).

Mao initiated the Cultural Revolution on May 16, 1966 proclaiming "liberal bourgeois" elements which dominated the whole party and society. Through this post-revolutionary class struggle, he claimed that capitalistic elements should be uprooted. Chinese youth were mobilized to form Red Guard groups all over the country. Hereafter, this movement extended into all classes including the military, urban workers, and the party leadership itself. Mao insisted the most important affair of this period was to enhance political consciousness by class struggle. *Class labeling* among the youth involved pre-school children, resulting in immense psychological damage (Milner, 2009). This was characterized as one of the more insidious features of the Cultural Revolution. People were divided into two basic groups a) *five black classes* (landlords, rich farmers, anti-revolutionists, criminals, and right-wingers, which were regarded as general enemies) and b) *five red classes* (revolutionary cadres, revolutionary military, revolutionary martyrs, pre-liberation industrial workers, former poor and lower-middle peasants, regarded as

general comrades). The above groups were classified in the light of the *theory of class origin* and traced back several generations to distant relatives for determining one's origin. The losers of the inner conflicts within the party such as the former potential successors of Mao, Biao Lin, and Shaoqi Liu were the worst representatives of the five black classes. The Red Guards consistently raided the houses of the bourgeoisie (so-called "social dregs") including teachers, professional people, capitalists and rightists, except the revolutionary cadres (Lee, 1975). People of that era believed that in the past, the Chinese had been suppressed by *three big mountains* including feudalism, imperialism, and bureaucrat-capitalism (Renwick & Cao, 1999).

During this decade (1966–76) of the GPCR, intellectuals (including professors and teachers) were oppressed, while peasants and workers were elevated to a relatively higher social status. In education, the pendulum swung back towards redness and towards a unified structure for social equality (Zhou, Moen, & Tuma, 1998). The education system nearly stagnated during the Cultural Revolution, and there existed little education for a generation of Chinese (Tsang, 2000). Zhou and colleagues indicated that educational opportunities in response to political shifts like the Cultural Revolution fluctuated dramatically. At that time, high school graduates could not register to take the college entrance examination and only a few students from the labor forces were recommended to enter college according to certain political selection criteria. Many middle and high schools were also closed following Mao's direction that "the knowledgeable youth must go to the country, and will be educated from living in rural poverty." Millions of "rusticated youth"—urban middle school graduates were sent to the countryside to be reeducated (Bernstein, 1977). Cross and Price (1987) found that during this period, education in China was of interest for teachers in the West because Chinese curriculum writers attempted to produce textbooks emphasizing the relevance of science rather than its theoretical aspects.

### Theoretical Framework

Based on Apple and Christian-Smith's study (1991), authors of textbooks during this period attempted to teach neutral, legitimate knowledge. Textbooks frequently functioned as "ideological tools to promote a certain belief system and legitimize an established political and social order" (p.10). The selection and organization of knowledge in school curriculum was an ideological procedure that served the interests of particular classes and social groups. Apple (1992) also argued that the syntax of school curricula was ideologically biased since the existing political and economic power had considerable influence over the school curriculum to select and control the contents of student learning.

The curriculum is never simply a neutral assemblage of knowledge, somehow appearing in the texts and classrooms of a nation. It is always part of a selective tradition, someone's selection, and some group's vision of legitimate knowledge. It is produced out of the cultural, political, and economic conflicts, tensions, and compromises that organize and 'disorganize' people" (Apple, 1996, p. 22).

Thus the textbooks can serve as predominantly powerful transmitters of a selective tradition. When students were repeatedly exposed to content that projected a negative representation of less dominant groups (e.g., women and ethnic minorities), they developed negative attitudes and stereotypes toward these groups. In the same way, if textbooks excluded or underrepresented less

powerful groups, the learners might have concluded that these groups contributed little to society (Taxel, 1989).

When conducting textbook or school intended curricula analysis, researchers should focus on how they might reinforce a selective tradition. As Williams (1989), Taxel (1989), and Apple (2004) pointed out, school textbooks transmitted the values and beliefs of those in power, effectively providing no voice to less powerful groups and strengthening the dominant ideology. Thus, determining who controls textbook content and design and what knowledge should be included or excluded can be very important to either group depending upon who controls the publishing power.

Olson (1989) talked about the authoritarian role of textbooks when he proclaimed, textbooks “are taken as the authorized version of a society’s valid knowledge” (p. 239). The influence of the textbooks originated not from the basis of authority, but from the social or institutional contexts in which the textbooks were produced, taught, and studied (Olson, 1989). With the purpose of taking full advantage of profit, Apple (1992) explained that competitive publishers tried to develop textbooks that matched lists allowed by state textbook-adoption committees, thus the “texts made available to the entire nation, and the knowledge considered legitimate in them, are determined by what will sell in textbook adoption states” (p. 6).

Mathematics is one of the most important required subjects in the K-12 curriculum thus playing a significant role in the process of students’ knowledge. Generally one would examine social studies or civics books to find instances of ideological content. However, during this period of time in China, it is interesting to note that mathematics textbooks also contained ideological content (Zhang, 2005). Textbooks analyses can provide a concrete picture of what knowledge was communicated in classrooms; moreover, analyzing textbooks can serve as a more accessible approach of documenting how teaching and learning is functioning for a large population and over a long period of time (Li, Chen, & An, 2009).

