

## Putting Children First

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The American Educator is published quarterly by the American Federation of Teachers, AFL-CIO, 555 New Jersey Avenue, NW, Washington, DC 20001-2079. Telephone: 202-879-4420.

American Educator is mailed to all AFT teacher, higher education and other school-related professional members. Annual subscription price: \$1.75 (included in membership dues) and available only as a part of membership. Subscription for others: \$8.

Signed articles and advertisements do not necessarily represent the viewpoints or policies of the American Federation of Teachers, AFL-CIO.

American Educator cannot assume responsibility for unsolicited manuscripts.

Application to mail at second-class postage rates pending at Washington, DC and additional mailing offices. **Postmaster:** Send address changes to **American Educator**, 555 New Jersey Avenue, NW, Washington, DC 20001-2079.

General advertising office 555 New Jersey Ave., NW Washington, DC 20001 Telephone: 202-879-4420

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Southwest and Midwest Thomas H. Bachman Peter Li, Inc. 1000 N. Lake Shore Drive, Suite 1802 Chicago, IL 60611 312-337-7490 Fax # 312-337-7685

American Educator is produced with the assistance of members of Local 2, Office and Professional Employees International Union, AFL-CIO, and members of AFT Staff Union. Composition and printing are done in 100 percent union shops.

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#### MAGICAL HOPES: MANIPULATIVES AND THE REFORM OF MATH EDUCATION 14 By Deborah Loewenberg Ball

Fraction bars, base-ten blocks, and Popsicle sticks: Is the use of concrete objects such as these the sure road to mathematical understanding? Not so fast, says the author; they're not magic, and if we act as if they are, the trick may be on us and our students.

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Students think they're pretty well prepared for jobs and college, and their parents agree. But employers and college educators say they had better take off the rose-colored glasses.

#### **REACHING BEYOND THE SELF**

#### By Diane Harrington

NOTEBOOK

When ours was a more agrarian society, young adolescents contributed to the common work. Their need to be useful basn't changed, and bere are programs that provide them with meaningful opportunities.

# NOTEBOOK

#### The Medically Fragile Child

At the start of the school year, you find that you have a number of special students in your classroom: One must be regularly catheterized to empty his bladder, a second is diabetic and must receive regular insulin injections, a third has a feeding tube in place, and still another may require specific emergency treatment if stung by a bee. All four of these children are what is termed "medically fragile students." Their number has increased by more than 17 percent in the last ten years, and that number is expected to rise as the mandates of the Individuals with Disabilities Education Act are fully implemented in schools. This swift and sudden influx of a student population in need of complex medical services, coupled with a severe decrease in the numbers of health care personnel, has created a crisis situation in our schools. Many school employees, from teachers to paraprofessionals and bus drivers, are taking on the job of providing health/medical services without appropriate training, supervision, or legal authority. The AFT's new resource guide, The Medically Fragile Child in the School Setting, provides information on the scope of the problem, defines the school nurse's responsibility, and outlines appropriate roles and responsibilities for other members of the education team. It also outlines possible solutions for AFT locals to pursue on behalf of their members. This 82page publication is available from the AFT Order Department, 555 New Jersey Ave., N.W., Washington, DC 20001. The cost is \$1.50 for AFT members, \$5 for nonmembers. Ask for Item #451.





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## LETTERS

#### FROM THE HOUSETOPS

I just wanted to say how much I liked (no, loved) Patrick Welsh's "It Takes Two to Tango" (Spring 1992)—about student laziness.

Hallelujah! Hooray! It's the truth. And it won't change until we keep shouting it from the housetops.

-DR. DANIEL CURZON-BROWN City College of San Francisco

#### **COLUMBUS CONTROVERSY**

In his previously published and already controversial essay on the Spanish conquest of the Americas, reprinted in your Spring 1992 issue, Mario Vargas Llosa chooses to ignore an entire generation of historical work on the pre-Columbian and conquest periods in order to maintain a clean and uncomplicated narrative line. He constructs an opposition between the spirit of Europe-"the Judeo-Christian tradition, the Spanish language, Greece, Rome, the Renaissance, the notion of individual sovereignty, and the chance of living in freedom"-and the "vertical and totalitarian structure," the "antlike societies," that made up the indigenous civilizations. As a consequence, he argues, Native Americans were unable to resist the conquerors. They had no individual initiative, no ability to confront novelty; when their leaders were defeated, the people simply rolled over and died. Today, governments are unable to provide a decent living for their indigenous populations because the Indians, who continue to "live in such a primitive way that communication is practically impossible," resist modernization and assimilation.

The author expresses sympathy for the plight of indigenous peoples and distaste for the "semiliterate, implacable, and greedy swordsmen" who did the dirty deed of conquest. But his narrative line leads him to a single conclusion. In his own words, "[i]f forced to choose" between modernization and the preservation of indigenous cultures, he would choose modernization, "because there are priorities." And that priority, as he concludes the piece, is to create "the definite masterwork we have been preparing ourselves to accomplish since the three caravels stumbled onto our coast." I can only conclude, then, that his first priority is to finish the conquest, and this time to get it right.

Twenty years of historical and ethnohistorical work, on the Andes and Mexico, contradicts Mr. Vargas Llosa's assumptions. The Aztec and Inca empires were not monolithic structures, but complex alliances of distinct peoples in conflict with each other at the time the Spanish arrived. The Indian populations have not been isolated from markets, education, or modernization; they have actively participated in the social and political conflicts of the past 500 years. If inequality and misery have endured, it is not because the conquest came out wrong the first time. but because colonial and postcolonial societies have rebuilt racial hierarchies as a form of social control.

Mario Vargas Llosa is a brilliant novelist; but as a historian, he leaves much to be desired. In his reflections on past and present, his picture of enduring Indian primitiveness and lack of communication is wishful thinking. It is too bad that, in his eagerness to give his novel a happy ending, he avoids confronting the complex and painful questions associated with building more egalitarian, yet still multicultural, societies.

--- FLORENCIA E. MALLON PROFESSOR OF LATIN AMERICAN HISTORY UNIVERSITY OF WISCONSIN-MADISON

#### **COGNITIVE APPRENTICESHIP**

A mix of interesting articles made the Winter 1991 issue of *American Educator* one of the most thought-provoking yet; keep up the good work.

As I read "Cognitive Apprenticeship: Making Thinking Visible," I realized that this past year I had inadvertently begun using one of the techniques described. While explaining a proof to a geometry class, I realized that I didn't know how to do this particular problem, though I'm an experienced geometry teacher. Rather than either bluffing my way through or quitting, I said to the class: "I'll admit it: I'm not sure how to do it. But being a teacher means that even if you don't know something, you know how to know it. Watch and I'll show you what to do when you're really stuck, as I am." And together we drew figures, checked suggestions, argued alternate lines of reasoning, until we got the thing to work and wrote out our finished proof. Since then, that phrase has become part of my teaching, in geometry as well as other classes: "You may not know everything about this (no one does), but you should know how to know it." Then we try specific strategies. My biggest kick is to hear students say, "Mr. Rosenbloom, I know how to know this!"

> —HERBERT G. ROSENBLOOM SAN FERNANDO HIGH SCHOOL SAN FERNANDO, CALIFORNIA

I greatly enjoyed the article on cognitive apprenticeship, which appeared in your Winter 1991 issue. However, I took exception to the footnote appearing on p. 39 that stated:

"For those of you for whom it has been a while since you grappled with college math, let us assure you that you need not follow the substance of the math in this example in order to understand and appreciate what Schoenfeld is doing pedagogically ...."

First of all, the mathematics in the example that followed is, or at least

(Continued on page 48)

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## PUTTING CHILDREN FIRST

#### BY WILLIAM A. GALSTON

THE AMERICAN family has changed dramatically in the past generation, and it is children who have paid the price. From Ozzie and Harriet to the Simpsons, from one breadwinner to two, from child-centered nuclear families that stayed together for the sake of the children to the struggling one-parent families of today; the revolution in the American family has affected us all. Divorce rates have surged, and child poverty has risen alarmingly. The signs are everywhere around us that America's children are suffering—economically, educationally, and emotionally. Although this fact is obvious, indeed increasingly obtrusive, it has hardly been discussed by intellectuals and policy elites until quite recently. Several broad forces—racial conflict, feminism, the culture of individual rights—help explain this odd silence.

The story begins in 1965, with the publication of Daniel Patrick Moynihan's *The Negro Family: The Case for National Action,* which identified the breakdown of the black family as a growing obstacle to racial progress. Although intended as the analytical backdrop to major federal initiatives, it was received as a call for quietism, even as a subtle relegitimation of racism. Black civil rights leaders and white liberal scholars argued that the emphasis on family structure would inevitably divert attention from economic inequalities and would justify "blaming the victims" for the consequences of discrimination. As William Julius Wilson has argued, this enraged response had the consequence of suppressing public debate over, and serious scholarly inquiry into, the relation between black family structure and the problems of the ghetto poor—suppressing it for an entire generation.

Feminism also contributed to the silence. The postwar American women's movement began as a criticism of the 1950s family. "Liberation" meant leaving the domestic sphere for the world of work outside the home. It also meant denying traditional theories of gender difference that seemed to legitimate inequalities of resources, power, and self-respect. To be equal was to be the same: to compete on the same terms as men, with the same focus on individual separateness and independence. As Sylvia Ann Hewlett argues, the unquestionable moral force of the feminist movement muted the voices of those who, though dubious about its denial of gender differences and deeply concerned about its consequences for the well-being of children, did not wish to be accused of a disguised effort to ratify the patriarchal or chauvinist status quo.

Then there was the cultural upheaval of the 1960s, which yielded an ethic of self-realization through incessant personal experimentation, the triumph of what has been termed "expressive individualism." An increasingly influential therapeutic vocabulary emphasized the constraints that relations could impose on personal growth and encouraged adults to turn inward toward the self's struggles for sovereignty, to view commitments as temporary or endlessly renegotiable—to behave, in effect, like adolescents. This vocabulary was anything but hospitable to the discourse of parental continuity, commitment, and self-sacrifice.

A related legacy of the generation just past has been an impoverishment of moral vocabulary. What some regard as a descent into relativism is more accurately

William A. Galston, the author most recently of Liberal Purposes: Goods, Virtues, and Diversity in the Liberal State (Cambridge University Press), teaches at the University of Maryland, College Park. He is an advisor to the Washington, D.C.-based Progressive Policy Institute and a co-editor of The Responsive Community, a new journal that seeks a better balance between rights and responsibilities. This article is an expanded version of an essay that appeared in the December 2, 1991, issue of The New Republic, with material drawn from Putting Children First: A Progressive Family Policy for the 1990s by Elaine Ciulla Kamarck and William A. Galston, published by the Progressive Policy Institute.



characterized as the relentless expansion of morality understood as the articulation of the rights of individuals. This development is not alien to the American experience, and it is not wholly to be deplored. Rights, after all, do support self-respect and offer protection against evils. Still, we now know that there is a difficulty: Although systems of rights can guide some spheres of life tolerably well, they can obscure and distort others. In particular, the effort to understand family relations as the mutual exercise of rights led to a legal and emotional culde-sac.

IN RECENT years, however, the climate has changed. Debates within the black community, and among social democrats as well as conservatives, have helped to relegitimate the discussion of the links between family structure and a range of social ills. To acknowledge such links, it is not necessary to sever the causal connections between structural inequalities at the political and economic level and disintegration at the family level, or to focus exclusively on the "culture of poverty." The point is, rather, that the cultural effects of past discrimination can take on a life of their own, that they can persist even in the face of changing opportunity structures.

The women's movement is changing, too. In place of equality understood as sameness, feminists such as Sara Ruddick, Carol Gilligan, and Jean Bethke Elshtain have embraced categories of difference, nurturance, and care.

#### **BOOKS REVIEWED**

When the Bough Breaks: The Cost of Neglecting Our Children by Sylvia Ann Hewlett (Basic Books, 346 pp., \$22.95)

Divided Families: What Happens to Children When Parents Part

> by Frank F. Furstenberg Jr. and Andrew J. Cherlin (Harvard University Press, 142 pp., \$18.95)

The Illusion of Equality: The Rhetoric and Reality of Divorce Reform by Martha Albertson Fineman (University of Chicago Press, 252 pp., \$27.50)

> Rebuilding the Nest edited by David Blankenhorn, Steven Bayme, and Jean Bethke Elshtain (Family Service America, 264 pp., \$16.95)

Childbood's Future by Richard Louv (Houghton Mifflin, 420 pp., \$21.95)

Brave New Families by Judith Stacey (Basic Books, 328 pp. \$22.95, \$13 paper)

*The Minimal Family* by Jan E. Dizard and Howard Gadlin (University of Massachusetts Press, 304 pp., \$22.95) Martha Albertson Fineman insists that public policy "recognize and accommodate the positive and lasting nature of mothers' ties to their children." Surely this style of feminist argument will prove far more compatible with traditional understandings of the family than anyone could have predicted a decade ago.

And even broader cultural changes are under way, provoked by demographic shifts. Baby boomers who delayed marriage until their thirties have discovered that the moral universe of their young adulthood is not a suitable place for parents with young children. Others have discovered that the casting off of binding relationships is not necessarily the path to liberation and happiness. A generation that once devoted itself to the proliferation of rights and the expression of individuality has begun haltingly to explore counterbalancing notions of responsibility and community; several polls have documented rapid shifts during the past two years in public attitudes toward a range of family issues.

The most important shift is a welcome expansion of concern beyond narrow bounds of race and class. For too long, worries about children and families focused on such issues as teenage pregnancy, dire deprivation, and collapsing marriage rates. These are serious problems, but they are disproportionately characteristic of the ghetto poor. Such measurements, in other words, enabled the American middle class, scholars as well as citizens, to believe that families and children were someone else's problem. But with increased attention to the clash between work and family, to parental time deficits, and to the impact of divorce, the middle class can no longer sustain such an illusion. The decay of the family is its problem, too. The children of the middle class are also at risk; and its choices can be just as shortsighted, selfindulgent, and harmful to the young as any ever contemplated in the culture of poverty.

THESE RECENT trends are at last producing important changes at the level of national politics. For decades, the revolution in the American family evoked a polarized reaction: Liberals talked about structural economic pressures facing families and avoided issues of personal conduct, and conservatives did just the reverse. Liberals habitually reached for bureaucratic responses, even when they were counter-productive, and conservatives reflexively rejected government programs even when they would work.

Both are wrong. Traditional conservatives' support for families is largely rhetorical; their disregard for new economic realities engenders a policy of unresponsive neglect—expressed for example, in President Bush's misguided veto of the Family Leave Act. Conversely, traditional liberals' unwillingness to acknowledge that intact two-parent families are the most effective units for raising children has led them into a series of policy culde-sacs.

Recently, however, this clash of conflicting worldviews has begun to give way to a new spirit of accommodation. As E.J. Dionne Jr. has observed, recent proposals for pro-family tax reform reflect the realization that both values and dollars count. Many younger conservatives are addressing social problems long neglected by their movement. Many younger Democrats, meanwhile, are looking for new forms of nonbureaucratic, There is growing recognition that we must place the family at the center of our thinking about social issues and children at the center of our thinking about the family.

choice-based public activism as a supplement to the frequently cumbersome and intrusive institutions of the welfare state. There is growing recognition that we must place the family at the center of our thinking about social issues and children at the center of our thinking about the family. We need policies that support and compensate families as they carry out their critical social role providing for the economic and moral well-being of children. As we will see, a large body of evidence supports the conclusion that in the aggregate, the intact two-parent family is best suited to this task. Making this premise our point of departure takes us toward policies that *reinforce* families and away from bureaucratic approaches that seek to *replace* family functions.

