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EDITOR'S NOTE

Welcome to the second issue of *The Journal of Civic Literacy.*

We are delighted to introduce this issue with an essay by widely respected former Congressman Lee Hamilton, a longtime and ardent proponent of civic literacy and civic engagement, whose Center on Congress has added greatly to the discourse over what skills and information are critical to the maintenance of our democratic system.

The two research articles in this issue address very different subjects, both of which are central to an understanding of the barriers Americans face as we attempt to fashion policies that are consistent with our foundational values. In *Reflections on Scientific Literacy, Worldviews, and Education,* David L. Stocum considers the nature and extent of scientific knowledge required by policymakers and voters in a country and world that is rapidly being remade by science and technology. Stocum raises important questions about the relationship of science and the humanities, the nature of credible evidence, and the effect of scientific illiteracy in a democratic society.

In *Civic Education, Public Education and the African-American Community in Indianapolis: Mending the Fracture*, Johari R. Shuck and Rob Helfenbein report on the conclusions of a methodologically innovative research project focused upon civic identity in Indianapolis' African-American community, and consider the implications for the transmission of civic knowledge and encouragement of civic engagement in marginalized communities. Their findings suggest that formal civics education, even when done well, may not be sufficient to encourage lifelong civic participation.

In partial contrast to the Shuck and Helfenbein thesis, Melinda Cooperman reports on a successful approach being taken by the Marshall-Brennan Constitutional Literacy Project. In *Seeds of Change: Using the Tools of Today to Empower the Leaders of Tomorrow,* Cooperman reports on a project to teach high school students to care about civic issues, especially those connected to the U.S. Constitution. The Project was started in 1999 by Professor Jamin B. Raskin to address the well-documented constitutional illiteracy and civic disengagement of many young people, especially those from marginalized communities.

Taken together, the articles in this issue serve to illuminate the complexities of civic literacy and the barriers to greater civic participation, but as we think you will agree, the authors also suggest some paths forward.

As always, we welcome your comments on these articles, as well as your submission of your own research. Send these to my attention at civlit@iupui.edu.

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We Need an Informed Citizenry

By Lee H. Hamilton
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One of the more disturbing pieces of news that came out during the Iraq war was the large number of Americans who believed that Saddam Hussein was involved with the September 11 terrorists. There has never been any evidence for such a link.

You can pass off this widespread belief as simple confusion, or the result of misleading statements by those with a vested interest in pursuing the Iraq war, but it's nothing to be shrugged away. In a democracy, public misperceptions carry an enormous cost.

Consider the federal budget. If you look at polls surveying how Americans think Congress spends their money, you'll find that Americans consistently respond that Congress spends a large proportion of the federal budget on foreign aid. One-third of respondents to the Pew Research Center's October 2014 poll said that Congress spent more money on foreign aid than any other programs. Another quarter of respondents said that servicing the national debt took more of the federal budget than anything else.

This is just wrong. In truth, the largest single portion of the overall federal budget – some 39 percent of it in 2014 – goes to programs for seniors, primarily Social Security and Medicare. This is followed by defense, which got 22 percent of the budget; welfare, including food stamps and unemployment insurance, at 11 percent; and interest payments of the federal debt, at 6 percent. Foreign aid checked in at just around 1 percent. So

when someone stands up at a public forum and talks about cutting foreign aid as a way of reducing the budget deficit, the truth is that it wouldn't get us very far.

You could argue, I suppose, that this mismatch between the facts and Americans' beliefs doesn't really matter, so long as their representatives in Congress understand what's what. But it's not a very big step from there to suggesting that we should just forget all this talk of democracy and leave the difficult art of governing in the hands of our betters.

The truth is that for our democracy to work, it needs not just an engaged citizenry, but an informed one. We've known this since this nation's earliest days. The creators of the Massachusetts Constitution of 1780 thought the notion important enough to enshrine it in the state's founding document: "Wisdom and knowledge, as well as virtue, diffused generally among the body of the people," they wrote, are "necessary for the preservation of their rights and liberties."