During the past 15 years, researchers have paid ever-increasing attention to textbook analyses (e.g., Delaney, Charalambous, Hsu, & Mesa, 2007). These studies included content topic coverage presented in textbooks (e.g., Westbury, 1992), textbooks’ pedagogical features (e.g., Schmidt, McKnight, & Raizen, 1997), curricular treatment of mathematics content (e.g., Li, Ding, Capraro, & Capraro, 2008), and exercise problems (e.g., Fan & Zhu, 2007). Among the existing studies of mathematics curriculum textbooks, limited research has focused on the ideological and political content represented in these textbooks. Thus the current study examines how and in what way political and ideological issues were represented in Chinese mathematics textbooks from 1966–1976. The two research questions framing the current study were: (a) What ideological content was presented in the mathematics textbooks in China during the Cultural Revolution era? (b) How did textbook writers integrate the ideological contents into mathematics books during the Chinese Cultural Revolution era?

## Methods

### *Data Sources*

By adopting the purposeful sampling method (Patton, 1980), limited pages of textbooks from four different versions of extensively used Chinese mathematics textbooks (Heilongjiang Elementary School Textbook Writing Committee, 1969; Shanghai Elementary School Textbook

Writing Committee, 1967; Beijing Middle School Textbook Writing Committee, 1973; Yunnan High School Textbook Writing Committee, 1971) during the period from 1966-1976 were analyzed. These textbooks were widely used in K-12 grades in China during the Cultural Revolution decade in different geographic areas of China and bore the approval of the National Education Commission. The ideological contents that were repeated in numerous locations within textbooks were eliminated. For example, as Chairman Mao's figures, stories and quotations was repeatedly integrated into examples and problems across all version of textbooks, only limited pages of the same content were used in the current study. Thus for this study, 28 specific pages from the four textbooks that have typical ideological content were selected and analyzed.

### *Coding Process and Data Analysis*

Grounded theory (Strauss & Corbin, 2008) and relational analysis (Apple, 2004) were used for analyzing data for this study. The conceptual model was inductively derived from the responses provided during textbook content coding. The textbook content of the 28 independent pages from four versions of textbooks was then coded into thematic clusters or categories using an inductive approach (Patton, 2002). During this process, multiple discussions among two of the authors were conducted about possible categories or themes, thereby refining the definitions of the categories. Once the coding of subsets was saturated, the remaining data was coded by using categories previously developed. Next, a relational analysis was used to analyze the data by comparing the textbook information with out-of-school, macro-social political situations. Through this process of using political or ideological related content, we selected these situations to analyze from the four versions of mathematics textbooks and we associated the textbook contents with the outside macro social and historical background during the Cultural Revolution era in China.

## Results

The result of this analysis with the textbooks showed that mathematics textbooks published during the Cultural Revolution decades from 1966 to 1976 contained large amounts of socialist and ideological-oriented content. In general, this ideological content focused on various political and historical issues that had distinctive right-or-wrong value judgments presented in multiple ways through pictorial, verbal, and numerical representations. Throughout all the ideological content, the cult personality of Chairman Mao and the struggles between the working and the exploited classes were the two strongest themes. It was mainly through these two themes that textbooks integrated the ideologies of the time within the content of mathematics.

### *Categories of Representation in Mathematics Textbooks*

In the series of Chinese mathematics textbooks from the Cultural Revolution era that we selected, many examples of ideological content were identified during our content analysis. Specifically, the textbooks provided verbal explanations and numerical computations together with pictorial representations advocating the nation and party leaders' ideologies. These representations were verbal, pictorial, and numerical.

Verbal representation was the most common way of illustrating ideologies in the mathematics textbooks. Generally, verbal representations were categorized into two types: (1) direct revolutionary slogans and quotations of Chairman Mao or his “close comrade” Biao Lin’s words without connections to mathematics, and (2) creation of the mathematical problems into ideological contexts. The verbal representations without mathematical connections were usually presented at the beginning of each lesson, unit, and sometimes before or after a specific example question. There were three main resources for verbal representations without connections to mathematical content: a) the quotations of Chairman Mao, “our education orientation is to develop literate workers with socialism ideology and develop their character, intelligence and physique though education” (Middle School Textbook Writing Committee of Beijing, 1967, p. 1); b) the quotations of Biao Lin,

If you do not know what class is and what exploitation is, you will not know what revolution is. If you cannot figure out how bitter we had experienced previously, you will not know how sweet we have it now, we even may treat today’s sweet as bitter (Heilongjiang Elementary School Textbook Writing Committee, 1969, p. 25);

and c) the “top direction” quotations from Chairman Mao’s new words which were not included in his quotation book, “Knowledge is started from the practice; the theoretical knowledge we gained from the practice must go back to the practice” (Heilongjiang Elementary School Textbook Writing Committee, 1969, p. 28)

Pictorial representation of ideological content was another way of infusing ideologies into mathematics textbooks. From our analysis of the selected textbooks, we found that Chairman Mao’s portrait and the image of revolutionary army men, industrial workers, and poor peasants as popular pictorial representations in all of the selected textbooks. Chairman Mao’s portrait was the key pictorial representation illustrating his cult personality. Although in different versions of textbooks there existed slightly different images of Chairman Mao, the common characteristics portrayed were that he was treated as the great leader of the country (see Figures 1, 2, 3, & 4). Industrial workers and poor peasants, the two classes previously exploited, were the *masters of the country* now. Their images were found in the mathematics textbooks (see Figures 5 & 6). The pictorial representations from the concrete visual images expressed the prevalent ideology of the country in these selected mathematics textbooks.



Figure 1 & 2. Illustrations of Chairman Mao in one Chinese textbook (Heilongjiang Elementary School Textbook Writing Committee, 1969, pp. 25 & 37).