To avoid misunderstanding, I want to make it clear that

a general preference for the intact two-parent family does not mean that this is the best option in every case. Nor does it mean that all single-parent families are somehow dysfunctional; that proposition would diminish the achievements of millions of single parents who are struggling successfully against the odds to provide good homes for their children. Rather, the point is that at the level of statistical aggregates and society-wide phenomena, significant differences do emerge between one-parent and two-parent families, differences that can and should shape our understanding of social policy.

**I** DO NOT mean to suggest that the renewed emphasis on the family is solely the product of cultural and ideological change. Equally important is a broad process of social learning—a growing (and increasingly painful) awareness of the consequences of the choices that we already have made, individually and collectively, over the past generation.

The economic facts are distressing. As Hewlett summarizes the data: Among all children eighteen years and under, one in five is poor, nearly twice the poverty rate for the elderly; among children younger than six, the rate is almost one in four; among children in families headed by adults younger than thirty, one in three; among black children, almost one in two. And noneconomic trends are no less stark. In the past quarter-century, the amount of time that parents spend with their children has dropped by 40 percent, from thirty hours a week to just seventeen; and there is no evidence that these remaining shreds of parental availability represent "quality time." On the contrary: As social historian Barbara Whitehead reports, "Increasingly, family schedules are intricate applications of time-motion principles."

These stress-filled lives reflect changes in the economy that have prompted momentous shifts in the labor force in this country. Since 1973, under the pressure of declining productivity and mounting international competition, family incomes have stagnated while the relative costs of a middle-class existence-in particular, of homeownership, health care, and higher educationhave soared. Wage prospects have grown increasingly dismal, especially for young people with no more than a high school education. The surge of women into the work force may have begun three decades ago as a cultural revolt against household roles experienced as stifling, but it has been sustained by increasingly urgent economic necessity. Today two-thirds of all mothers with children younger than eighteen do at least some work outside the home, as do more than one-half of all mothers with children under five.

For tens of millions of American families, the second income means the difference between keeping and losing a tenuously maintained middle-class way of life. To be sure, some adjustments at the margin are possible: Young families can live in smaller houses and stop eating at restaurants. Still, the hope of many moral traditionalists that the 1950s family can somehow be restored flies in the face of contemporary market forces. The tension between remunerative work and family time will not be overcome in the foreseeable future—unless increased income from nonmarket sources allows parents with young children to do less work outside the home. Many thoughtful conservatives are coming to the realization that they must choose between their vision of a wellordered family and their desire for smaller, less costly government.

THESE TENSIONS and others have clearly taken their toll. Test scores are down, and not just the much-discussed SATs. At BellSouth in Atlanta, for example, only about 10 percent of job applicants can pass exams that test basic learning ability, versus 20 percent a decade ago. Theft, violence, and the use of illicit drugs are far more prevalent among teenagers than they were thirty years ago; and the rate of suicide among teenagers has tripled.

It is tempting to dismiss these data as one sided, or to interpret them as mere cyclical variations within longerterm stability. After all, virtually every generation in every culture has complained of a decline of the family. But this is an alibi. We must face the fact that the conditions we take for granted are the product of a social revolution that has rapidly unfolded over just the past three decades. And at the heart of this revolution lie changes in family structure.

In thirty years, the percentage of children born outside of marriage has quintupled, and now stands at 18 percent for whites and 63 percent for blacks. In this same period, the divorce rate has tripled, as has the percentage of children living with only one parent. Of white children born in the early 1950s, 81 percent lived continuously until the age of seventeen with their two biological parents; the projected rate for children born in the early 1980s is 30 percent. The corresponding rate for black children has fallen from 52 percent in the 1950s to only 6 percent today.

These structural shifts are responsible for a substantial portion of child poverty. As David Ellwood has observed, "[t]he vast majority of children who are raised entirely in a two-parent home will never be poor during childhood. By contrast, the vast majority of children who spend time in a single-parent home will experience poverty." As Ellwood showed in *Poor Support*, in any given year, fully 50 percent of children in one-parent families will experience poverty, versus 15 percent for those in two-parent families; 73 percent of children from one-parent families will experience poverty at some point during their childhood, versus 20 percent for children from one-parent families; will experience poverty of children from one-parent families; will experience poverty at some point during their childhood, versus 20 percent for children from one-parent families; will experience persistent poverty (seven years or more), versus only 2 percent from two-parent families.

These data suggest that the best anti-poverty program for children is a stable, intact family. And this conclusion holds even for families headed by younger parents with very modest levels of educational attainment. For married high school graduates with children, the 1987 poverty rate was 9 percent, versus more than 47 percent for families headed by female high school graduates. Even for married high school dropouts with children, the poverty rate was 25 percent, versus more than 81 percent for families headed by female high school dropouts. Overall, Frank Furstenberg Jr. and Andrew Cherlin conclude, the differences in family structure go "a long way toward accounting for the enormous racial disparity in poverty rates. Within family types, black families are still poorer than white families; but the racial gap in poverty shrinks considerably when the marital status of the household head is taken into account."

'The vast majority of children who are raised entirely in a two-parent home will never be poor during childhood. By contrast, the vast majority of children who spend time in a single-parent home will experience poverty.'



To BE SURE, the causal arrow could point in the opposite direction: differences in family structure might be thought to reflect differences in economic status. Wilson offered an influential statement of this counterthesis in *The Truly Disadvantaged*: Reduced black marriage rates reflect dramatically higher rates of black male unemployment, which reduces the "male marriageable pool"—under the assumption that "to be marriageable a man needs to be employed." But the most recent research offers only modest support for this hypothesis. Robert Mare and Christopher Winship find that changes in employment rates among young black males account for only 20 percent of the decline in their marriage rates since 1960; they speculate that the various family disruptions of the past three decades may be

self-reinforcing.<sup>1</sup> Though Wilson continues to defend the validity of his thesis for the hard-hit central cities of the Northeast and Midwest, he is now willing to say that "the decline in marriage among inner-city blacks is not simply a function of the proportion of jobless men . . . it is reasonable to consider the effects of weaker social structures against out-of-wedlock births."

Along with family non-formation, family breakup is a potent source of poverty, especially among children. According to a recently released Census Bureau study by Susan Bianchi, who identified and tracked twenty thousand households, it turns out that after their parents separate or divorce, children are almost twice as likely to be living in poverty as they were before the split. The gross income of the children and their custodial parent (usually the mother) dropped by 37 percent immediately after the family breakup (26 percent after adjustment for the decline in family size) and recovered only slightly after sixteen months. These findings support the arguments of scholars who have long contended that divorce under current law spells economic hardship for most custodial parents and their minor children.

As Furstenberg and Cherlin show in their admirably balanced survey of current research, there are at least three sets of reasons for this outcome: Many women bargain away support payments in return for sole custody of their children or to eliminate the need to deal with their former spouses; when awarded, child support payments are on average pitifully inadequate; and many fathers cough up only a portion (at best) of their required payments. A Census Bureau report from the mid-1980s showed that of mothers with court-ordered support payments, only half received all of what they were owed, a quarter received partial payments, and the remaining quarter got nothing at all.

IF THE economic effects of family breakdown are clear, the psychological effects are just now coming into focus. As Karl Zinsmeister summarizes an emerging consensus, "There is a mountain of scientific evidence showing that when families disintegrate children often end up with intellectual, physical, and emotional scars that persist for life. . . . We talk about the drug crisis, the education crisis, and the problems of teen pregnancy and juvenile crime. But all these ills trace back predominantly to one source: broken families."

As more and more children are reared in one-parent families, it becomes clear that the economic consequences of a parent's absence (usually the father) may pale beside the psychological consequences—which include higher than average levels of youth suicide, low intellectual and educational performance, and higher than average rates of mental illness, violence, and drug use.

Nowhere is this more evident than in the longstanding and strong relationship between crime and one-parent families. In a recent study, Douglas Smith and G. Roger Jarjoura found that "neighborhoods with larger percentages of youth (those aged 12 to 20) and areas with higher percentages of single-parent households also have higher rates of violent crime."<sup>2</sup> The relationship is so strong that controlling for family configuration erases the relationship between race and crime and between low income and crime. This conclusion shows up time and time again in the literature; poverty is far from the sole determinant of crime.

While the scarcity of intact families in the ghetto is largely a function of the failure of families to form in the first place, in the larger society the central problem is family disintegration, caused primarily by divorce. This pervasive phenomenon has effects that are independent of economics. It is to these studies that we now turn.

In 1981, John Guidubaldi, then president of the National Association of School Psychologists, picked a team of 144 psychologists in thirty-eight states, who gathered long-term data on seven hundred children, half from intact families, the other half children of divorce. Preliminary results published in 1986 showed that the effects of divorce on children persisted over time and that the psychological consequences were significant even after correcting for income differences.<sup>3</sup>

The problems engendered by divorce extend well beyond vanishing role models. Children need authoritative rules and stable schedules, which harried single parents often have a hard time supplying. As Guidubaldi puts it, "One of the things we found is that children who had regular bedtimes, less TV, hobbies and after-school activities—children who are in households that are orderly and predictable—do better than children who [did] not. I don't think we can escape the conclusion that children need structure, and oftentimes the divorce household is a chaotic scene."

The results of the Guidubaldi study have been confirmed and deepened by Judith Wallerstein's ten-year study of sixty middle-class divorced families. Among her key findings:

• Divorce is almost always more devastating for children than for their parents.

• The effects of divorce are often long lasting. Children are especially affected because divorce occurs during their formative years. What they see and experience becomes a part of their inner world, their view of themselves, and their view of society.

• Almost half the children entered adulthood as worried, underachieving, self-deprecating, and sometimes angry young men and women.

• Adolescence is a period of grave risk for children in divorced families; those who entered adolescence in the immediate wake of their parents' divorces had a particularly bad time. The young people told us time and again how much they needed a family structure, how much they wanted to be protected, and how much they yearned for clear guidelines for moral behavior.<sup>4</sup>

Furstenberg and Cherlin offer a nuanced, but ultimately troubling, account of the noneconomic consequences of divorce. For most children, it comes as an "unwelcome shock," even when the parents are openly quarreling. In the short-term, boys seem to have a harder time coping than girls, in part because of an "escalating cycle of misbehavior and harsh response between mothers and sons." Girls more typically respond with internalized disruption rather than external behavior with heightened levels of anxiety, withdrawal, and depression that may become apparent only years later. These differences reflect the fact that divorce almost always means disrupted relations with the father. It is difficult to overstate the extent of the disruption that typi-*(Continued on page 44)* 

## MAGICAL HOPES

Manipulatives and the Reform of Math Education

#### BY DEBORAH LOEWENBERG BALL

THIS ARTICLE begins with a story from my own teaching of third-grade mathematics.<sup>1</sup>It centers on an unusual idea about odd and even numbers that one of my students proposed.<sup>2</sup> The crux of the story, however, is the response I've received whenever I've shown a segment of videotape from that particular lesson to groups of educators.

First, what happened in the class: One day, as we began class, Sean announced, seemingly out of the blue, that he had been thinking that six could be both odd *and* even because it was made of "three twos." He drew the following on the board to demonstrate his point:



He explained that since three was an odd number, and there were three *groups*, this showed that six could be both even and odd. We had been working with even and odd numbers and exploring patterns that the children had noticed such as, "An even number plus an even number will always equal an even number." At this point, the

Deborah Loewenberg Ball is associate professor of teacher education at Michigan State University in East Lansing. She conducts research on teaching and learning to teach mathematics and is especially interested in problems of changing practice. definition of even numbers that we shared was that a number was even "if you can split it in half without having to use halves":



Six is even because you can split it in half without having to use halves.



*Five is not even because you have to split one in half. Five is odd.* 

Sean was apparently dividing six into *groups of two* rather than into *two groups*. Although the other children were pretty sure that six could not be considered odd, they were intrigued. Mei thought she could explain what he was thinking. She tried:

I think I know what he is saying . . . is that it's, see. I think what he's saying is that you have three groups of two. And three is an odd number so six can be an odd number *and* an even number.

Sean nodded in assent. Then Mei said she disagreed with him. "Can I show it on the board?" she asked. Paus-



ing for a moment to decide what number to use, she drew ten circles and divided them into five groups of two:

0 0/0 0/0 0/0 0/0 0

- Mei: Then why don't you call *other* numbers an odd number and an even number? What about ten? Why don't you call ten an even and an odd number?
- Sean: (*paused*, *studying her drawing calmly and carefully*) I didn't think of it that way. Thank you for bringing it up, and I agree. I say ten *can* be odd or even.
- Mei: *(with some agitation)* What about *other* numbers? Like, if you keep on going on like that and you say that *other* numbers are odd and even, maybe we'll end up with *all* numbers are odd and even! Then it won't make sense that all numbers should be odd and even, because if all numbers were odd and even, we wouldn't be even *having* this discussion!

I think this episode illustrates the dilemma faced by teachers who are committed to respecting students' ideas and yet also feel responsible for covering the curriculum. On the one hand, numbers are not conventionally considered both odd and even. Why not just tell Sean this and clarify for all the students that the definition of an even number does not depend on how many groups of two one can make? On the other hand, Sean was beginning to engage in a kind of activity that is essential to number theory: namely, noticing and exploring patterns with numbers, and, as such, his idea was worth encouraging. As the conversation unfolded in the class, Sean sparked the other children to discover that alternating even numbers (i.e., 2, 6, 10, 14, 18, etc.) had the same property he had first observed with six. Fourteen is seven groups of two, eighteen is nine groups of two, and so on. Each of these numbers is composed of an odd number of groups of two, and could be considered. according to Sean, both odd and even.

I have shown a small portion of the videotape from this class to other educators on several occasions. My intention has been to provoke some discussion about how to handle this situation: Should I seek other students' opinions? Clarify the definition of even numbers? Agree with Mei and move on to the plan for the day? Is this an opportunity or a problem to solve? Every time I show this tape, however, several teachers immediately inquire whether we used manipulatives for our work with even and odd numbers. When I say that we made drawings but did not use any concrete materials, these teachers have argued fiercely that that was "the problem" in this episode: Had I given the children counters as the medium for talking about even and odd numbers, then Sean would not have had this "confusion" about what makes a number even.

This response has baffled me. I am unable to discern how using counters and separating them into groups would have forestalled Sean's discovery that, if you group by twos, some numbers will yield an odd number of groups of two. Couldn't he have just moved six



counters on his desk into three piles of two and made the same observation?

I am not convinced that manipulatives were the key to dealing with Sean's observation. Now, of course, I could have used manipulatives and *told* the children to divide the counters into two equal piles and if one were left over, then the number was odd. In other words, I could have guided their work more firmly, toward the desired conclusions. But I could have done this in guiding their use of drawings as well. However, as a teacher, I am not necessarily interested in preventing the sorts of discoveries that Sean made. Moreover, I do not think that the point being made here had anything to do with whether the students were using manipulatives.