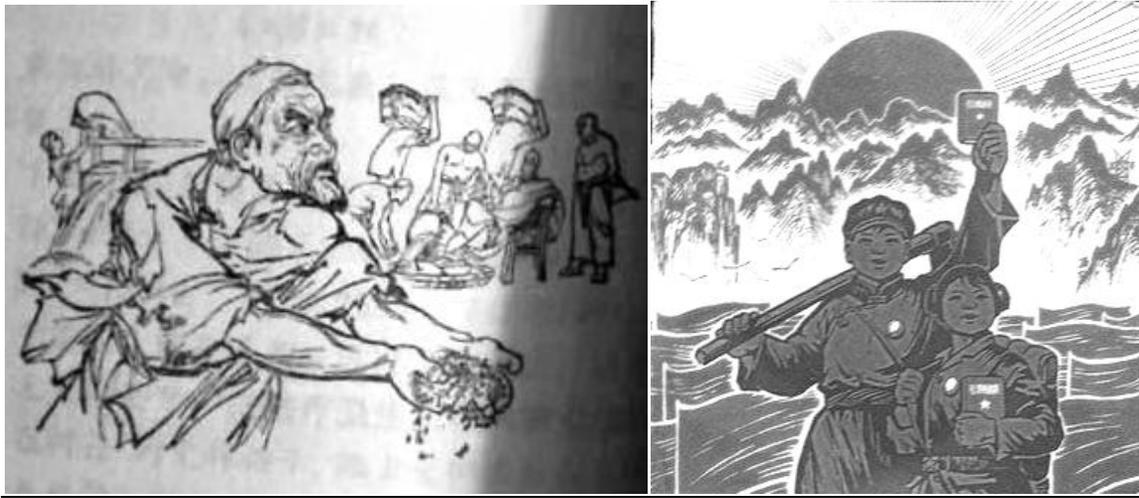


Figure 3 & 4. Illustrations of peasants in one Chinese textbook (Elementary School Textbook Writing Committee of Shanghai, 1967, pp. 17 & 23).



Figure 5 & 6. Illustrations of workers in one Chinese textbook (Middle School Textbook Writing Committee of Beijing, 1967, pp. 1–2).

Numerical representations, along with verbal and pictorial representations were another way of integrating the ideologies of the time into Chinese mathematics textbooks. In the books selected to examine, we located data from the Korean and Vietnam wars that were used as one resource representing the ideological content (see Figures 7 & 8). For example, in figure 7, the question asks students using addition to find the answer that how many enemy troops were killed in the Korea War. In the numerical ideological representations, numbers were used as mass media to point out how brave the people of socialist countries were as well as how cowardly the people of opposite ideologies were.

The Glorious Achievements of Chinese and North Korean People during the Korean War.

(1) Number of enemy troops to be annihilated

US Force	South Korea Force	Other Forces	Total
397543	667293	29003	

(2) Number of enemy weapons to be destroyed

Planes be shot down	Planes be shot on	Total
5729	6784	

Figure 7. One fill-in-the-box question provided in the Chinese Textbook integrated with the Korean War context (Elementary School Textbook Writing Committee of Shanghai, 1967, p. 33).

The Glorious Achievement of Vietnamese People in the Great Victory of Xining Battle (January 1967-April 1967)

	1st	2nd	3rd	4th	Total
US Force be annihilated	3000	1800	5370	4800	
US Planes be shot down	40	7	91	51	
US tanks be destroyed	30	69	420	261	
US cannons be destroyed	11	9	55	32	

Figure 8. One fill-in-the-box question found in the Chinese Textbook integrated with the Vietnam War context (Elementary School Textbook Writing Committee of Shanghai [translated from Chinese], 1967, p. 33).

*Ideological Content in Mathematics Textbooks*

In the previous section we analyzed the categories of representation in mathematics textbooks, and found that ideological content in the mathematics textbooks were represented verbally, pictorially, and numerically. In this section, the relational analysis of selected mathematics textbooks demonstrated that various ideological content focused on political and historical issues. In general, this ideological content had a distinctive right-or-wrong value judgment: The textbook, mirrored the country’s ideological policy leaning toward the side of communism and opposing all other ideologies other than communism or socialism (e.g., capitalism, feudalism). Next, we will present data from the relational analysis in two areas: a) Chairman Mao, Lin, and Liu, and b) hostile ideologies within class struggles, we will report our findings about the ideologies found in the textbooks about international wars and domestic class struggles.

*Chairman Mao, Lin and Liu.* From the relational analysis, we found that Chairman Mao was the most important ideological figure in mathematics textbooks. Additionally, his two previous comrades, vice Chairman Biao Lin and Shaoqi Liu, were also mentioned in mathematics text-

books. The image of Chairman Mao was integrated into various scenarios in mathematics textbook problems. The two most popular scenarios among all versions of textbooks were the publication of the book, *Quotations of Chairman Mao*, and his visits to the red guards and the revolutionists. Also some other scenarios showed Chairman Mao's intelligence and military skills in the textbooks. The following is such an example in one fifth grade textbook. Chairman Mao, as the nation's leader during the Cultural Revolution era, was used repeatedly as a resource to create mathematics questions and worked-out examples. Additionally, the quotations of Chairman Mao were used repeatedly in textbooks to present the socialist ideology by covering many aspects of his social life.

The reddest sun in our heart—Chairman Mao trusts, cares and admires people. During the unprecedented Great Proletarian Cultural Revolution he met 8 times with the red guards and the revolutionary people from the whole country in Tiananmen Square within 3 months from August 18 to November 26, 1966. The number of people he met with was as follows:

The first meeting (Aug 18 <sup>th</sup> ) 1 million	The second meeting (Oct 18 <sup>th</sup> ) 1.5 million
The third meeting (Aug 31 <sup>st</sup> ) 0.5 million	The fourth meeting (Nov 3 <sup>rd</sup> ) 1 million
The fifth meeting (Sep 15 <sup>th</sup> ) 1 million	The sixth meeting (Nov 10–11 <sup>th</sup> ) 2 million
The seventh meeting (Oct 1 <sup>st</sup> ) 1.5 million	The eighth meeting (Dec 25–26 <sup>th</sup> ) 2.5 million

How many people in total did our great leader Chairman Mao meet? (Elementary School Textbook Writing Committee of Shanghai, 1967, p. 53)

The mathematics objective for this task was to assess students' understanding of the computation of numbers in the millions; however, ideological context was obviously inserted into this question. This book published in 1967 was updated with the most famous news of Chairman Mao's meeting with the red guards in 1966. The scenario of this mathematical problem was based on Mao's visit with the red guards as he was glorified by using phrases such as "trusts, cares and admires people." This example of ideological content demonstrated that Chinese mathematics textbooks during the Cultural Revolution era chanted Chairman Mao's deeds.

Not only the Chairman's formal political events, but also his private hobbies, such as swimming, were used in textbook problem scenarios. The following problem is an example of integrating the Chairman's hobby into a mathematics problem scenario:

Our great leader Chairman Mao is very healthy. This is the greatest happiness of Chinese people. On July 16<sup>th</sup>, 1966, our great leader Chairman Mao rode the winds and broke the waves, he swam in the Changjiang River. He finished his 15000 meters journey in one hour and 5 minutes. What distance did he swim per minute? (Elementary School Textbook Writing Committee of Shanghai, 1967, p. 27)

Additionally, the words of Biao Lin, vice Chairman of China's Communist Party (1956–1971), were cited in all four versions of the textbooks after quotations by Chairman Mao. This finding was consistent with his position during the late 1960s, as the official successor of Mao, his name and words always followed Mao's in many published books. For example, one of Lin's most famous quotations from the Foreword of *Quotation of Chairman Mao* (1961) on class struggle was cited in one of the mathematics textbooks:

The account of blood and tears between the landlord class and poor peasants Chairman Mao teaches us “never forget class struggle.” Vice Chairman Lin also said, “If you do not know what class is and what exploitation is, you will not know what revolution is. If you cannot figure out how bitter we had experienced previously, you will not know how sweet we have now, we even may treat today’s sweet as bitter.” (Elementary School Textbook Writing Committee of Shanghai, 1967, p. 38)

The wide publication and distribution of Chairman Mao’s books, movies, and letters is another ideological integration resource illustrating the cult of the people who followed Chairman Mao. During the Cultural Revolution period, publishing, reading, and watching Chairman Mao’s works was considered honorable behavior (Peng, 2001). In the textbook example below, we also found the integrations of Chairman Mao’s movie into a mathematical problem. For example, in a computational division problem, a scenario of watching Mao’s movie was presented:

The Worker Peasant Soldier Cinema is showing the honorable movie, *Chairman Mao is the Red Sun in Our Heart*. Every day, the cinema has two shows, and each show has an audience of 850. By following the new requirements, the schedule was changed to providing three shows every day and each show having an audience of 950. How many people can now be in the audiences per day using the new schedule? (Heilongjiang Elementary School Textbook Writing Committee, 1969, p. 56)

The following example illustrated both the charismatic personality of Chairman Mao and the attack by Shaoqi Liu who was Chairman of China (1959–1968) and Vice Chairman of the Chinese Communist Party from 1956 to 1968. He was politically persecuted by his political opponent Chairman Mao because of his disagreement with some political and economic developments in China (CCPC, 1981). In order to attack Liu, Mao and his followers slandered Liu as a traitor and spy of the country. In the mathematics textbooks that we selected, Liu was repeatedly used as the villain in conflicts with Mao and Lin. The following whole number multiplication problem is just one example of how Liu was slandered:

The proletarian revolutionaries in the publishing industry with their great admiration for Chairman Mao and the loyalty to Chairman Mao’s theory and working class people, printed huge numbers of Chairman Mao’s works. In 1967 they printed 86,500,000 copies of *Chairman Mao Selected Works* which was 7 times and 5,760,000 copies more than the copies we printed in the 17 years before the Great Proletarian Cultural Revolution. Let’s compute how many copies had been printed in the 17 years before the Great Proletarian Cultural Revolution due to destroying of the traitor and spy Shaoqi Liu. How many times do the copies printed in 1967 compare with the copies printed per year in the 17 years before the Great Proletarian Cultural Revolution? (Elementary School Textbook Writing Committee of Shanghai, 1967, p. 11)

In another example, consistent with China’s mainstream media’s view (e.g., People’s Daily Editorial Board & Red Flag Journal Editorial Board, 1964), Liu was described as the Khrushchev of China and the largest public enemy who plotted to turn over the current government in order to place the people into further disaster. A textbook example of a class struggle scenario with fractions is provided below:

The traitor and spy, Shaoqi Liu boosted his anti-revolutionary theory of “stop the class struggle.” He alleged that “the (people who have) been exploited more have made more contributions (to society).” He praised the exploiting class and vainly attempted to turnover the dictatorship of the proletariat and wanted to turn back the wheels of history to restore capitalism in China in order to make millions of people experience the disaster again. This Great Proletarian Cultural Revolution had a great victory and successfully foiled Shaoqi Liu’s plot of restoring capitalism to China. However, we should never think we could sleep without anxiety now. We should remember Chairman Mao’s instruction: “We had already had a great victory, however, the exploited classes are still struggling, they are still existing and the class is still existing. Thus, we cannot say we have not obtained the final victory, we cannot even say it in future decades.” (Beijing Middle School Textbook Writing Committee, 1973, p. 49)

*Hostile Ideologies.* Marx and Engels (1848) wrote in the *Communist Manifesto* that the “history of all hitherto existing society is the history of class struggle” (p 2). The class struggle theory was one of the key thoughts of Mao. He divided the population of China into two hostile camps—the people and the enemy of the people. In his view, the proletariat, the peasantry, and the urban party bourgeoisie should be united to find a country and government and adopt the dictatorship over the enemy of the people who were the landlord class and the bureaucrat-capitalist class (Mao, 1949).