Some teachers are convinced that manipulatives would have been the way to prevent the students' "confusion" about odd and even numbers. This reaction makes sense in the current context of educational reform. In much of the talk about improving mathematics education, manipulatives have occupied a central place. Mathematics curricula are assessed by the extent to which manipulatives are used and how many "things" are provided to teachers who purchase the curriculum. Inservice workshops on manipulatives are offered, are usually popular, and well attended. Parents and teachers alike laud classrooms in which children use manipulatives, and Piaget is widely cited as having "shown" that young children need concrete experiences in order to learn. Some argue that all learning must proceed from the concrete to the abstract. "Concrete" is inherently good; "abstract" inherently not appropriate-at least at the beginning, at least for young learners. Whether termed "manipulatives," "concrete materials," or "concrete objects," physical materials are widely touted as crucial to the improvement of mathematics learning. From Unifix cubes, counters, and fraction pieces to baseten blocks, Cuisenaire rods, and dice, mathematics educators emphasize the role of manipulatives in promoting student learning.

One notable exception to this emphasis on manipulatives can be found in the Professional Standards for Teaching Mathematics (1991) published by the National Council of Teachers of Mathematics (NCTM). The use of manipulatives is not the centerpiece of this document's vision of mathematics teaching. Instead, the Standards hold that teachers should encourage the use of a wide range of "tools" for exploring, representing, and communicating mathematical ideas. "Tools" include concrete models and materials, graphs and pictures, calculators and computers, and nonstandard and conventional notation. Manipulatives-or concrete objectsare important but no more so than other vehicles in NCTM's vision of mathematics teaching and learning. Still, because the passion for manipulatives runs so deep in the current discourse, many people read the Standards as a treatise that puts manipulatives at the center of mathematics teaching.



ANIPULATIVES-and the underlying notion that understanding comes through the fingertipshave become part of educational dogma: Using them helps students; not using them hinders students. There is little open, principled debate about the purposes of using manipulatives and their appropriate role in helping students learn. Little discussion occurs about possible uses of different kinds of concrete materials with different students investigating a variety of mathematical content. Likewise, how to sort among alternatives, distinguishing the fruitful from the flat, receives little attention. Articles in teacher journals, workshops, and new curricula all illustrate how to use particular concrete materials-how to use fraction bars to help students find equivalent fractions, or beansticks to understand computation with regrouping. But rarely are alternative manipulatives compared side by side. For example, in teaching place value, what are the relative merits of baseten blocks and beansticks? Is money an equivalently workable model? How do bundled Popsicle sticks fit with the other options available? Rarely is the relative merit-in a specific context-of symbolic, pictorial, and concrete approaches explored. In teaching fractions, for example, what is gained from using fraction bars? Might drawing one's own pictures offer other opportunities? And rarely is the difficult problem of helping students make connections among these materials examined. Many teachers have seen students operate competently with base-ten blocks in modeling and computing subtraction problems, only to fall back to the familiar "subtract-up" strategy when they move into the symbolic realm.3 This lack of specific talk leaves teachers in the position of hearing that manipulatives are good, maybe even believing that manipulatives can be very helpful, but without adequate opportunities for developing their thinking about them as one of several useful pedagogical alternatives.

A close examination of some widely used instructional materials reveals an assumption that mathematical truths can be directly "seen" through the use of concrete objects: "Because the materials are real, and physically present before the child, they engage the child's senses .... Real materials ... can be manipulated to illustrate the concept concretely, and can be experienced visually by the child" (p. xiv).<sup>4</sup> Teachers' guides also often convey the impression that, when students use manipulatives, they will most likely draw correct conclusions. This approach suggests that the desired conclusions reside palpably within the materials themselves.

One of the reasons that we as adults may overstate the power of concrete representations to deliver accurate mathematical messages is that we are "seeing" concepts that we already understand. That is, we who already have the conventional mathematical understandings *can* "see" correct ideas in the material representations. But for children who do not have the same mathematical understandings that we have, other things can reasonably be "seen":

"Can I have a few of the blue fraction bars—the thirds ones?" asks Jerome. Dina passes him two and he piles them with his other fraction bars. "Is four eighths greater than or less than four fourths?" asks Ms. Jackson. Jerome thinks this is a silly question. "Four eighths has to be more," he says to himself, "because eight is more than four." Lennie, sitting next to him, makes a picture:



"Yup," says Jerome, looking at Lennie's drawing. "That's what I was thinking." But because he knows that he is supposed to show his answer in terms of fraction bars, Jerome lines up two fraction bars and is surprised by the result:

-		

"Four fourths is more?" he wonders. He hears Ms. Jackson saying something about that four fourths means that the whole thing is shaded in, which is the same as what he has in front of him. It doesn't quite make sense, because the pieces in one bar are much bigger than the pieces in the other one. He does not quite understand what's wrong with Lennie's drawing, either. He moves some of the fraction bars around on his desk and waits for Ms. Jackson's next question. She asks, "Which is more—three thirds or five fifths?" Jerome moves two fraction bars in front of him and sees that both have all the pieces shaded. "Five fifths is more, though," he decides, "because there are more pieces."

Jerome is struggling to figure out what he should pay attention to about the fraction models—is it the number of pieces that are shaded? The size of the pieces that are shaded? How much of the bar is shaded? The length of the bar itself?

This vignette illustrates the fallacy of assuming that students will automatically draw the conclusions their teachers want simply by interacting with particular manipulatives. Because students may well see and do other things with the materials, some teachers strive to tightly structure students' use of manipulatives. This is usually done in one of two ways. One way is to use materials that are relatively rigid. For example, if you use fraction bars to find equivalent fractions, it is difficult to come up with anything other than appropriate matches. The materials force you to get the right answers:



Find fractions that are equivalent to  $\frac{1}{2}$ 

It is very hard to go wrong with these materials. Students' answers will likely be what we want: e.g.,  $\frac{4}{8}$ ,  $\frac{2}{4}$ , and so on. Another strategy often used to control students' thinking with manipulatives is to make rules about how to operate with the manipulatives so that students are less likely to wander into other conclusions or ideas. Fuson and Briars, for example, argue that any fruitful approach must lead the child to "construct the necessary meanings by using ... a physical embodiment that can direct their attention to crucial meanings and help constrain their actions with the embodiments to those consistent with the mathematical features of the systems."5 Nesher also emphasizes that any learning system must be built in with clear rules about how to use it.6 For example, bundles of Popsicle sticks are often used to teach addition and subtraction with regrouping. Although the manipulatives in this case are relatively flexible, teachers will usually tell students that they must always group by tens and that when they need to subtract, they cannot do it unless they unbundle an entire group of ten. Without such instructions, many second graders I know would simply remove a few sticks from a bundle-just enough sticks to make the subtraction possible. But instead they follow the rules:



This works very well: Students unbundle a group of ten and count that they have fourteen sticks. Next they take away seven sticks. They then take two bundles of ten sticks away from the remaining three bundles, and they happily write down 17. Their answer is right. Following the rules, they readily arrive at the correct answers. In a sense, the manipulatives are employed as "training wheels" for students' mathematical thinking. However, most teachers have encountered directly the frustration when the training wheels are removed. Students, rather than riding their mathematical "bicycles" smoothly, fall off, reverting to "subtracting up" and other symbol-associated methods for subtraction. Even with close controls over how students work in the concrete domain, there are no assurances about the robustness of what they are learning. These training wheels do not work magic. Seeing students work well within the manipulative context can mislead—and later disappoint—teachers about what their students know.

Y MAIN concern about the enormous faith in the power of manipulatives, in their almost magical ability to enlighten, is that we will be misled into thinking that mathematical knowledge will automatically arise from their use. Would that it were so! Unfortunately, creating effective vehicles for learning mathematics requires more than just a catalog of promising manipulatives. The context in which any vehicle-concrete or pictorial-is used is as important as the material itself. By context, I mean the ways in which students work with the material, toward what purposes, with what kinds of talk and interaction. The creation of a shared learning context is a joint enterprise between teacher and students and evolves during the course of instruction. Developing this broader context is a crucial part of working with any manipulative. The manipulative itself cannot on its own carry the intended meanings and uses.

The need to develop these shared contexts was underscored for me when, in my class, we were using pattern blocks to develop some ideas about fractions. The children were able to build such patterns as:



and to label them as, respectively, two sixths and two thirds. They were able to interpret the two triangles as sixths in the first arrangement and the very same triangular pieces as thirds in the second. This attention to the *unit* is crucial both to understanding fractions in general as well as to using these blocks to develop such understandings. The students were also able to build arrangements that modeled other fractions, such as:



One day they were trying to figure out what one sixth plus one sixth would be. A disagreement developed between those who thought the answer was two sixths and those who thought it was two twelfths. Charlie argued that the answer had to be two twelfths, "because one plus one equals two, and six plus six is twelve."

$$\frac{1}{6} + \frac{1}{6} = \frac{2}{12}$$

(Continued on page 46)

## Geography makes a comeback

FTER YEARS of being lost in an overcrowded social science curriculum, geography is making a comeback. It is one of only five subjects specifically named in the national education goals adopted by the president and the nation's governors in 1990. Some school districts are re-introducing geography as a separate discipline, and—as attested to by the 6 million students who took part in this year's National Geography Bee—student interest is on the rise. In addition, in 1994, the National Assessment of Educational Progress (NAEP), whose reports on students' abilities in math, science, reading, and writing are well known, is scheduled to conduct the first comprehensive nationwide test of what students should know and be able to do in geography in grades four, eight, and twelve.

As educators and geographers join forces to restore geography to a more secure place in the curriculum, they are also trying to change the way it is taught. "A lot of times, if you ask somebody, 'Are you teaching geography?' they'll say, 'Oh, yes, I have all my students learn the state capitals and the nations' capitals.' But that's not the kind of geography we're talking about," Sarah Bednarz, co-coordinator of the Texas Alliance for Geographic Education, recently told *Education Week*. In the first essay of this special geography section, George Demko, former director of the Office of the Geographer for the U.S. State Department, puts the point in perspective: "Knowing countries, states, capitals, and rivers will always have a place in geography—and in the repertoire of well-informed people. But such data should be only the prelude to real geographic discovery . . . . *Real*-world geography is about which way the wind blows from Chernobyl, the Pacific ring of fire, AIDS, terrorists, and refugees. It is about El Niño, ocean dumping, cultural censorship, and droughts and famine."

In the pages that follow, we are pleased to present two lesson plans that exemplify this more analytical geography. Both were developed under the auspices of the National Geographic Society, whose extraordinary financial and organizational commitment make it one of the leading forces behind geography's resurgence.

The first lesson plan shows how medical geography can be used to track the silent route of disease. The second one, the "Bermuda Triangle Mystery," is not only a good exercise in fundamental mapping skills; it also teaches today's video kids a valuable lesson about double-checking facts before believing everything they hear. These lesson plans, adaptable for different age groups, may be reproduced for nonprofit educational use.

As geography receded from the landscape, many teacher degree programs did not require, and often did not offer, courses in geography. With that in mind, Susan Munroe has compiled, as the last part of this section, an impressive list of geography resources for teachers. They range from summer workshops and geography contests to curriculum frameworks and state-based geography networks.

Welcome back, geography!

-EDITOR

## WHERE IS THAT PLACE AND WHY IS IT THERE?

#### BY GEORGE J. DEMKO

WITH JEROME AGEL AND EUGENE BOE

"Pearl Harbor? Who's Pearl Harbor?"—Sally, the cigarette girl, asks on hearing of the Japanese air raid, in Woody Allen's "Radio Days."

W<sup>E</sup> HAVE all seen the alarming statistics: ■ Forty-five percent of Baltimore's junior and senior high school students could not locate the United States on a map of the world.

Twenty-five percent of high school students in Dallas could not name the country directly south of Texas.

Forty percent of high school seniors in Kansas City, Missouri, could not name three of South America's dozen countries.

■ Sixty-nine percent of 2,200 students in North Carolina could not name a single African country south of the Sahara.

In a geography quiz administered to students in many countries, Americans ranked at the bottom.

Much of our place-name "geographical illiteracy" is attributable to the fact that for some time geography had all but disappeared from the curriculum of our high schools while being swallowed up by the "social science" curriculum of our elementary schools. In a survey of three thousand private and public high schools conducted by the United States Department of Education, geographic skills were described as feeble and disturbing. There was little ability, for instance, to interpret and analyze geographical facts as they relate to environment.

The geography bees sponsored by the National Geographic Society every spring are high-powered events that spread the word about basic geography to just about every school in the country. It really is something to hear youngsters respond correctly to such questions as where Mt. Erebus is, which country has the most islands, and what is the most populous English-speaking country in the world after the United States. The winners and runners-up have at the tip of their tongues a ton of information classifiable as "geography." Knowing countries, states, capitals, and rivers will always have a place in geography—and in the repertoire of well-informed people. But such data should be only the prelude to real geographical discovery. One wishes that the winners of the National Geographic contests would use their generous prizes to pursue an education in true geography. They could help to predict terrorist attacks or to map the origin and likely spread of the next plague or to learn what can be done to alleviate famine in Africa or to redirect water supplies. At the local level, attention might be paid to trying to predict school-age population growth for a school district or the future distribution of the aging population.

It is indeed disturbing when a student, or any of us for that matter, cannot locate the major countries and cities on a map of the world. But to the geographer, it is more vexing that most Americans, even our well-educated citizens, do not know the purpose and function of geography. "Where is this place?" "Where is that place?" the questions usually go. A good atlas can answer such questions readily. Rarely are the questions the essential "Why is it there?" or even "How is it connected physically, socially, and intellectually with its neighbors?"

Geography-real-world geography-is the art and science of location, or place. It is about spatial patterns and spatial processes. It is about which way the wind blows from Chernobyl, the Pacific "ring of fire," AIDS, terrorists, and refugees. It is about acid rain, El Niño, ocean dumping, cultural censorship, droughts and famines, and it is about MiTTs. (MiTTs are pure geography, the measured Minutes of Telecommunication Traffic-voice, facsimile, and data transmission on public circuits-information flows between places internationally. MiTTs compute what places are connected geographically in what proportion to other places, creating a critically important map of economic and social interdependence. In terms of MiTTs per 1,000 people, Hong Kong leads the growing spatial process of globalism with 56,296, one third of them to the People's Republic of China, which takes over the British crown colony-island in 1997.)

Geographers, with their expertise on spatial patterns, help plan the layout of new suburbs and the revitalization of cities. They advise on the management and conservation of natural resources. They study voting patterns (over political units) and the migration of "killer" bees (over space). With the analysis of spatial flows and

George J. Demko, a professor of geography at Dartmouth College and the director of the Rockefeller Center for Social Sciences, was director of the Office of the Geographer, U.S. Department of State, from 1984 to 1989. This essay is excerpted from bis new paperback book, Why in the World: Adventures in Geography (\$10), written in collaboration with Jerome Agel and Eugene Boe and published in May by Anchor Books. Copyright © 1992 by Jerome Agel, reprinted with permission.



#### town.)

We are curious about where places are, and now we are adding a more fruitful compound question, What is there—and why? Why is Silicon Valley in northern California and Hollywood in southern California? ("Hollywood" was once in Fort Lee, New Jersey, and Astoria, New York, in the sense that the first movies were produced there; "the Coast" in those days was the East Coast.) Why are so many countries vying for control of the reefs known as the Spratly Islands in the central part of the South China Sea? Why did the physiography of Vietnam and Afghanistan negate the technologically advanced armies of the United States and the Soviet Union? Knowing where something is located is only the precursor question to in-depth knowledge and new insights.

HARVARD UNIVERSITY eliminated its geography department shortly after the second world war. More recently, the universities of Pittsburgh, Michigan, Northwestern, Chicago, and Columbia have eliminated theirs. None has provided a reasonable explanation as to why, except to save money! Geography, when it is taught at all, has become the neglected stepchild of social sciences. Those who are ignorant of history, we have heard a thousand times, are doomed to repeat its mistakes. I know that those who are ignorant of geography are doomed to make costly errors in judgment about space and location.

If colleges required geography for admission, more high schools would start teaching it, and that would help to close the "geography gap." Inasmuch as American students notoriously place near or even at the bottom in geography test scores, they might even learn where things are simply by learning where on a map are those countries with students who outscored them, and then posing the question "Why there?" The study of geography should be reintroduced into the curriculum before the ninth grade as a separate subject, not as a part of social studies or any other grouping. If geographers can convince the rest of us of the depth and breadth of the subject, geography will assume a greater importance than ever in academic education, and the public will insist that geography be brought to their children in a meaningful and exciting way to serve their needs as fully educated human beings.

The boundaries of geography are boundless. They lie beyond infinity. Not even the sky is the limit.

changes, geography provides an understanding of the consequences of events at particular places. It can map the pattern of nuclear and toxic wastes, the spreading population epidemic, the depletion of natural

resources—problems global in nature. Geographers in the good old days were not surprised that the invention of the silk hat led to the formation of many small lakes and bogs in the United States, because there was a reduced demand for beaver furs and the reprieved beavers set about their normal business of reshaping geography. Earlier, they were not surprised that Manhattan was valuable to the British during the American Revolution. Britain was a naval power, the United States had almost no navy. Britain's command of Manhattan Harbor and the strategic waterways leading from it all but cut the fledgling United States in half. (King George's Redcoats were never driven out of New York City; they marched out in formation two years after York-

## **Fighting Cholera with Maps**

### LESSON PLAN

#### **Preview of Main Ideas**

Five hundred people—all from the same section of London, England—died of cholera within a ten-day period in September 1854. Dr. John Snow, a local physician, had been studying the spread of cholera for some time. An early example of medical geography is Dr. Snow's use of maps to prove his long-held theory that cholera was a water-borne infection. Using mapping techniques similar to Snow's, students will analyze maps to see if they can determine the sources of cholera in London. This activity can help students learn how mapping techniques can be used to understand social issues and to solve problems.

#### **Connection with the Curriculum**

This activity can be used in geography, world history, and other social studies classes.

Teaching Level: Grades 6-12

Geographic Themes: Human/Environment Interactions, Movement, Location, Place

#### **Materials**

- One copy of the handouts for each student (Note: Handouts #2 and #3 are both on page 25).
- Handout #1—Cholera
- Handout #2—Map of cholera deaths
- Handout #3—Map of cholera deaths and locations of water pumps
- Overhead projector and overhead transparency of each map (optional)

#### **Objectives**

Students are expected to:

- Examine maps to draw conclusions about cholera deaths in London
- Understand how maps can provide useful information about an issue
- Understand how maps can be used to solve problems

#### **Suggestions for Teaching the Lesson**

#### **Opening the Lesson**

Have students use atlases to locate Great Britain and London. Tell students that in September 1854, during the last great cholera epidemic in Great Britain, five hundred people—all from the same section of London, England—died of the disease within a ten-day period. Bacteria was still unknown. People were panicking. Distribute or read Handout #1 to students.

#### **Developing the Lesson**

Dr. John Snow was a British doctor who had been studying cholera for many years. In trying to determine the source of cholera, Dr. Snow located every cholera death in the Soho district of London by marking the home of each victim with a dot on a map. Distribute Handout #2 to students and have them focus on the distribution of cholera deaths.

Have students formulate questions about the map. (For example: Why is there a cluster of deaths near Broad Street? Why are there fewer deaths on Regent Street?) Ask

students to speculate as to the spread of cholera deaths. Record student responses on the chalkboard. After discussing the distribution of cholera deaths, distribute Handout #3. Again have students examine the cluster of deaths. What relationship might water pumps have to the spread of cholera? Explain to students that, in those days in London, water was supplied by different water companies, and each company had its own water source.

#### **Concluding the Lesson**

Ask students what course of action they would take if they were city officials presented with the information on Dr. Snow's map. Then tell students that Dr. Snow requested city officials to remove the handle from the Broad Street pump, making it impossible to get water there. After his request was granted, the number of new cholera cases in the area declined dramatically—almost to zero. Dr. Snow's theory was confirmed: Cholera was associated with the drinking water supply, and the water was carrying the disease to its victims.

#### **Assessing Student Learning**

Ask students to list the major steps that Dr. Snow took in trying to solve the cholera problem in London. Ask them to answer the following: What if the locations of deaths and locations of water pumps (shown on Handout #3) were different? How might this have altered Dr. Snow's research and course of action? Have students identify particular problems and issues that might be better understood through map development and analysis (for example, the occurrence of auto accidents, tornadoes, earthquakes, or crimes).

#### **Extending the Lesson**

Discuss some of the questions that are important to medical geographers. Where are diseases found? How are diseases spread? Is there a pattern to the spread of disease? Are some diseases more common in some environments than in others? Are the locations of health care facilities important? Are they related to patterns of disease?

Have students research the spread of specific diseases, for example, AIDS, smallpox, malaria, typhoid. If possible, have them use medical atlases for their research and plot the spread of diseases on blank outline maps.

Give students (or have them acquire) information on traffic accidents in your community. (This information should be available from local police or the county sheriff's office.) Plot the accidents on a map and have students formulate questions and draw conclusions based on the data. Perhaps there is need for a stop sign, traffic signal, or lower speed limit in a particular area.

#### **Additional Reading**

Snow, John. *Snow on Cholera*. New York: Hafner, 1965. Stamp, L. D. *The Geography of Life and Death*. Ithaca: Cornell Press, 1964.

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## Cholera

Cholera (also called Asiatic cholera) is a severe infectious disease of the small intestine. It is marked by heavy diarrhea, vomiting, and muscle cramps, and can even result in coma and death. For centuries, it was confined to India, but in the early nineteenth century it began to spread to other parts of Asia, Europe, and the Americas. In the 1970s and 1980s, cholera epidemics occurred in the Middle East and Africa, and there was a localized outbreak of the disease in Naples, Italy. In the 1990s, an epidemic that began in Peru spread to many countries in Latin America.

The disease is contracted by swallowing food or drink—usually water—that is contaminated with a bacterium found in feces. After cholera bacteria are swallowed, they multiply in the small intestine, where they set off an infection that interferes with normal intestinal functions. As a result, rapid painless diarrhea begins. This can cause a great deal of fluid loss—water and essential salts—in a short period of time. In some cases, three to four gallons of fluid loss has been reported in a twenty-four-hour period. In addition, vomiting and other symptoms often develop. Sometimes, however, an infected cholera victim will develop only mild diarrhea and can get rid of the disease through excretion. With prompt treatment, recovery is almost certain. Treatment consists of replenishing the body's fluids until the diarrhea stops. Sometimes antibiotics, such as tetracycline, are administered. Unfortunately, about 50 percent of all those who contract cholera are not treated and die of the disease.

Cholera remains common in impoverished tropical and semitropical developing nations, where poor sanitation and contaminated water are common. Prevention of cholera outbreaks is based on clean food and drinking water. A vaccine can provide partial protection for a limited time, but the vaccine cannot prevent the spread of infection on a large scale.

### HANDOUT 1

### **Map of cholera deaths**



**CUT HERE** 

## Map of cholera deaths and locations of water pumps



ublications Art

HANDOUT 2

HANDOUT 3

## **Bermuda Triangle Mystery**

### LESSON PLAN

#### **Preview of Main Ideas**

The Bermuda Triangle is an area in the Atlantic Ocean where many ships and airplanes supposedly have vanished. In this lesson, students will plot the locations where some of the ships and airplanes disappeared, analyze the distribution of those locations, and form their own conclusions about the mystery of the Bermuda Triangle.

#### **Connection with the Curriculum**

The mapping exercises in this lesson are appropriate for use in social science classes. Reading maps and drawing conclusions are helpful in understanding social issues and in solving problems.

Teaching Level: Grades 6-12

Geographic Themes: Location, Regions

#### **Materials**

- One copy of the handouts for each student
- Handout #1—What is the Bermuda Triangle?
- Handout #2—Map for plotting disappearances in the Bermuda Triangle area
- Handout #3—Where did the disappearances occur?
- Handout #4—Now what do you think?
- Reference atlas

#### **Objectives**

Students are expected to:

- Determine where events occurred by using place names
- Determine locations by using a grid system of latitude and longitude

#### **Suggestions for Teaching the Lesson**

#### **Opening the Lesson**

Distribute Handout #1—What Is the Bermuda Triangle? Ask students to read it.

Distribute Handout #2—Map for plotting disappearances in the Bermuda Triangle area. Have students draw the Bermuda Triangle on the map by referring to the information in Handout #1.

#### **Developing the Lesson**

Distribute Handout #3—Where did the disappearances occur? Have students read it, then answer this question: How many of these seventeen reported disappearances would you expect to fall within the boundaries of the Bermuda Triangle?

Explain to students that they will be plotting the disappearances on their maps. But first, they must locate and label the landmarks cited in the third column of Handout #3. This is necessary because some of the disappearances are listed as a certain distance and direction from a location. For example, the *Mary Celeste* disappeared 500 miles (805 kilometers) east of the Azores. Students need to locate the Azores on their maps. Permit students to refer to atlases for this activity.

Review latitude and longitude and the bar scale, then have students plot the locations of the disappearances on their maps. Have students label each disappearance with a number that corresponds to the listing in Handout #3.

#### **Answer Key:**



#### **Concluding the Lesson**

Have students refer to their maps and respond to the following questions and statements.

- 1. Where did most of the disappearances occur?
- 2. What does the arrangement of disappearances suggest about the mystery of the Bermuda Triangle?
- 3. Have students develop questions about the arrangement on the map. For example, why are there so many disappearances along the eastern seaboard of the United States?
- 4. Have students answer their questions. (One response to the question above might be heavy traffic in shipping lanes.)
- 5. Distribute Handout #4—Now what do you think? Ask students to read it and to comment on it.

#### **Assessing Student Learning**

Have students respond to the following: How can maps help us better understand events? Why is it necessary to know where things are before asking why they are there? Give other examples where maps have been used to solve problems.

#### **Additional Reading**

Kusche, Lawrence David. *The Bermuda Triangle Mystery—Solved.* New York: Harper & Row, 1975.

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### HANDOUT 1

## What Is the Bermuda Triangle?

For several decades, the Bermuda Triangle has attracted media attention. Magazine articles, books, TV specials, and talk shows have reported accounts of ships and air-planes vanishing in the triangle area without explanation and without leaving behind any wreckage or bodies. According to reports, more than a hundred such unexplained incidents have occurred in the past century and a half—but most since 1945. The Bermuda Triangle extends from Bermuda, to the north; to southern Florida, to the west; and to Puerto Rico, to the south.

Theories supporting the supernatural or mysterious aspects of this region abound. Some claim there are electromagnetic disturbances in the area, caused by some unknown atmospheric peculiarity. Others say there is an atmospheric aberration in the area caused by a hole in the sky, or a fourth dimension unknown to us on earth. Believers in this theory contend that some day the hole in the sky will open up and out will come the lost ships with skeletons still on board. Even more extraordinary predictions say the crews of the ships are still alive and the same age as when they vanished, and they will return one day to reveal the secrets of the triangle. Others have speculated that the cause of all the strange happenings in the triangle is a power source left there ages ago by beings from another plant. Beams from this power source have led navigators astray and destroyed their ships.

The most famous disappearance in the triangle is that of Flight 19. This was a group of five U.S. Navy planes that took off from a base in Fort Lauderdale, Florida, in December 1945. The planes were on a routine training mission. The planes took off about 2 P.M. and after they had been airborne about an hour and a half, the pilot of another Navy plane in the area heard the lead pilot report, "I don't know where we are. We must have got lost after that last turn."

The pilot of the Navy plane that heard this radioed the pilot: "MT-28—this is FT-74, what is your trouble?"

The pilot of MT-28 responded: "Both my compasses are out, and I am trying to find Fort Lauderdale, Florida."

FT-74 responded that if MT-28 would "put the sun on your port wing . . . and fly up the coast until you get to Miami, then Fort Lauderdale is 20 miles farther . . . ." Shortly after this, FT-74 lost transmissions from MT-28 and assumed that the planes had flown north out of his range.

Intermittent radio communication between the confused pilot and the land tower and then between the group of planes was maintained until about 7 P.M. It was clear that the pilot of the lead plane was lost. After flying in different directions, MT-28 never did reach its destination. All five pilots must have ditched their planes in rough seas. They were never found. A rescue plane sent out to the area disappeared as well.

In 1918, the USS Cyclops, a Navy ship, sailed from Barbados in the West Indies. It was a large ship, more than five hundred feet long, and carried a crew of more than three hundred. The ship was heading for Norfolk, Virginia, but never arrived. It never radioed that it was in any kind of trouble. It simply vanished.

Such disappearances have combined to create the legend of the Bermuda Triangle. Is it fact or fiction?

-N°03 -N°05 10°S-40°N 20°N °O AFRICA 10°W 10°W IRELAND 0.000 `p` 20°W 20°W Equator 00 10 .0 30°W 30°W AZORES Atlantic Ocean 40°W 40°W 50°W 50°W SOUTH AMERICA 1000 1500 2000 KM 0 200 400 600 800 1000 MI Mercator Projection Scale at Equator BERMUDA SAN JUAN M°08 60°W ----500 0 M.02 200 0 6-9 and the 3 8 80°W W°08 2 MIAMI NORTH AMERICA M.06 W°06 30 Pacific Ocean 100°W 100°W 110°W 110°W •• 20°N-N°03 40°N 10°N-10°S-30°N) °

HANDOUT 2

## Where did the disappearances occur?

Until recently, people who wanted to learn about the Bermuda Triangle could get no clear descriptions of the locations of the disappearances. Few locations were precise. Books and articles about the triangle would say, for instance, that a wreck occurred "near the triangle" or "not far from the triangle" or "in the triangle area."

In 1975, Larry Kusche wrote a book in which he attempted to show the exact location of each disappearance. Kusche did extensive research using a variety of sources, such as old newspapers and U.S. Navy records. In many instances, he was unable to determine exact locations, because no remains had ever been found. But he did succeed in determining the approximate locations of these seventeen disappearances.

#### **Disappearances in the Bermuda Triangle**

Ship or Plane Date **Approximate Location** 1. Bella April 1854 Just off the Cape of San Roque, Brazil 2. Mary Celeste December 1872 500 miles (805 kilometers) east of the Azores 3. Freya October 1902 Off the Mexican coast near Mazatlán 4. Carroll A. Deering January 1921 Off the North Carolina coast, 50 miles (81 kilometers) north of Cape Lookout 5. Raifuku Maru 42°N. 60°W April 1925 6. John and Mary April 1932 600 miles (965 kilometers) northwest of Bermuda and 270 miles (434 kilometers) east of Cape May, New Jersey La Dabama August 1935 38°N, 52°W 8. Gloria Colita February 1940 200 miles (322 kilometers) south of Mobile, Alabama, in the Gulf of Mexico 9. Flight 19 December 1945 29°N, 79°W (east of New Smyrna, Florida) 10. Globemaster March 1950 600 miles (965 kilometers) southwest of Ireland British York Transport 11. February 1953 360 miles (579 kilometers) east-southeast of Gander, Newfoundland 12. Connemara IV September 1955 32°N, 60°W Marine Sulphur Queen February 1963 13. 25°N. 83°W 14. C-119 Flying Boxcar June 1965 Between Crooked Island in the Bahamas and Grand Turk Island 15. Scorpion May 1968 400 miles (644 kilometers) southwest of the Azores 16. **Teignmouth Electron** July 1969 33°N. 40°W 17. V.A. Fogg February 1972 50 miles (81 kilometers) southeast of Galveston, Texas

(Italics indicates ships. Plain text indicates aircraft.)