The results of our textbook analysis showed that class struggle was another key ideological content presented in the mathematics textbooks. The books clearly indicated not only the positive and negative values that the current government possessed but also indicated who their comrades or enemies were. The only right ideology was socialism and communism, all other ideologies—imperialism, feudalism, bureaucrat-capitalism and revisionism were presented as appalling ideologies that may benefit landlords, capitalists and other exploiting classes and may harm the exploited classes of people such as peasants and workers. The textbook also reported several wars between socialism and other ideologies. For example, from the Chinese textbooks’ interpretation, (a) the Sino-Japanese War during World War II was a war between socialism and imperialism together with feudalism, and finally under the leadership of Chairman Mao, the army of the Communist Party of China defeated the Japanese army and the Chinese army ex-emperor; (b) the Chinese Civil War was the war between socialism and imperialism together with bureaucrat-capitalism, and finally led by Chairman Mao, the army of the Communist Party of China defeated Chiang Kai-shek’s nationalist army with the support of the US’s army and weapons; (c) the Korean War and Vietnam War, were wars between the world’s communist countries as well as their armies, and the world’s imperialistic countries under the leadership of the U.S., with the Communist Party finally winning the Korean War and the battles in the Vietnam War; (d) the Sino-Soviet Border Conflict was a war between socialism and revisionism, the result of this conflict was that being under the leadership Chairman Mao, the Communist Party army of China defeated the Soviet Union’s army led by Khrushchev (CCPC, 1981). Moreover, the textbooks also focused on the class struggles within China, specifically the class struggle between China and the five red and five black categories. Within the next section, we will examine examples from textbooks of both international wars involving the ideological class struggles and domestic class struggles.

*International Wars Involving Ideologies of Class Struggles.* All four versions of the mathematics textbooks integrated information about the wars from the 1930s until the 1960s into various mathematical topics and different forms of questions. In general, the war content used data to show the benefits of socialism and the negative aspects of other ideologies. For example, one of the problems in the textbook demonstrated the criminal acts that the Japanese army performed on the Chinese people during World War II:

Before liberation, the coal mine in the city of Fushun was occupied by the Japanese army, and they not only frantically exploited Chinese laborers but also rudely robbed our mineral resources. From 1936, they abducted 4000 adults and children from Shandong province to work as slaves in the mines. Writhing under fascism's whip, in less than one year 2350 people were killed in the mine, and 60% of the total adult population and 50% of the total children's population were killed. Compute how many adults and how many children were killed by the Japanese army? (Heilongjiang Elementary School Textbook Writing Committee, 1969, p. 15)

One textbook also presented the content of the Chinese Civil War (see Figure 9); the achievement of the Chinese Communist Party's army was reported:

The Chinese People's Liberation Army is the greatest army that was founded and led by Chairman Mao and directed by Vice Chairman Lin. The following table is a list of Chinese People's Liberation Army's achievements concerning enemy annihilation during the 4-year Chinese Civil War versus Chiang Kai-shek's nationalist army. Find the total number in each category.

	1 <sup>st</sup> year (1946.7- 1947.6)	2 <sup>nd</sup> year (1947.7- 1948.6)	3 <sup>rd</sup> year (1948.7- 1949.6)	4 <sup>th</sup> year (1949.7- 1950.6)	In Total
annihilated	476000	540200	571610	173300	
surrendered	17000	28200	130600	671150	
captured	677000	953000	1834010	1122740	
incorporated	--	--	271000	22030	
gave up	--	--	242780	390730	
In total					

Figure 9. One fill-in-the-box question provided in the Chinese Textbook integrated with Chinese Civil War context (Heilongjiang Elementary School Textbook Writing Committee [translated from Chinese], 1969, p. 41).

The Chinese textbooks not only integrated the Korean War and Vietnam War's context into the mathematics textbook (the examples of these two wars were already mentioned in the previous section—see figure 2), but also updated the latest wars between China and Soviet Union into one textbook:

Vice Chairman Lin said, "The modern revisionists, represented by Khrushchev as well as his successor Brezhnev, crazily opposed the revolutions of the people all over the world. They gave up the dictatorship of the proletariat and wanted to restore capitalism in the

Soviet Union. They betrayed socialism, Marxism, and Leninism, and betrayed the great people of the Soviet Union. The revisionists in the Soviet Union ganged up with U.S. imperialism, actively providing the anti-revolutionary group in India to their anti-China activities. From October 1962 to June 1967, they had already provided 0.9 billion dollars' military assistance, including: 4 submarines, 50 MiG-21 jet fighter aircrafts, 74 air-freighters, 100 helicopters, 100 tanks, and 17 missile launchers. How many weapons did the revisionists in the Soviet Union provide to the anti-revolutionary group in India? (Heilongjiang Elementary School Textbook Writing Committee, 1969, p. 35)

During the Sino-Soviet polemic of the 1960s, Mao further asserted that socialism in the Soviet Union had gradually eroded through an emerging bureaucratic capitalist class, so capitalism had been restored in Soviet society (People's Daily Editorial Board & Red Flag Journal Editorial Board, 1964). China's domestic political and social lives were again rapidly radicalized with the dominance of so-called revisionism in the Soviet Union. Mathematics textbooks demonstrated, as the mainstream media of China reported, that revisionism was an ideology that also existed and caused danger in China. For example, one textbook integrated revisionism into a whole number subtraction mathematics problem by demonstrating the harm caused by revisionism on Chinese education:

Before the Great Proletarian Cultural Revolution there were 48 students in class one in Qunli Elementary: During the six years of obliteration by revisionism on the educational system, 13 students dropped out. All 13 students were from the worker or poor peasant families. Compute how many students from the worker or poor peasant families dropped out and how many were retained due to the obliteration by revisionism? (Elementary School Textbook Writing Committee of Shanghai, 1967, pp. 34).