### HANDOUT 4

### Now what do you think?

As you have seen in the mapping exercises, many ships and planes said to have vanished in the Bermuda Triangle in fact disappeared in areas far from it. Much research supporting the Bermuda Triangle mystery has been sloppy and inept. Few writers on the subject (aside from Larry Kusche in his book *The Bermuda Triangle Mystery— Solved*) have taken the time to double-check the facts before repeating undocumented stories. The disappearance of many ships and planes in the area is not unusual, since downed vessels and aircraft are common in wide stretches of ocean. This area has no more disappearances than any other expanse of ocean. Dramatic accounts of vanishings in perfectly good weather with no apparent cause have proved false, too. In many cases, a ship or plane may have departed in good weather but soon encountered severe storms, high winds, or heavy seas. Much triangle lore fails to mention this. Many accounts of disappearances also ignore the age of the planes and ships and records of repeated mechanical failures.

Why have so many planes and ships vanished without a trace? This is not, in fact, unusual. In many cases, there was a considerable delay between the time of the disappearance and the start of an intensive search. The seas are known to swallow evidence of this sort quickly, or to sweep wreckage far from the scene of an accident. Finding traces of such disasters has been likened to searching for a needle in several haystacks.

Now what do you think about the Bermuda Triangle legend? Why do you think it has become so widespread and popular?

## WHERE IN THE WORLD ARE GEOGRAPHY RESOURCES FOR TEACHERS?

COMPILED BY SUSAN MUNROE

#### **GENERAL READING**

■ The Real World: Understanding the Modern World through the New Geography, 1991, \$35. Houghton Mifflin Co. Edited by Bruce Marshall, this colorful and accessibly written book addresses fundamental questions about the physical and social aspects of the contemporary world. Most book stores stock this volume.

■ The essay that introduces this special geography section is excerpted from *Why in the World: Adventures in Geography,* by George J. Demko, with Jerome Agel and Eugene Boe, published this past May by Anchor Books, available in paperback for \$10. It's a wide-ranging introduction to the "new geography," entertaining as well as highly informative.

#### INSTRUCTIONAL MATERIALS

■ "Fighting Cholera with Maps" and "The Bermuda Triangle Mystery" are both taken from *Directions in Geography: A Guide for Teachers*, 1991, \$29.95. Prepared by the National Geographic Society's Geography Education Program, this 176-page notebook explores geography's multiple dimensions, provides a series of simple-to-sophisticated lesson plans, and contains numerous reproducible outline maps for classroom use. To order, call 1-800-368-2728.

The 1994 Geography Assessment Framework (1992), developed to guide the NAEP Geography Assessment in 1994, is an extremely valuable instructional resource for teachers. Strongly influenced by public concern for our nation's geographic ignorance, it is constructed with one guiding question foremost in mind: What fundamental geographic knowledge, understanding, and applications should students have mastered in order to be informed and productive 21st century citizens? It clearly explains the dynamics of geography education and provides sample questions and objectives to illustrate the cumulative nature of geographic learning. Pre-publication

copies are available from the National Assessment Governing Board, 800 N. Capitol St., N.W., 8th Fl., Washington, DC 20001.

■ The following booklets, based on *Guidelines for Geographic Education: Elementary and Secondary Schools*, are published by the Geography Education National Implementation Project in cooperation with Rand McNally & Co. To order, contact the National Council on Geographic Education, Indiana University of Pennsylvania, Indiana, PA 15705 or call 412-357-6290;

*K-6 Geography: Themes, Key Ideas, and Learning Opportunities,* 1987, \$6.00. This booklet addresses levels of thinking and dimensions of content for elementary students;

7-12 Geography: Themes, Key Ideas, and Learning Opportunities, 1989, \$6.00. The secondary-level volume provides a framework for developing courses of study.

■ Grade 4-6 students participating in National Geographic Kids Network use computers and telecommunications to learn geography with their peers worldwide. For information, contact the NGS's Educational Services Division, P.O. Box 98018, Washington, DC 20090 or call 1-800-368-2728.

#### WORKSHOPS AND NETWORKS

The National Geographic Society's Geography Education Program supports state-based geographic alliances in forty-six states and Puerto Rico. Geographic alliances are grass-roots organizations that bring together the content expertise of academic geographers and the classroom experience of teachers. These alliances conduct annual two- and three-week summer geography institutes and workshops for teachers during the school year. Alliances also develop classroom materials keyed to the local curriculum, coordinate geography awareness activities, and provide a focus for individuals and institutions interested in restoring geography to the curriculum. The Alliance Network also distributes a free newsletter, UPDATE, complete with lesson plans. In 1991, free

annual Geography Awareness Week materials were sent to 150,000 teachers. For more information, write Geography Education Program, National Geographic Society, P.O. Box 37138, Washington, DC 20013-7138 or call 202-775-6701.

#### CONTESTS FOR STUDENTS

■ Scholarships of up to \$25,000 are provided to winning students competing in the annual National Geography Bee, sponsored by the National Geographic Society. More than 6,000,000 students from every state and territory entered the 1992 contest. For more information, call 202-828-5455.

The American Express Geography Competition, open to students in grades 6-12, challenges them to find creative solutions to real-world geography problems. More than \$100,000 in travel awards are presented to winning students and their teachers. For information, call 1-800-395-GLOBE.

#### **PEOPLE AND PLACES**

- National Council for Geographic Education Indiana University of
- Pennsylvania Indiana, PA 15705
- National Geographic Society 17th and M Streets, N.W. Washington, DC 20036
- Association of American Geographers 1710 Sixteenth St., N.W. Washington, DC 20009

#### FOR PARENTS

■ *Helping Your Child Learn Geography*, 1990, 50¢. Geography: Consumer Information Center, Dept. 414Y, Pueblo, CO 81009. Prepared by Carol Sue Fromboluti, this booklet provides games and activities for children age ten and under.

Susan Munroe is consensus coordinator for the 1994 NAEP Geography Assessment Framework Consensus Project. From 1985 to 1989, she developed and implemented the National Geographic Society's Geography Education Program.

#### AMERICAN FEDERATION OF TEACHERS 33

## THE GREAT DIVIDE

Students and Parents Satisfied, Employers and Colleges Not



ONE OF the biggest obstacles to education reform may be students' and parents' overly rosy view of the way things are now. A new study shows a wide gap between what students and their parents think of the students' preparedness for jobs and college versus what their employers and college professors and admissions officers think.

Sponsored by the Committee for Economic Development and conducted by the Harris Education Research Center, the study asked the four different groups to rate students on a list of fifteen attributes seen as key to performance on the job and in higher education (see charts, next two pages). The attributes included students' "ability to read and understand written and verbal instruction"; the capacity to do arithmetic and higher mathematics; to write and read well; to solve complex problems; having disciplined work habits; and "the capacity to concentrate on the work done over an extended period of time."

Here are the report's central findings: "Out of the fifteen key attributes, the *average* positive rating among employers is no better than 30 percent compared with an *average* negative rating of 66 percent. Among college educators, the *average* is 36 percent positive and 62 percent negative for the same fifteen items. "Employers could find only one of the fifteen attributes on which they were able to rate the recent students positive. Educators found only three on which recent students came up positive.

"Most serious by far are the uniformly negative ratings on bedrock attributes that are essential to functioning in a job or in higher education.

"Among employers, only 33 percent report that recent high school graduates have 'the ability to read and understand written and verbal instructions,' while a lower 25 percent say they are 'capable of doing arithmetic functions.' This means that most employers have serious doubts about the functional capability of much of the labor pool from which they must find new employees.

"No more than 30 percent of all employers give a positive response to whether recent students have 'learned to read well,' 22 percent positive on 'learning mathematics well,' and a striking 12 percent positive on 'learning how to write well.'

"Every bit as significant is that no more than 30 percent give a positive rating to recent students 'having the capacity to concentrate on the work done over an extended period of time,' that only 25 percent say they are 'motivated to give all they have to the job they are

#### VIEWS OF COLLEGE EDUCATORS, STUDENTS AND PARENTS

Obudanta Mila Dana Mil

#### Estimates of the level of preparation of recent high school students for higher education

(all estimates expressed as percentages)	Edi	College ucators	We	nt on to Further ucation	Childre on to Ed	Further ucation
	Positive	Negative	Positive	Negative	Positive	Negative
Being able to work cooperatively with fellow students	66	31	79	21	87	13
Having a good attitude toward their teachers	63	35	76	24	81	18
Learning how to dress and behave well	55	42	70	28	85	14
Having both the desire to learn more and the capacity to keep learning more as they move to higher levels of education	48	50	68	32	75	22
Having a good attitude in dealing with the pressure of meeting academic standards	43	56	66	33	74	25
The ability to read and understand written and verbal instructions	41	58	86	14	86	14
Learning how to read well	33	66	80	19	82	18
Being capable of doing arithmetic functions	32	65	74	26	77	23
Being motivated to give all they have to stretching their minds and learning new disciplines	29	70	62	38	73	27
Learning mathematics well	27	69	70	30	71	28
Having a real sense of dedication to learning	26	73	66	34	73	27
Having the capacity to concentrate on their studies over an extended period of time	25	74	59	40	70	27
Having real discipline in their work habits	21	77	60	39	68	29
Learning how to write well	18	80	71	29	77	23
Learning how to solve complex problems	15	83	63	37	71	26
Average	36	62	70	30	77	22

doing,' that 20 percent feel they 'have a real sense of dedication to work,' that only 19 percent feel recent students 'have real discipline in their work habits,' and that 10 percent feel recent students have 'learned to solve complex problems.' All of these attributes, of course, are critical elements in achieving a high level of performance on the job.

"The five remaining attributes show better scores, although only one is in the positive column: a total of 57 percent rate highly the recent students' ability 'to work cooperatively with fellow employees."

Among college educators, "the pattern is slightly more positive in the scores accorded the recent high school graduates who have been accepted for attendance at their institutions of higher learning. But the essential elements show almost all of the same flaws and failures:

"A somewhat higher 41 percent give a positive rating to the 'ability of recent graduates to read and understand written and verbal instruction,' although a lower 32 percent report that they have the capability of doing arithmetic functions.' These are no small problems for those providing these former students higher education.

"Again, only 33 percent report positively on recent students 'having learned to read well,' 27 percent on 'having learned mathematics well,' 18 percent on having learned to write well.' All three, of course, are absolutely basic to any kind of post-high school education.

"Five other answers are particularly disturbing: Only 29 percent give recent students positive marks on 'being motivated to give all they have to stretching their minds and learning new disciplines,' no more than 26 percent report their having 'a real sense of dedication to learning,' 25 percent say they are positive on their 'having the capacity to concentrate on their studies over an extended period of time,' only 21 percent say they 'have real discipine in their work habits,' and no more than 15 percent that they have 'learned how to solve complex problems.

"The five remaining attributes, all essentially dealing with attitude, are more positively rated by the educators than was the case among the employers: For example, 66 percent say recent students are positive about their 'being able to work cooperatively with fellow students and faculty,' and 63 percent say the same about their 'having a good attitude toward their teacher.'"

The most dramatic findingwhat the CED report calls the "reality gap"—is the chasm between the ratings given by students and parents on the one hand, and those from employers and college educators on the other: "The average gap between the positive rating given by employers and that given by students and their parents is no less than forty points among students [30 percent positive versus 70 percent positive] and thirty-five points for parents [30 percent positive versus 65 percent positive]. The picture in terms of higher education is the same, with students 34 percent more positive than educators [36 percent versus 70 percent] and parents an even greater 41 percent more positive [36 percent versus 77 percent].

"To put it succinctly," the CED report observes, "the current crop of students and their parents are deluding themselves. This points up the real necessity of enlisting and informing America's parents about what employers and higher education institutions expect. It also means (and this is even more important) that students and their schools need to be made aware of what standards are demanded. Until this gap is closed, little progress can be made in ensuring that America has a truly educated workforce."

Employers do not escape criticism in the CED report. Only about one-fourth of them now pay "a great deal of attention" to the high school records of their job applicants. This has to change, the report says, because if employers don't make it clear that they care about grades, it becomes much more difficult to motivate the job-bound student to work hard in high school.

A free copy of the sixteen-page report summary, entitled "An Assessment of American Education," is available from: Committee for Economic Development, Distribution Division, 477 Madison Avenue, New York, NY 10022, 212-688-2063.

#### VIEWS OF EMPLOYERS, STUDENTS, AND PARENTS

#### Estimates of the level of preparation of recent high school students for the job market

(all estimates expressed as percentages)	Emį	ployers	Studer G	nts Who ot Jobs	Pa Childro G	rents of en Who ot Jobs
	Positive	Negative	Positive	Negative	Positive	Negative
Being able to work cooperatively with fellow employees	57	41	72	27	77	21
Having both the desire to learn more and the capacity to keep learning more on the job	46	50	69	29	63	37
Good attitude in dealing with those under them	42	45	73	27	71	27
Learning how to dress and behave well	39	58	68	30	68	29
Having a good attitude toward supervisors	39	58	69	30	68	25
Ability to read and understand written and verbal instructions	33	64	78	21	70	27
Having the capacity to concentrate on the work done over an extended period of time	I 30	66	73	27	65	35
Learning how to read well	30	67	78	22	67	30
Motivated to give all they have to the job they are doing	25	71	69	30	69	30
Being capable of doing arithmetic functions	25	72	71	28	66	33
Learning mathematics well	22	74	68	32	65	35
Having a real sense of dedication to work	20	78	73	27	67	33
Having real discipline in their work habits	19	78	70	30	54	43
Learning how to write well	12	84	66	34	56	42
Learning how to solve complex problems	10	86	57	43	48	52
Average	30	66	70	29	65	33

## REACHING BEYOND THE SELF

Service Learning for Middle Schoolers

#### BY DIANE HARRINGTON

FIRST visited a middle school community service program about twelve years ago. It was a two-hour drive from my home; to get there on time, I had to leave at sixthirty in the morning. I remember wondering, given this age group, whether the program could possibly be that special. Shortly after I arrived, we left for the Head Start center where some sixth graders worked each week. I rode with the students in a van, and they were just like the other eleven- and twelve-year-olds I had known: half child, half teen, full of unfocused energy and silliness. Once we got to the center, however, all that changed. I can still remember how surprised I was by their maturity, attentiveness, and sense of responsibility. I followed these youngsters around the classrooms where they worked as assistant teachers, then returned to school with them, where, over lunch, they debated the effectiveness of various methods of discipline. It sounded like a college class for student teachers, I thought.

I had arrived a skeptic. I left a believer.

Nowadays, we hear much more about service learning for middle schoolers and even for younger children. Is what I saw all those years ago, way out on Long Island, typical of service learning programs for this age group? Are these activities worth the time and energy they require? What do they teach our youngsters? Should they be part of the school program for young adolescents?

One of the most compelling arguments in favor of community service is that it gives young adolescents opportunities—mostly absent from their busy but selfinvolved lives—to do valued and needed work. Harold Howe, in remarks he made at Lehigh University in 1986, articulated this argument:

In a society based on the work ethic, work helps to define each one of us. To the extent that we do something useful to the society, we gain a feeling of belonging and contributing that sustains us even when the work we do is dif-

Diane Harrington is director of communications at the National Center for Restructuring Education, Schools, and Teaching (NCREST) at Teachers College, Columbia University, in New York City.





ficult or dull.... [Y] outh has been progressively denied the opportunity to be engaged in work that is important to others and, therefore, denied the rewards such work produces (Howe, p. 7).

The point is a powerful one for those of us who parent or teach young adolescents; we are keenly aware that they do not feel useful or needed or important. Can community service activities help to counteract that negative sense of themselves?

This article chronicles some recent journeys—my visits to school-based programs in different parts of New York City and to the pages of educational literature—in an attempt to answer these questions and to pinpoint the appeal and value of community service for middle schoolers.

I began my journey at Bleeker Junior High School, located in the Queens neighborhood of North Flushing, where solid, middle-class brick and stone homes line quiet streets. The school appears to be an orderly, rather traditional, junior high of about one thousand students. Its ethnic mix is pure New York City: Greek, Italian, African-American, Korean, Latino, and Jewish, among others. A number of recent immigrants have come from Asia and Central America.

This was the first day of community service for six seventh-grade helpers waiting, across the street at P.S. 21, for "their" students to arrive. Jessica's face was radiant, transparent in equal parts anticipation and nervousness. Alexandria, as always was self-contained, but awkwardness showed in the set of her shoulders. Lisa sat forward anxiously, leaning on her elbows. Vito pretended calm, while Eric could scarcely sit still. Angela looked stiff and shy. When the third graders arrived and were introduced and assigned, one to each seventh-grade tutor/mentor, these young helpers turned with relief to the books they had brought along to read aloud.

These books, selected by the helpers on their own at the public library, provided a focus for this first gettogether. Eric and his partner finished theirs in record time and then leafed through a small library on the room's window sill together. Lisa and her partner sat back, starting to look relaxed on the couch. The boy paired with Jessica was easily distracted, though, and looked up each time someone walked by.

When they left, a short half hour later, the helpers were bursting with exuberance. On the way back, they almost danced around science teacher Jean Fazioli, who had accompanied them. Comments and questions came spilling out: "How did it go?" "He wouldn't say anything." "We ran out of things to talk about at the end." "He sure had a lot to say!" "Was I okay?" "I think I was okay."

THESE YOUNGSTERS are part of the Early Adolescent Helper Program, a network of service learning programs, mostly in schools, for ten- to fifteen-year-olds. Based in New York City at the National Center for Service Learning in Early Adolescence, it involves roughly fifteen middle and junior high schools there, as well as others in Louisville (Ky.), Alexandria (Va.), Bucks County (Pa.), and Peekskill (N.Y.). Now in its tenth year, the Helper Program supports schools and community agencies by producing curriculum materials; providing training, technical assistance, and advice; and acting as an advocate for community service for early adolescents.

Actually, founder and director Joan Schine prefers the term "service learning" to "community service." In a study issued in 1989 and updated two years later, *Connections: Service Learning in the Middle Grades*, the Helper Program defined model programs as those that enable young adolescents to perform "real" services for which they are held accountable; that include a strong learning component, with opportunities for training and reflection; and that are led by adults sensitive to and knowledgeable of young adolescents.

The typical "community service" activity, according to Schine, is much more limited than this, taking students on such things as a once-a-year trip to a nursing home to sing Christmas carols or serve a holiday meal. There's nothing wrong with this, she says, except that it could be so much more.

To illustrate this point, Alice Halsted, associate director of the National Center for Service Learning in Early Adolescence, tells a favorite story about one young helper working at a nursing home. One week, as the class was leaving the nursing home, the teacher asked, "How did it go?" "Fine," answered this particular boy. "We kissed Mrs. Klein goodbye and wished her a Happy Easter." The teacher matter-of-factly said, "Good." Later, she filled Halsted in. This boy, she said, didn't let anyone hug or kiss him. He had witnessed a parent die violently and now lived with a grandmother who really didn't like him much. Even she, his teacher and a naturally affectionate woman, wasn't allowed to hug him. The fact that he was kissing his adopted grandmother goodbye was monumentally significant.

"That kind of thing happens with regularity," asserted Halsted. "And then you get on the bus with them and 'rowdy' is too discreet a term to describe their behavior! They swing back and forth from being profound to being ridiculous."

These relationships can be equally significant for the seniors. Ivy Diton, who coordinates community service at Louis Armstrong Middle School, a magnet school in Queens, loves to tell the story about giving a party at the Franklin Nursing Home, where she takes nearly thirty



seventh graders each week. "One of my students had said, 'No one expects anything from these people. Why should they get up? Why should they feed themselves?' He was right, and it shows you how smart they really are. But when we had a party, some of the seniors got dressed for the very first time!"

Service learning gives youngsters the opportunity to take on helping roles over a period of time and enables them to prepare for and reflect on their experiences in other words, to *learn* from them. In one of Diton's seminars, for example—this one for helpers who work at a day care center—the seventh graders prepared case studies of young children, based on close observation of their motor skills and language development. "In this way, they began to see the growth and development of a child," said Diton. "It becomes real to them."

In a weekly seminar, the youngsters are trained for the service they'll perform. Helper Program guides encourage active learning through role playing, simulation exercises, open-ended discussions, and journal writing so that youngsters can explore their new roles and responsibilities. Materials and activities on such topics as child development or aging prepare the helpers for the populations with whom they'll work.

After they begin working at their placements, helpers continue to meet, reflecting on their experiences and helping each other solve whatever problems they encounter. At least one school staff member (the "program leader") takes responsibility for leading the seminar and for coordinating all the program details—finding placements, working with the placement site staff, arranging transportation, and trouble shooting. Some-



times two or more teachers share this role, making it a bit more manageable.

In fact, weeks of preparation preceded that first session for the Bleeker Junior High School Helpers at P.S. 21. The students had been meeting weekly with their program leaders, Jean Fazioli (who accompanied them to P.S. 21) and English teacher Marc Landas. In addition, Helper Program staff led a special training session on reading aloud and tutoring.

Finally, there was an orientation at P.S. 21, conducted by assistant principal Dianne Sandler and guidance counselor Joan Gewurz, the program supervisor. "You're young adults, and we need your help," Gewurz said to the young helpers. She also talked with them about the children with whom they would work. "They all need your help," she said. "Why? Some have bad study habits, some are troubled and have no one to talk to. When you have someone to talk to, your heart is relieved and your mind can work." Later, Sandler underscored this point: "We targeted youngsters having difficulty in third grade," she said, "who were not feeling good about themselves. We thought if we could pair them with 'almost-teenagers,' it would help their self-esteem." "Did it?" I asked her two months later. "They really, really loved it," she answered. "I can't tell you their achievement went up because of this, but I think their attitude was turned around."

"How about the helpers?" I wondered. Like all the adults I met who had been involved in community service with young adolescents, the program leaders were unequivocal in their enthusiasm. Landas articulated his high hopes: "I'm getting a chance to help students become more responsible and more autonomous," he INTEREST IN early adolescence has surged in recent years, particularly since 1989, when the Carnegie Council on Adolescent Development released its provocative report, *Turning Points: Preparing American Youth for the 21st Century.* This aimed at no less than the transformation of the nation's middle grade schools, based on the claim that:

A volatile mismatch exists between the organization and curriculum of middle schools and the intellectual and emotional needs of young adolescents. Caught in a vortex of changing demands, the engagement of many youth in learning diminishes, and their rates of alienation, substance abuse, absenteeism, and dropping out of school begin to rise (Carnegie, pp. 8-9).

Some of Carnegie's specific recommendations have the potential to shake up middle and junior high schools around the country—such as the call to eliminate tracking, to give teachers more control over their schools' instructional programs, and to involve parents in school governance. Another recommendation was that youth service in the community—as exemplified by the Helper Program—should be part of the core program in all middle schools. What links these seemingly diverse recommendations is the interest in and focus on the early adolescent learner. In the foreword to *Turning Points*, David Hamburg, President of the Carnegie Corporation of New York, wrote:

There is a crucial need to help adolescents at this early age acquire durable self-esteem, flexible and inquiring habits of mind, reliable and relatively close human relationships, a sense of belonging in a valued group, and a sense of usefulness in some way beyond the self (Carnegie, p. 12).

But *Turning Points* is not the only recent educational reform report to advocate community service. John Goodlad's *A Place Called School* (1984), Ernest Boyer's *High School* (1983), and Eliot Wigginton's *Sometimes a Shining Moment* (1985) all include proposals and ideas

#### FOR MORE INFORMATION

**I**F YOU would like to find out more about the Helper Program in general, locate service learning programs in your area, consult with staff about starting up community service in your school, or share information with the clearinghouse about your existing program, call or write:

National Center for Service Learning in Early Adolescence Early Adolescent Helper Program CASE/CUNY 25 West 43 Street, Suite 612 New York, NY 10036-8099 (212) 642-2946 Felicia George, Clearinghouse Coordinator for youth service. They're joined by the 1985 report of the Education Commission of the States, *Reconnecting Youth: The Next Stage of Reform*, and the 1988 report of the William T. Grant Foundation Commission on Work, Family, and Citizenship, *The Forgotten Half: Pathways* to Success for America's Youth and Young Families.

Why all this interest in service learning?

Part of what makes it so appealing is its match with the developmental needs of early adolescents. The predominant characteristic of emerging adolescents is change. Alongside the more obvious physical changes of early puberty are many other shifts, all intensely felt: a shift away from parents and toward peers; a move from what Piaget calls concrete to abstract thinking; unpredictable mood swings, including periods of intense self-doubt; a search for adult role models other than parents; the start of an interest in the broader social and political world side by side with seemingly total self-absorption. Overall, the young adolescent is trying to "find" her or himself, testing new values and roles to discover which ones fit.

Community service, according to Schine and to the authors of *Turning Points*, can address many of these needs. Within the confines of a carefully structured experience, like the tutoring at P.S. 21, the young adolescent can try out new skills, experience success in the eyes of others, and see tangible, valued outcomes. When such experiences are based on interpersonal relationships they are usually successful, capitalizing as this does on young adolescents' overriding interest in all matters social.

But there are other powerful arguments for service learning. One is that through these experiences, youngsters can learn or reinforce academic skills. Research indicates, for example, that peer tutors' skills often increase as much or even more than those of tutees (Conrad and Hedin, 1991). This may be true, but it's probably also true that academic skills are learned more efficiently in regular classes. Community service should teach something beyond the academic, something unique and different from the rest of a school's offering. If it doesn't, it may not be worth the effort.

My favorite argument in favor of community service is that it helps youngsters to be more caring. "Some of these kids had never known what it was to care or be responsible," Diton pointed out. "And parents really love this, too. They're so glad their children have a chance to care for someone else, because this is the 'me age.' "

In a 1988 address to the Chief State School Officers, Diton's point was emphasized by David Hornbeck, the former commissioner of education in Maryland:

Learning to care . . . has a place in the public schools. It should not be considered extracurricular. It should be treated as a fundamental part of any self-respecting school that is attempting to nurture young people in their initial quest toward an effective and satisfying adulthood (Hornbeck, pp. 11-12).

Jennifer, a helper from Louis Armstrong, wrote in her journal, "I think the children in my group really enjoy me. We read to them and help them tie their shoes and put on their coats. As the weeks passed, we have to help them less and hug them more. It is like they are becoming family."

A related argument is that community service helps to



create better citizens, young people who understand their interconnectedness with others and have a sense of personal efficacy and worth in that regard. Diton has pointed out, for example, that "helpers are never absent on the day of community service. One time a student was out, and she called the school to make sure we knew." Again and again, program leaders confirm Diton's point that helpers take their responsibilities very seriously.

Consider the words of Katara, another Louis Armstrong helper: "I've learned to be patient," she wrote in her journal. "I am much better with kids than when I first started this program. Now when I babysit, I get better results now that I don't get so mad at the kids."

**S**INCE THE publication of *Turning Points* and *Connections*, according to Schine, interest in community service for early adolescents has blossomed—and so has the number of programs. The Helper Program itself has spread to schools all over the city and country, making it difficult for Schine to say precisely how many youngsters are participating at any given moment.

Each school manages program details in a way that suits its unique circumstances, goals, and constraints. This is intentional, according to Halsted: "What I like about the Helper Program is that we work with schools the way they are." Despite the diversity of details, there are three basic helper models: the child care helper, the after-school helper, and the partners helper. Child care and after-school helpers work with younger children, usually preschoolers or elementary school students, in varied roles: reading aloud, tutoring, helping with homework, supervising on the playground, or whatever else is needed. The partners helper works with the elderly in a senior citizen center, nursing home, or hospital. For each model, the Helper Program has developed a train-



ing guide and a wealth of other materials.

Program leaders have found that having activities to focus on enables early adolescents to be more successful, especially in the very beginning when they're taking on new roles and meeting new people. Child care and after-school helpers, for example, often begin by reading aloud to their students, as the Bleeker Junior High School helpers did. To prepare adolescents for this, the Helper Program has produced a handbook on reading and literacy activities; there's talk about developing one for math and science activities, too.

A fourth kind of helper is the student evaluator. Chosen by their program leaders, helper evaluators collect information about the program from fellow helpers and their "clients." They learn techniques for research and for interpreting data. Halsted, who helped train the student evaluators this year, was thrilled to receive a message from Eric (an evaluator and tutor at Bleeker) one Saturday evening at 7:00: "Every year we give them our business cards and tell them to call us if they have any questions. No one ever did, until now." After returning Eric's call, Halsted explained, "He was a colleague: very matter of fact, not at all shy. He said, 'I have these questions. I want to make sure I do this right.' He'll be interviewing the third-grade teachers at P.S. 21 and the helpers who were not tutors, and he wants to be sure he's using the right questionnaires."

WONDERFUL AS service learning is, it's not an easy launch, as Landas and Fazioli can testify. One difficulty is finding good placements. "I work very hard on placement," Diton pointed out. "I think that's the key. I pick places where I love the people and where they are excited—as excited as I am."

Halstead, who (along with other Helper Program staff)

often helps schools find placements, agreed: "We're looking for people who understand."

There are other obstacles, too, including the ordinary enemies of time and scheduling. The tutoring at P.S. 21, for example, was scheduled for one period, giving the helpers only forty minutes to walk to P.S. 21, work with their students, and walk back. It just wasn't enough time, and they were always late returning. Worse still, the seminar was scheduled during the forty-minute lunch period that followed, so that got cheated, too. "Programs that meet during the lunch period generally don't last beyond the program leader," warned Rebecca Lieberman, program associate at the National Center for Service Learning, although, she conceded, "Historically that has been a typical way to get around scheduling problems."

Most established Helper Programs do meet during the regular school day, however, and give students some kind of credit for participating. (At Bleeker, students got credit and a grade; but, because the program began in the middle of the year, according to Landas and Fazioli, there just wasn't any other way to squeeze it in.) At Louis Armstrong, Diton's seventh-grade helpers—three sections of them, totalling almost ninety students—got credit for "Home and Careers," a course required by New York state.

Scheduling the community service activities after school or on weekends is another approach. At Hillside Middle School in Queens, for example, students work at their placements throughout the week, after school, and on Saturdays, whenever it's convenient for them and the placement sites.

The arrangement at Intermediate School 174 in the Bronx is a bit more formal. Helpers work twice a week after school at the Kips Bay Boys and Girls Club—just down the street from the school. Their program leader, guidance counselor Milt Waltzer, accompanies and supervises them there, like Diton at Louis Armstrong.