*Domestic Class Struggles.* The Chinese domestic struggle is another key ideological topic that was presented in the mathematics textbooks. With this kind of content, generally the orientation was to give praise and sympathy to the exploited classes and to show distaste for the exploiting classes (Sun, 2008). Thus in this section we will discuss both the landlords versus peasants followed by the capitalists versus workers.

*Landlords versus Peasants.* During the Cultural Revolution decade, the former landlords, as the exploiting class, were satirized frequently for their inhumanity to the peasants who worked on their lands. The people who owned large areas of land and made a living leasing land to peasants to cultivate crops were labeled as the *historical counter-revolutionary people*, and were criticized and denounced at public meetings all over the country. The poor peasants, however, were portrayed as victims who were cruelly exploited by the landlords in the feudalistic and bureaucratic-capitalistic society (Sun, 2008). For example, in the teaching of mathematical logarithms, the ideological content of class struggle was integrated into one mathematics textbook worked out example:

Before liberation, the poor peasant Uncle Zhang was forced to take a loan of 3 yuan from the landlord Baopi Qian, and Zhang was extorted by Qian to pay his loan with "Yuesanfen" (the interest each month was 30% of the previous debit). Uncle Zhang finally paid all his loans 10 months later. How much did Uncle Zhang pay? How much interest did landlord Qian exploit from Uncle Zhang? Chairman Mao teaches us "never forget class struggle." Now, let's expose the ugly landlord Qian Baopi's criminal account of

compound interest that exploited the poor peasant, Uncle Zhang. The poor peasant Uncle Zhang only borrowed 3 yuan from the ugly landlord, ten months later, the total amount based on compound interest increased into  $3 \times (1+30\%)^{10}$ . Now, let's compute how large this number is. In the old evil society, the landlord class heavily exploited workers and peasants through loaning land to them but also sucked their blood by providing high-interest-loans to them. The landlord class constructed their evil heaven based on the working class's bones of the dead. The victims like Uncle Zhang, number more than millions upon millions of poor peasants. Thanks to the leadership of Chairman Mao who defeated imperialism, feudalism, and bureaucratic-capitalism and founded a new government under the dictatorship of the proletariat. Now our poor peasants can live a happy life today. (Yunnan High School Textbook Writing Committee, 1971, p.45)

*Capitalists versus Workers.* Very similar to the landlords versus peasants, the capitalists in the mainstream media in China were described as inhumane people who crazily exploited workers. The people who had factories and hired workers were also labeled as historical counter-revolutionary people. They were criticized and denounced at public meetings all over the country. The workers, according to Marx's theory of socialist revolution, were the core components of the revolution. During the 1970s, China was an agriculturally oriented country where agricultural workers made up 80 percent of the country's total population (National Bureau of Statistics of China, 2010). During the Cultural Revolution decade, China's media portrayed contemporary industrial workers as their *big brothers* or the leaders of society. Before the liberation of China, they were portrayed as the *suffering* class in society (Sun, 2008). Mathematics textbooks were consistent with the mainstream media in portraying the workers and capitalists before the liberation of China. One example of this was displayed in the textbook example below of whole number computation:

The boss of a certain factory is vindictive. I as well as my partners need to carry 45 tons of coal from the boat to the bank every day. Each time we need to carry a basket of 150 kilograms of coal, the boss flogged us with a leather scourge to force us to work and not let us rest. How many baskets do we need to carry every day? Every day the coal we made was worth 168 yuan, but the prime cost (including our payment) was only 42 yuan. The whole factory has 160 workers, how many yuan could the boss earn by exploiting us every month? (Shanghai Elementary School Textbook Writing Committee, 1967)

### Discussion and Conclusion

Textbooks, as previously pointed out, provide a linkage between the "intended curriculum" that is produced at the system or state level and the "implemented curriculum" which is enacted in classrooms. At a time when we acknowledge a possible influence of textbook content organization and presentation on classroom instruction (Li, Chen, & An, 2007), it is important to note how textbooks present ideological content throughout historical periods. In this study, we analyze four versions of Chinese mathematics textbooks published and widely used during the Cultural Revolution era (1966–1976). With a focus on the representations of ideological and political content in mathematics, this study examined the selected textbook series in detail with respect to two aspects: the methods of ideological content representations (verbal, pictorial, and numerical) in the textbooks and the presentations of ideological topics in the textbooks. Examin-

ing these two aspects of textbooks allowed us to go beyond the analysis of content topic inclusion that has typically been the focus of previous textbook studies (e.g., Fuson et al., 1988; Westbury, 1992). Our findings suggest that mathematics textbooks, books intended to impart scientific knowledge of quantity, structure, space, and change, can also play an important role in transmitting ideological information (Li, 2004). In the examples that we selected to analyze in the study, we found that integrated with mathematics content, sometimes the ideological content could have been presented in a more straightforward way. For example, the mathematics problems that asked students to compute how many Chinese civilians were killed by the Japanese army, the example of computing how many U.S. troops were killed in the Korean War, and the task to compute how much money the landlords or capitalists exploited from peasants and workers can provide amazing and possibly shocking content to students in understanding how cruel the Japanese army was, how brave the Chinese and North Korean armies were and how selfish the landlords or capitalists were. The representational ideology through computation may provide the administrative authority an alternative way to infuse their desired ideology to their students. Our findings along with those of Peng (2001) supported the stance that the public media took advantage of all opportunities, including textbooks in all subject areas (Li, 2004) during the Cultural Revolution decade, to integrate the personality cult of Chairman Mao. In our analysis through the examples presented above, we found that Mao's image and quotations were repeatedly inserted into mathematics textbooks without any connection to mathematics content. Moreover, Mao's public activities (e.g., meeting with red guards at Tiananmen Square) as well as Mao's private hobbies (e.g., swimming across the Changjiang River) were carefully integrated into the background setting for mathematics problems to demonstrate how the mathematics textbook writers were impacted by the social environment in demonstrating their loyalty to Chairman Mao.