On the day I visited, it was noisy inside the wellequipped center—the noise of many young people playing and flirting and working and doing all the things young people do after school. Signs advertised everything from summer camp to parent activities, and as helpers drifted in they were clearly identifiable by the red T-shirts that said, "Kids Helping Kids." Twenty-one of them were there that day, despite the fact that it had been a half-day in school and they had to come from home instead of walking there together. Usually all twenty-five were present, Waltzer said.

Once they had signed in, the youngsters were assigned by Waltzer: some to the tutoring room, some to the library, some to the early childhood room, and one to arts and crafts. "I use my judgment in assigning them," said Waltzer, who clearly knew each student well and tried to match their interests with what was needed by the younger children whose parents had signed them up for this program.

Originally, this was a state-funded "attendance improvement and dropout prevention" program; all the helpers were students designated "at risk" of dropping out of school. But this year the school's attendance level rose, so it was "rewarded" by losing the funds. This created problems for Waltzer and his helpers, since there were no replacement monies to pay for his after-school time. The Helper Program staff sprang into action and assisted him in getting a grant from the Ralph Ogden Foundation.

"All of these kids are at risk in lots of ways. You really wouldn't believe some of their stories," said Waltzer, who grew up and attended school in this district himself. He pointed to Luz, intent on helping a young girl in the library with homework. "She just came to this country four years ago," he said, "and she was in the Helper Program being helped. Now she's a helper."

In the tutoring room, students were crowded around several large tables. They were casual and noisy, but working nonetheless. "Is a dike like a dam?" one girl called across the room. Someone at another table answered her. Roberto was doing math exercises with two boys, and one of them was sulking. "He keeps on getting the answers wrong, and he wants to go to the gym," commented Roberto. Patiently, he turned the paper around and began explaining again.

Charlene, in her second year of high school, stopped by to say hello. Three or four years ago she was Luz's helper. "She really acquainted Luz with America," said Waltzer proudly. Now Charlene has an after-school paying job as "second secretary" to the director of the Boys and Girls Club. She told us she was thinking about becoming a guidance counselor, "like Mr. Waltzer."

In the early childhood room, Jackie, a helper for the third year in a row, said, "I like helping them, hearing them say, 'Thank you.' "

"They come because they're part of something," said Waltzer. "Everybody wants to be part of something." Then he turned toward Lily, who had come to ask him what a crocus is.

THE HELPER Program began in 1982 as a pilot project of the National Commission on Resources for Youth (NCRY). NCRY advocated giving young people more opportunities to be engaged in responsible, productive activities—a concept it called "youth participation." But the focus was mostly on high school and older. Peter Kleinbard, NCRY's director, believed with Schine that younger adolescents could benefit from the same opportunities, as long as activities were structured appropriately. And thus, despite considerable initial skepticism about whether youngsters in this age group could really take on such roles, the Helper Program was born.

When NCRY was dissolved in 1983, the late Harold Proshansky, president of the Graduate Center of the City University of New York, invited Schine to move the Helper Program to CUNY's Center for Advanced Study in Education (CASE), where it remains to this day. "He gave us space and respectability," Schine remembers with a smile. At first, she operated out of a tiny office; later, she moved to a modest suite of four rooms, initially shared with other CASE staff and now filled by Helper Program staff. With quiet persistence and compelling belief in what she sees as a "mission," Schine managed to garner support, one by one, from an impressive list of private foundations and to expand the program's scope.

Recently, a major grant from the DeWitt Wallace-Reader's Digest Fund enabled her to turn a long-time dream into reality by establishing the National Center for Service Learning in Early Adolescence. This builds on and



encompasses the work of the Helper Program, which Schine refers to as "the action arm" of the National Center, adding to it the creation of a clearinghouse of programs across the country—those meeting the Helper Program's standards, that is. "They *must* include the reflection piece," Schine consistently emphasizes.

**I**'LL CLOSE with a stop on Manhattan's Upper West Side, where I spent some time with a group of articulate middle schoolers.

In a comfortably messy classroom, with remnants of science experiments and projects scattered at the periphery, half a dozen seventh graders sat at a table made by pushing desks together, discussing their last semester's community service experiences over lunch. "I was full of joy at first," said Vera about her weekly visits to elderly patients on a ward at Roosevelt Hospital, "but later I got depressed. It was hard. There was only so much we could do."

Shalinda, who visited elderly residents at the Jewish Home and Hospital, disagreed: "When I saw them smile, I felt really good." Then she reminisced about one woman who, the nurses said, wouldn't talk until Shalinda befriended her. "I felt really needed," she said simply.

"Did your visits make a difference?" I asked. "For some people it did," admitted Vera. "Others appreciated us, but we couldn't really help them. All we could do was talk to them."

Aliza, who worked with first and second graders at P.S. 87, a nearby elementary school, was more positive: "The class could get more work done while I was there. And I think it was nice for them to have an older kid there, someone who's not yet an adult."

Vera, Shalinda, Aliza, and the others are students at



Columbus Academy, a magnet middle school (grades six to eight) whose entire seventh grade—a total of sixty-five students—participates in community service once a week for three periods. They choose from among ten sites, including elementary schools, Head Start centers, hospitals, and one veterinary office. Students are also encouraged to find their own placements; this year, for the first time, one did—hence the vet! Most of these are within easy walking distance of the school. Students take a city bus to those a little farther away, using bus passes if they have them or tokens supplied by the school's parent association if they don't. Walking or riding, all travel with at least one partner and the permission of their parents.

This is the Helper Program's fifth year at Columbus Academy. Two years ago, with the help of a federal magnet school grant, it expanded from a small elective program for fifteen to twenty students to a required course for all seventh graders. Four teachers oversee the placements and conduct the training and reflection seminars. Two of them sat quietly with us, letting the students do all the talking: Eric Brand, who teaches social studies, science, writing, Latin, and community service, and has worked with the Helper Program for two years; and Aurea Hernandez, new to the program this year, who teaches science, social studies, writing, family living and sex education, and community service.

Usually, students change placements halfway through the year. This group was about to start working at their second sites, so it was a good time to reflect on last semester's experiences.

"Tell me about some things that have been hard," I asked. Aliza described one girl, in some detail, who frustrated and confused her. On the one hand, she was "wild" and stole other kids' snacks, and, on the other, she called Aliza "Mommy" and wanted to sit in her lap. Vera interrupted to clarify that, "In the seminar, we talk about problems like this. We see if anyone has any ideas about what to do."

"Did they have ideas for you?" I asked Aliza. "Yes," she said. "I should be sure to compliment her when she's doing something good." Her unspoken comment was that she would try, but she doubted that this would be enough.

Doni recalled his placement at P.S. 199, his old elementary school, in a kindergarten class where he worked with two difficult boys in particular: "I think I might have made a difference. Not a big difference. They had problems, but not big problems, and I helped them out."

Marsha, who worked with first and second graders at another elementary school, echoed this feeling: "It wasn't a big thing. There was one kid who would listen to me."

Shalinda, unabashed, insisted, "I think just being there made a difference. It showed somebody cares. This goes for little kids and the elderly." Around the table, heads nodded solemnly, then ducked in shyness; only Shalinda was bold enough to make this claim for all of them.

Curious, I asked, "Does this take time away from what you should be learning in school?" "Oh, no!" they said immediately and almost in unison, the force of their response making me and their teachers smile. "You learn from life, not from textbooks," asserted Marsha with typical adolescent certainty, as though this were an either/or proposition. Ryaz, who worked with four- and five-yearolds at the Brownstone School, a private preschool, added, "This teaches us how life's going to be, how a job's going to be when I get older."

Shalinda, again, voiced what the others could not: "I think I got a little less selfish from doing this. I thought my little problems were the biggest problems in the world. Then I saw that half of them [the seniors she visited] couldn't even get dressed and go to the bathroom alone. I think I grew up a little."

#### REFERENCES AND FURTHER READING

- Carnegie Council on Adolescent Development (1989). Turning Points: Preparing American Youth for the 21st Century. Washington, DC: Author.
- Conrad, Dan and Hedin, Diane (1991). "School-Based Community Service: What We Know from Research and Theory." *Pbi Delta Kappan*, Vol. 72, No. 10. pp. 743-749.
- Hornbeck, David (1988). Values Education and Student Community Service. Address to Community Service Conference, Council of Chief State School Officers.
- Howe, Harold (1986). *Can Schools Teach Values?* Remarks at Lehigh University.
- Lipsitz, Joan (1984). Successful Schools for Young Adolescents. New Brunswick, NJ: Transaction Books.
- National Center for Service Learning in Early Adolescence (1991). Connections: Service Learning in the Middle Grades. New York: Author.
- National Center for Service Leaning in Early Adolescence (1991). *Reflection: The Key to Service Learning*. New York: Author.
- Schine, Joan G. and Harrington, Diane (1982): Youth Participation for Early Adolescents: Learning and Serving in the Community. Fastback #174. Bloomington, IN: Phi Delta Kappan Educational Foundation.

#### **PUTTING CHILDREN FIRST**

(Continued from page 13)

cally occurs. Even in the period relatively soon after divorce, only one-sixth of all children will see their fathers as often as once a week, and close to one-half will not see them at all. After ten years, almost two-thirds will have no contact.

These findings are less than self-interpreting, Furstenberg and Cherlin point out, because they must be compared with the effects on children of intact but troubled families. On the one hand, various studies indicate that the children of divorce do no worse than children in families in which parents fight continuously. On the other hand, a relatively small percentage of divorces result from, and terminate, such clearly pathological situations. There are many more cases in which there is little open conflict, but one or both partners feels unfulfilled, bored, or constrained. Indeed, the onset of divorce in these families can intensify conflict, particularly as experienced by children. As Nicholas Zill observes, "Divorces tend to generate their own problems."

Given the profound psychological effects of divorce, it is hardly surprising to discover what teachers and administrators have known for some time: One of the major reasons for America's declining educational achievement is the disintegrating American family. And if we continue to neglect the crisis of the American family, we will have undercut current efforts at educational reform.

Untangling just what it is about family structure that makes for high or low educational achievement is a difficult task. Clearly the economics of the family have a great deal to do with achievement; children from poor families consistently do less well than do children from non-poor or well-to-do families. Nevertheless, income is clearly not the whole story. When studies control for income, significant differences in educational achievement appear between children from single-parent families and children from intact families.

For example, a study conducted under the auspices of the National Association of Elementary School Principals and the Institute for Development of Educational Activities shows that family background has an important effect on educational achievement above and beyond income level—especially for boys. Lower-income girls with two parents, for instance, score higher on achievement tests than do higher-income boys with one parent. At the very bottom of the achievement scale are lowerincome boys with one parent.<sup>5</sup>

WHAT SHOULD be our response to these developments? The recent literature suggests three broad possibilities. First, we may applaud, with Judith Stacey, the demise of the traditional (rigid, patriarchal) family and the rise of "postmodern" (flexible, variegated, female-centered) arrangements, which are allegedly far more consistent with egalitarian democracy. Second, we may accept Jan Dizard and Howard Gadlin's suggestion that moral change (in the direction of autonomy) and economic change (in the direction of a two-earner, postindustrial economy) have rendered obsolete the older model of the private family; in its place, they advocate a dramatically expanded public sphere on the

It goes something like this. A primary purpose of the family is to raise children well, and for this purpose stably married parents are best. Sharply rising rates of divorce, unwed mothers, and runaway fathers do not represent "alternative lifestyles." They are, instead, most truly characterized as patterns of adult behavior with profoundly negative consequences for children. Families have primary responsibility for instilling traits such as discipline, ambition, respect for the law, and regard for others; and it is a responsibility that cannot be discharged as effectively by auxiliary social institutions such as public schools. This responsibility entails a sphere of legitimate parental authority that should be bolstered-not undermined-by society. It requires personal sacrifice and the delay of certain forms of gratification on the part of parents. It means that government should devote substantial resources to stabilizing families and to enhancing their child-rearing capacity. But at the same time it must minimize bureaucratic cost, complexity, and intrusiveness, working instead to broaden family choice, opportunity, and responsibility.

The willingness to join the languages of economics and morals, and to consider new approaches to old goals, is increasingly characteristic of public discussion of the family. As Barbara Whitehead notes, this approach suffuses the recent report of the National Commission on Children. The volume edited by David Blankenhorn, Steven Bayme, and Jean Bethke Elshtain is particularly strong along the moral dimension. To be sure, it is easy for this stance to give the appearance of ineffectual exhortation. The editors of The New York Times assert that the commission's final report "swims in platitudes." Still, there are eminently practical ways of embedding moral concerns in policies and institutions. Richard Louv argues for moral change focused on the community as much as the individual. He urges us to reweave the tattered "web" of social relationships-parent-school ties, neighborhoods, communal child care arrangements, and the like-that provide a supportive environment for families and help nurture children. Although Louv emphasizes the importance of civil society, he does not imagine that the web can be adequately repaired without major changes in public policy.

Here Louv joins an emerging consensus that differs over details but not over essentials. The point is not to be driven to make a false choice between moral and economic concerns, but rather to combine them in a relation of mutual support. It might well be argued, for example, that the government has a responsibility not to tax away the money that families need to raise children. Four decades ago, the United States had a disguised family allowance: In 1948 the personal exemption was \$600 (42 percent of per-capita personal income), while today's personal exemption is only 11 percent of per-capita income. This meant that a married couple at the median income with two minor dependents paid only 0.3 percent of their 1948 income in federal income taxes, compared to today's 9.1 percent. The 1948 couple's total tax bill (federal, state, and Social Security) was 2 percent of personal income.

Today that total comes to about 30 percent.

Thus, one proposal now gaining support is to raise the personal exemption from the current \$2,050 to at least \$4,000, and perhaps eventually to \$7,500. To make this more affordable, the bulk of the increase could be targeted to young children, and the increase could be phased out for upper-income taxpayers. Another approach, endorsed by the National Commission on Children, would create a \$1,000 tax credit for each child; low-income families that owe no taxes would receive a cash payment for the amount of the credit. (To avoid potentially perverse incentives, this proposal should be coupled with a broader program of welfare reform.)

Reducing the tension between work and family will take changes in the private as well as the public sector. Hewlett, Louv, and many others argue for a "family-oriented workplace" with far more adaptable schedules: more flexible hours, greater opportunities for working at home and communicating by computer, for part-time employment, and for job sharing. Resistance to these changes reflects primarily the ignorance or the obduracy of middle-aged male managers, not negative impact on corporate balance sheets. Much the same is true of unpaid leave for parents following the birth of a child. Studies at the state level indicate that the costs and disruptive effects of such leaves, even when legally mandatory, are minimal. President Bush's opposition to federal family leave legislation is increasingly indefensible.

Adequate reward for labor force participation represents another important link between morals and public policy. If we believe that the presence of a parent who works outside the home furnishes a crucial moral example for his or her children, then surely the community has a responsibility to ensure that full-time work by a parent provides a nonpoverty family income. As Robert Shapiro of the Progressive Policy Institute has argued, the most efficient way to accomplish this goal would be to expand the Earned Income Tax Credit and tie it to family size.

This emphasis on the use of the tax code to promote family opportunity and responsibility is characteristic of a political outlook that has been called "neoprogressive." This is not to suggest that traditional liberal approaches are in every case misguided. Some of them-prenatal care, WIC (the nutrition program for poor women, infants, and children), childhood immunization, and Head Start-efficiently promote the well-being of children and families, and the political consensus supporting their expansion now stretches from KidsPac (a liberal, children-oriented political action committee) and the Children's Defense Fund to the Bush administration and the corporate-based Committee for Economic Development. And yet the neoprogressives are more willing than the traditional liberals to re-examine the programs of the past and to distinguish between what works and what doesn't.