The CCPC (1981) officially defined the Cultural Revolution as a political movement that was mistakenly launched by Mao but later plotted by Biao Lin and the Gang of Four that brought disastrous results to the party, country, and people. Although presently the Chinese government has thoroughly denounced the Cultural Revolution, the aftermath still impacts current society. The education of China was greatly influenced by the Cultural Revolution. The students who had opportunities to receive an education in school, as the current study demonstrated, were heavily impacted by this political movement and even their mathematics textbooks contained frequent citing of political or ideological related content.

Although the current study provided us an opportunity to examine the ideological content published in the mathematics textbooks, it only shows one aspect of how China integrated politically related topics into textbooks, and it is only an analysis for a very specific period during the Cold War. These themes come together to demonstrate how Chinese textbooks conceptualized and structured the ideological content for student learning. As revealed in this study, the selected textbooks from China during the Cultural Revolution era share broad similarities in representation and interpretation of ideological content. In particular, all versions of the selected Chinese mathematics textbooks used in this study represented a general orientation in support of the communistic and socialistic countries led by the Soviet Union (until the Sino-Soviet Union boarder conflict in 1969) and in opposition to the capitalistic countries led by the United States. Such a representation and orientation of ideological content was primarily explained during the Cultural Revolution era when China was governed by the Communist party and China had been recently involved in several wars during the Cold War period (e.g., the Chinese Civil War, 1946–1949; the Korean War, 1950–1953; the Sino-Indian War, 1962; and the

Vietnam War 1959–1975, (CCPC, 1981). During the Cultural Revolution decade, while China was controlled by Mao as well as Lin, and later the Gang of Four, the country was threatened not only from the countries with opposing ideologies (e.g., the US and Soviet Union) but also from domestic forces such as Jiang’s nationalist party and armies in Taiwan. In order to consolidate the power of the communist party of China to govern the country and their own power, the country’s leaders infused their desired ideology through the youth into all public media including textbooks (CCPC, 1981). The textbook, as an official curriculum, ineluctably served as one form of media to present the ideologies of the time.

Several limitations are noted in the current study. For example, only four versions of textbooks were selected and the perspectives and content reported may not represent all the textbooks used during the Cultural Revolution period in China. However, even with these limitations, this study provides an opportunity to take a glimpse at textbooks and delve into how political content can be infused into mathematics textbooks. Much remains to be understood about how ideological content is integrated and presented in textbooks for the periods previously and subsequently following the decade of the Cultural Revolution as well as how the ideological content was represented. Textbooks’ representations of ideological content are revealed from only two themes in this study. Future research also needs to look at possible additional ideological themes as well as negative influences that this ideological content had on the learners of mathematics during the Cultural Revolution.

Although no direct evidence exists to show the textbooks we investigated in the current study were not effective mathematics textbooks for students, the question of what constitutes unbiased curriculum emerges. Building up boundaries, while forbidding and blocking information from the outside world might not constitute an effective curriculum. Accepting, understanding, awareness, and coexistence with diversified knowledge created by people from all over the world are preconditions for developing an effective curriculum. The Cultural Revolution from 1966–1967 influenced the development of politically tainted teaching material for not only the Chinese but also curriculum scholars from all over the world, demonstrating how political movements impacted education. For students who did have an opportunity to study in school during the period from 1966–1976, their education was jaded by using politically-biased textbooks as illustrated in this study, where subjects studied in school, including mathematics, could possibly be misinterpreted through controversial content. Similar instances of this phenomenon of bias not only occur in socialist countries, western countries also portray racial bias in their curriculum (Hong, 2009). As a medium to convert the “official knowledge” to the future civilian (Apple, 1992), textbooks imply the correct perspectives of the world for students to value. In the contemporary world with no boundaries on curriculum development—rather than print curriculum content in textbooks—film, television, and internet-shared-videos all can be used to display curriculum content. These media venues in the postmodern era, portrayed as the “teacher-proof” curriculum was one of the causes of public miseducation (Pinar, 2004). Thus, the new curriculum media’s presentation of social core values, such as the hidden curriculum, have the same influence as traditional curriculum media such as textbooks on students’ development of morality and personal values. This reality calls for curriculum scholars to think seriously before deciding what content as well as social core values should be selected and how to present this curriculum for maximum students’ learning.

## About the Authors

Song A. An is a PhD candidate in the Department of Teaching, Learning, and Culture at Texas A&M University. His research interests are interdisciplinary curriculum development and lesson design.

Mary Margaret Capraro is an Associate Professor of Mathematics Education at Texas A & M University. She has over 45 peer-reviewed publications. Her research interests include teacher knowledge and preparation in mathematics education. She is currently Co-PI of the Aggie STEM Center and works extensively with public school teachers.

Haiping Hao is a PhD student in the department of Teaching Learning and Culture at Texas A&M University. Her research interests are teaching expertise, teacher education, early childhood education, and multicultural education.

## References

- Apple, M. W. (1992). The text and cultural politics. *Educational Researcher*, 2, 4–13.
- Apple, M. W. (1996). *Cultural politics and education*. New York: Teachers College Press.
- Apple, M. W. (2004). *Ideology and curriculum*. New York: Falmer Press.
- Apple, M. W., & Christian-Smith, L. (1991). The politics of the textbook. In M. W. Smith & L. Christian-Smith (Eds.), *The politics of the textbook*. New York: Routledge, Chapman & Hall.
- Beijing Middle School Textbook Writing Committee. (1973). *Shuxue, diwuce* [Mathematics, Vol. 5]. Beijing, China: Beijing Education Publisher.
- Bernstein, T. P. (1977). *Up to the mountains and down to the villages: The transfer of youth from urban to rural China*. New Haven, CT: Yale University Press.
- Central Committee of the Communist Party of China. (1981). *The resolution on certain questions in the history of our party since the founding of the People's Republic of China*. Beijing, China: People's Publishing House.
- Cross, R., & Price, R. (1987). School physics as technology in China during the great proletarian cultural revolution: Lessons for the West. *Research in Science Education*, 17, 165–174.
- Delaney, S., Charalambous, C. Y., Hsu, H.-Y., & Mesa, V. (2007). The treatment of addition and subtraction of fractions in Cypriot, Irish, and Taiwanese textbooks. In J. H. Woo, H. C. Lew, K. S. Park, & D. Y. Seo (Eds.), *Proceedings of the 31st conference of the international group for the Psychology of Mathematics Education* (Vol. 2, pp. 193–200). Seoul, Korea: PME.
- Elementary School Textbook Writing Committee of Shanghai. (1967). *Shuxue, dishiyice* [Mathematics, Vol. 11]. Shanghai, China: Shanghai Education Publisher.
- Fan, L., & Zhu, Y. (2007). Representation of problem-solving procedures: A comparative look at China, Singapore, and US mathematics textbooks. *Educational Studies in Mathematics*, 66, 61–75.
- Heilongjiang Elementary School Textbook Writing Committee. (1969). *Shuxue, disiyice* [Mathematics, Vol. 4]. Beijing, China: People Education Publisher.
- Hong, W. P. (2009). Reading school textbooks as a cultural and political text: Representations of Asia in geography textbooks used in the United States. *Journal of Curriculum Theorizing*, 25(1), 86–99.
- Mao, Z. (1949). *On the people's democratic dictatorship*. Beijing, China: Xinhua Press.

- Lee, H. (1975). The radical students in Kwangtung during the cultural revolution. *China Quarterly*, 64, 645–83.
- Li, G. (2004). Analysis of ideology in textbooks. *Journal of Huaiyin Institute of Technology*, 13(4), 5–7.
- Li, Y., Chen, X., & An, S. (2009). Conceptualizing and organizing content for teaching and learning in selected Chinese, Japanese and U.S. mathematics textbooks: The case of fraction division. *ZDM—The International Journal on Mathematics Education*, 41, 809–826.
- Li, X., Ding M., Capraro, M. M., & Capraro, R. M. (2008). Sources of differences in children’s understandings of mathematical equality: Comparative analysis of teacher guides and student texts in China and the United States. *Cognition and Instruction*, 26, 195–217.
- Milner, G. (2009). China: Youth and the cultural revolution. *International Journal of Socialist Renewal*. Retrieved October 8, 2010, from <http://links.org.au/node/1326>
- National Bureau of Statistics of China. (2010). *National bureau of statistics of China*, Beijing, China: China Statistics Press.
- Olson, D. R. (1989). On the language and authority of textbooks. In S. de Castell, A. Luke, & C. Luke (Eds.), *Language, authority and criticism: Readings on the school textbook* (pp. 233–244). Philadelphia: Falmer Press.
- Patton, M.Q. (2002). *Qualitative research and evaluation methods*. Thousand Oaks, CA: Sage.
- Patton, M. Q. (1980). *Qualitative evaluation methods*. Thousand Oaks, CA: Sage.
- Peng, H. (2001). Mao Zedong and the personality cult in the Cultural Revolution. *Journal of Wuxi University of Light Industry*, 2(3), 14–18.
- People’s Daily Editorial Board, & Red Flag Journal Editorial Board. (1964). Proletarian revolution and Khrushchev’s revisionism. *Red Flag Journal*, 7(6), 1–34.
- Pinar, W. F. (2004). *What is curriculum theory?* Mahwah, NJ: Erlbaum.
- Renwick, N., & Cao, Q. (1999) ‘China’s political discourse towards the 21st century: Victimhood, identity, and political power’ *East Asia*, 17(4), 111–143.
- Schmidt, W. H., McKnight, C. C., & Raizen, S. A. (1997). *A splintered vision: An investigation of US science and mathematics education*. Dordrecht, The Netherlands: Kluwer.
- Sun, L. (2008) *The people to be discussed*. Guilin, China: Unpublished dissertation in Guangxi Normal University.
- Taxel, J. (1989). Children’s literature: A research proposal from the perspective of the sociology of school knowledge. In S. de Castell, A. Luke, & C. Luke (Eds.), *Language, authority and criticism: Readings on the school textbook* (pp. 32–45). Philadelphia: Falmer Press.
- Tsang, M. C. (2000). Education and national development in China since 1949: Oscillating policies and enduring dilemmas. In Lau C, Shen J (Eds.), *China Review 2000* (pp. 579–618). The Chinese University Press: Hong Kong.
- Westbury, I. (1992). Comparing American and Japanese achievement: Is the United States really an underachiever? *Educational Researcher*, 21(5), 18–24.
- Williams, R. (1989). Hegemony and the selective tradition. In S. de Castell, A. Luke, & C. Luke (Eds.), *Language, authority and criticism: Readings on the school textbook* (pp. 56–60). Philadelphia: Falmer Press.
- Yunnan High School Textbook Writing Committee. (1971). *Shuxue, dijiuce* [Mathematics, Vol. 9]. Kunming, China: Yunann Education Publisher.
- Zhang, L. (2005, October 25). A review of China’s elementary mathematics education. *International Journal for Mathematics Teaching and Learning*, October 25 2005. Retrieved January 28, 2010, from <http://www.cimt.plymouth.ac.uk/journal/zhang.pdf>

Zhou, X., Moen, P., & Tuma, N.B. (1998). Educational stratification in urban China: 1949–94. *Sociology of Education*, 71, 199–222.