**I**F THE PRIVATE and public sectors must assume greater responsibility for the well-being of families with children, so must parents. In particular, the moral obligation to help support one's biological children persists regardless of one's legal relationship to them, and the law is fully justified in enforcing this obligation. The 1988 Family Support Act requires states to collect the Social Security numbers of both parents (married or unmarried) at birth, to increase efforts to establish contested paternity, to use (as at least rebuttable presumptions) their guidelines concerning appropriate levels of child support, and to move toward collecting all new support awards through automatic payroll deductions.

These are steps in the right direction, but they don't go far enough. Mary Ann Glendon has argued powerfully that a "children first" principle should govern our spousal support and marital property law:

The judges' main task would be to piece together, from property and income and inkind personal care, the best possible package to meet the needs of children and their physical guardian. Until the welfare of the children had been adequately secured in this way, there would be no question of, or debate about, "marital property." All assets, no matter when or how acquired, would be subject to the duty to provide for the children.<sup>6</sup>

Moreover, the state-level reforms mentioned above do nothing to address what is in many cases the chief impediment to support collection: fathers moving from state to state to slow or avoid apprehension. Conflicting state laws and a morass of administrative complexity discourage mothers from pursuing their claims across jurisdictions. Ellwood and others have called for the federalization of the system, with payroll deductions remitted to, and support payments drawn from, a centralized national fund. The U.S. Commission on Interstate Child Support, created by Congress to develop a blueprint for reform, is considering this idea.

Even when child support is collected regularly from absent parents who can afford to provide it, payments are typically set too low to avoid tremendous disruption in the lives of custodial mothers and their children. Writing from very different perspectives, Lenore Weitzman, Martha Albertson Fineman, and Furstenberg and Cherlin converge on the conclusion that the laws and the practices of many states leave men in a far more favorable situation after divorce. Furstenberg and Cherlin cite approvingly a proposal to require noncustodial fathers to pay a fixed proportion of their income, 17 percent to 34 percent, depending on the number of minor children; the adoption of this standard nationwide would raise total child support due by roughly two-thirds. Fineman advocates a need-based approach that would (she argues) yield better results for women and children than would ostensibly egalitarian standards.

During the past generation, the presumption in favor of awarding mothers custody of their children has been replaced in many cases by the presumption of equal claims. This development has generated a rising number of joint custody arrangements that do not, on average, work out very well. It has also worsened the post-divorce economic status of custodial mothers and their children: Because women tend to view custody as a paramount issue, they often compromise on economic matters to avoid the custody battle made possible by the new, supposedly more egalitarian, legal framework. And here, too, scholars from various points on the ideological spectrum are converging on the conclusion that the traditional arrangement had much to recommend it. They propose a "primary caretaker" standard: judges should be instructed to award custody of young children to the parent who has (in the words of a leading advocate) "performed a substantial majority of the [direct] caregiving tasks for the child."

HESE AND similar proposals will help custodial mothers and their children pick up the pieces after divorce, but they will do little to reduce the incidence of divorce. For Furstenberg and Cherlin, this is all that can be done: "We are inclined to accept the irreversibility of high levels of divorce as our starting point for thinking about changes in public policy." Hewlett is more disposed to grasp the nettle. While rejecting a return to the fault-based system of the past, she believes that the current system makes divorce too easy and too automatic. Government should send a clearer moral signal that families with children are worth preserving. In this spirit, she suggests that parents of minor children seeking divorce undergo an eighteen-month waiting period, during which they would be obliged to seek counseling and to reach a binding agreement that truly safeguards their children's future.

The generation that installed the extremes of selfexpression and self-indulgence at the heart of American culture must now learn some hard old lessons about commitment, self-sacrifice, the deferral of gratification, and simple endurance. It will not be easy. But other sorts of gratifications may be their reward. Perhaps the old morality was not wrong to suggest that a deeper kind of satisfaction awaits those who accept and fulfill their essential human responsibilities.

#### REFERENCES

<sup>1</sup>Mare, Robert D. and Winship, Christopher, "Socio-economic Change and the Decline of Marriage for Blacks and Whites." In *The Urban Underclass*, edited by Christopher Jencks and Paul Peterson. Washington, D.C.: The Brookings Institute, 1991.

<sup>2</sup>Smith, Douglas A., Jarjoura, G. Roger, "Social Structure and Criminal Victimization." In *Journal of Research in Crime and Delinquency*, Vol. 25, No. 1, February 1988.

<sup>3</sup>Guidubaldi, J., Cleminshaw, H.K., Perry, J.D., Nastasi, B.K., and Lightel, J., "The Role of Selected Family Environment Factors in Children's Post-Divorce Adjustment." In *Family Relations*, Vol. 35, 1986.

<sup>4</sup>Wallerstein, Judith S., and Blakeslee, Sandra, *Second Chances: Men, Women, and Children a Decade after Divorce.* New York: Ticknor and Fields, 1989.

Sally Banks Zakariya, "Another Look at the Children of Divorce," Principal Magazine, September 1982, p. 35. See also, R.B. Zajonc, "Family Configuration and Intelligence," Science, Vol. 192, April 16, 1976, pp. 227-236. In a later and more methodologically sophisticated study, the authors try to define more completely what it is about two-parent families that make them better at preparing students for educational success. Income clearly stands out as the most important variable; but the close relationship between one-parent status, lower income, and lack of time for things like homework help and attendance at parent teacher conferences-to name a few of the variables considered-led the authors to say that "the negative effects of living in a one-parent family work primarily through other variables in our model." Ann M. Milne, David E. Myers, Alvin S. Rosenthal, and Alan Ginsburg, "Single Parents, Working Mothers, and the Educational Achievement of School Children," Sociology of Education, 1986, Vol. 59 (July), p. 132. <sup>6</sup>Glendon, Mary Ann, Abortion and Divorce in Western Law. Cambridge, MA: Harvard University Press, 1987 (pp. 93-95).

#### **MAGICAL HOPES**

(Continued from page 18)

Most of the children thought that made sense. Dalia disagreed and showed on the overhead with the transparent pattern blocks that the answer had to be two *sixths*:



The other children easily agreed with Dalia. Following this, I thought the manipulative had convincingly helped students move toward the appropriate understanding until I heard Robbie explain, "Both. Both are right, because the answer is two twelfths with numbers, but two sixths with the blocks." Several others murmured assent. Juliette explained, "With numbers you add the one and the one and then you add the six and the six, and so you get two twelfths, but with the blocks, you have two of the one sixths, so you have two sixths." No one seemed at all disturbed that these answers did not correspond, and I realized that to know that these things were supposed to be congruent is something that has to be learned. The students had had plenty of experience with how context can affect both one's perspectives and one's answers. It made sense to them that the answers would vary in this case. They also had experience with mathematics problems having multiple solutions and, to them, this seemed like an example of such a problem. When Soo-Yung noted that Dalia's arrangement was also a picture of two twelfths (two pieces out of twelve). I knew we had a considerable way to go to use these materials toward some common understanding. Of course Soo-Yung was right. As was Dalia. I was beginning to understand how much work we needed to do in considering the question of unit in fractions.

The story of Soo-Yung and Dalia highlights the importance of the language we use around manipulatives. And how, even though they are more concrete than numbers floating on a page, there is much room for multiple interpretation and confusion. We need a lot more opportunity to discuss and develop ways to guide students' use of concrete materials in helping students learn mathematics. We need to listen more to what our students say and watch what they do. We cannot assume that apparently correct—or incorrect—answers, operations, or displays reflect the understandings that they appear to. Most of all, we need to put aside magical hopes for what manipulatives can do as we strive to improve mathematics teaching and learning.

IF WE PIN our hopes for the improvement of mathematics education on manipulatives, I predict that we will be sadly let down. Manipulatives alone cannot—and should not—be expected to carry the burden of the many problems we face in improving mathematics education in this country. The vision of reform in mathematics teaching and learning encompasses not just questions of the materials we use but of the very curriculum we choose to teach, in what ways, to whom, and in what kinds of classroom environments and discourse. It centers on new notions about what counts as worthwhile mathematical knowledge. These issues are numerous and complex. For instance, we need to shift from an emphasis on computational proficiency to an emphasis on meaning and estimation, from an emphasis on individual practice to an emphasis on discussion and on ideas, reasoning, and solution strategies. We need to alter the balance of the elementary curriculum from a dominant focus on numbers and operations to a broader range of mathematical topics, such as probability and geometry. We need to shift from a cut-and-dried, right-answer orientation to one that supports and encourages multiple modes of representation, exploration, and expression. We need to increase the participation, enthusiasm, and success of a much wider range of students. Manipulatives undoubtedly have a role to play in these aims, by enhancing the modes of learning and communication available to our students. But simply getting manipulatives into every elementary classroom cannot possibly suffice to fulfill these aims.

Why not? First of all, much more support is needed to make possible the wise use of manipulatives. Many teachers, who themselves did not learn mathematics represented in a wide range of ways, do not find it easy to distinguish among a variety of models for mathematical ideas, nor to invent them for some ideas. Teaching with manipulatives is not just a matter of pedagogical strategy and technique. Few well-educated adults-not just teachers-can devise or use legitimate representations for many elementary mathematical concepts and procedures-from fractions to multiplication to chance.7 It should not be surprising to discover this. Consider merely the kinds of opportunities to explore and understand mathematics that most adults have had. Although a number are competent with procedures, many have not had the opportunity to develop the accompanying conceptual understandings that are necessary to manage the development of appropriate concrete contexts for learning mathematics and to respond to students' discoveries (e.g., Soo-Yung's observation that the arrangement of triangles on top of hexagons showed that  $\frac{1}{6} + \frac{1}{6} = \frac{2}{12}$ . Most adults simply remember learning that, with fractions, you do not add the bottom numbers. Why not? Few can explain or model it. And still fewer can explain what is going on with Soo-Yung's observation. Modeling addition and subtraction is one thing; modeling probability, factoring, or operations with fractions is another.

We also need to question and talk more openly about what we know about learning and about knowledge. Although kinesthetic experience can enhance perception and thinking, understanding does not travel through the fingertips and up the arm. And children also clearly learn from many other sources—even from highly verbal and abstract, imaginary contexts. Although concrete materials can offer students contexts and tools for making sense of the content, mathematical ideas really do not reside in cardboard and plastic materials.

More opportunities for talk and exchange—not just of techniques, but of students' thinking, of the pitfalls and advantages of alternative models, and of ways of assessing what students are learning—are needed. If manipulatives are to find their appropriate and fruitful place among the many possible improvements to mathematics education, there will have to be more opportunities for individual reflection and professional discourse. Like so many other reforms, these sorts of support imply the need for restructuring. Delivering boxes of plastic links, wooden cubes, and pattern blocks is insufficient to affect the practice of mathematics teaching and learning. At best, such deliveries can alter the surfaces of mathematics classrooms. They do not necessarily change the basic orientation to mathematical knowledge and to what counts as worth knowing. They do not necessarily provide students with conceptual understandings. They are not necessarily engaging for all students. In a few years, the boxes of manipulatives will sadly be collecting dust in the corners of our classrooms, next to the artifacts of our past magical hopes. Manipulatives will continue to play a very important role-both as an appealing lever to motivate and inspire change and as an important tool in teaching and learning. But it is time to stop pretending that they are magic and turn to more serious and sustained talk and work. Then we will begin to move beyond quick fixes and panaceas and face off with the difficult challenge of improving students' learning.

#### ACKNOWLEDGEMENT

I would like to acknowledge several colleagues whose ideas about this article and about the uses of manipulatives have influenced my own thinking: Daniel Chazan, David Cohen, Magdalene Lampert, Dirck Roosevelt, Kara Suzuka, and Suzanne Wilson.

#### REFERENCES

<sup>1</sup>I teach mathematics daily in a local elementary school, in Sylvia Rundquist's third-grade class in East Lansing, Michigan. She and I have been collaborating since 1988; I teach mathematics and she teaches all the other subjects. In our regular meetings (and the conversations in between) we talk about the children, the culture of the classroom we are sharing, and about our role in helping students learn. My aim in this work is to investigate some of the issues that arise in trying to teach mathematics in the spirit of the current reforms (e.g., the NCTM *Standards* [1989, 1991]). It is a kind of research *into* teaching that I see as complementary to other research on teaching.

<sup>2</sup>I have written about this story more extensively in "With an eye on the mathematical horizon: Dilemmas of teaching elementary school mathematics," which will appear in the *Elementary School Journal*. <sup>3</sup>The "subtract-up" strategy, familiar to all elementary teachers, con-

sists of looking at a problem like: 57

#### - 39

and computing 9-7 instead of regrouping to subtract 9 from 17. This is one of the most persistent computational procedures that young children use.

<sup>4</sup>Baratta-Lorton, M. (1976). *Mathematics Their Way*. Menlo Park: Addison-Wesley.

<sup>5</sup>Fuson, K., & Briars, D. (1990). Using a base-ten blocks learning/teaching approach for first- and second-grade place value and multidigit addition and subtraction. *Journal for Research in Mathematics Education*, 21, 180-206.

<sup>6</sup>Nesher, P. (1989). Microworlds in mathematical education: A pedagogical realism. In L. B. Resnick (Ed.), *Knowing, learning and instruction: Essays in bonor of Robert Glaser* (pp. 187-215). Hillsdale, NJ: Erlbaum, p. 188.

<sup>7</sup>In our research (e.g., Ball, 1990), we asked college students and other adults to make up a story, draw a picture, or use concrete objects to model division of fractions:  $1\frac{3}{4} \div \frac{1}{2}$ . Only a very small percentage of adults in any category were able to correctly represent this statement. Most modelled  $1\frac{3}{4} \div 2$  instead of dividing by  $\frac{1}{2}$ . A sizable proportion said that this statement was not possible to model in any meaningful way.



#### **LETTERS** (Continued from page 6)

should be, high school rather than college-level math. But moreover, why let your readers "off the hook" in this way? This footnote is indicative of an attitude that pervades American society and, sadly, our schools, and that plays a major role in the dismally poor math skills demonstrated by American students. This is the attitude that it is okay not to understand mathematics.

There is a great problem in this nation with illiteracy, but at least adult non-readers regard their illiteracy with shame and will go to great lengths to disguise it. In contrast, in a world in which quantitative skills are becoming more and more important, it is still quite socially acceptable to claim "I'm just no good at math." Indeed I have heard these words uttered many times, as I am sure we all have, with almost a certain perverse pride. The idea that there are some people who simply are (innately) "no good at math" is an archaic one that enjoys

virtually no scientific support, is nonsensical as the idea that some people cannot learn to read, and further, is a dangerous idea to be conveying to our students and educators. So long as we continue to provide students with this ready-made alibi, and so long as those teaching them mathematics accept this notion, our students' math skills will not improve.

Sadly, the attitude of which I write is deeply ingrained in American society (but not in many other societies), and will not be easily changed. I have grown accustomed to hearing and reading examples of it on almost a daily basis. But still, I was surprised and disappointed to find such a blatant example of this deleterious attitude in a publication aimed at those who are responsible for educating America's youth. Would American Educator ever include a footnote to the effect that "it is okay if you cannot read the following article?" The place to start in changing this harmful attitude is with ourselves.

> -JOHN D. SEAL FT. WRIGHT, KENTUCKY



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