Getting the basic facts right is essential to governing well. The late Senator Patrick Moynihan put it well when he said to an opponent during a floor debate, "You are entitled to your own opinion, but you are not entitled to your own facts." One of the most critical jobs facing political leaders in a society as complex as ours is to forge a consensus among the many people and interests holding competing views. This is difficult enough to do when everyone agrees on the underlying facts; it is virtually impossible when there is no agreement. Voters' misperceptions, in other words, can become formidable obstacles to the functioning of our system of representative democracy.

These misperceptions develop for many reasons. Public policy is often complex. It can be wearying to sort through all the sources of information – the media, advocacy groups, the internet, politicians, commentators – on any given subject. And there are always political leaders, lobbyists, and others who are willing to have misperceptions linger. After all, if you're opposed ideologically to spending tax dollars on foreign aid, it doesn't hurt your cause if people believe we spend ten or twenty times more on it than we actually do.

By the same token, there is no single fix for the problem. Part of the answer lies with members of Congress and other public officials, who should feel great responsibility to correct public misperceptions when they surface. These officials should feel an ever greater responsibility not to lie to the American people or misuse their authority to withhold facts that Americans need to assess and respond to what their government is doing. Yet, in the context of pervasive federal surveillance programs, public officials have too often failed to meet these responsibilities.

Part of the answer lies with the media, which in recent years has shown a worrisome tendency to downplay its role as in-depth civic educator and focus instead on entertainment or once-over-lightly reporting. Too often,

journalists strive to give the appearance of even-handedness by creating a false balance between two sides that do not deserve equal weight.

Part of the answer lies with civic groups – some of them do their level best to counter the flood of misinformation, but they often seem entirely outmatched.

In the end, though, the burden lies with each of us citizens. There are a lot of powerful groups and interests in this country that try to manipulate public opinion, and they're very good at it. Yet, a democratic society depends on the ability of its citizens to separate the fact from the fiction, to form good judgments, and to put pressure on their representatives to act accordingly. If ordinary people can't do this or don't want to devote the time and energy to it, the country suffers.

No matter how good our leadership, if we don't have discriminating citizens, this nation will not work very well. There is an old observation that a society of sheep must in time beget a government of wolves. Living in a democracy may be a basic right, but it is also a privilege, and it is one that must be earned by living up to the fondest dreams of our founders for a well-educated and knowledgeable citizenry. We need citizens with discriminating judgment who grasp core principles in areas such as law, ethics, economics, and science, and understand how to use these to explore and address our collective challenges.

"If a nation expects to be ignorant and free, in a state of civilization, it expects what never was and never will be," Thomas Jefferson once wrote to a friend. Our first duties may be to our families and our immediate communities, but our freedom depends on all of us gaining the civic knowledge and skills needed to identify, and serve, the public interest as well.

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Reflections on Scientific Literacy, Worldviews, and Education

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AUTHOR'S NOTE: I thank Grady Chism, Steve Hinterberger, and the reviewers for their valuable critiques of the manuscript, Tami Barreto for her sharp editorial eye, and David Berfield for reminding me where our worldview begins. (E-mail: dstocum@iupui.edu)

INTRODUCTION

Science is at the core of many of the political, social, and economic issues that dominate modern society. These issues demand that citizens have a level of scientific literacy sufficient to understand the science on which policy arguments and decisions need to be based. Scientific literacy is also vital to maintaining a workforce increasingly reliant on science, and to link with the humanities in a search for truth to better understand our world as a whole.

Scientific literacy can be defined as consisting " … of a knowledge of certain important scientific facts, concepts, and theories; the exercise of scientific habits of mind; and an understanding of the nature of science, its

connections to mathematics and technology, its impact on individuals and its role in society." This definition emerged from two publications by Project 2061 of the American Association for the Advancement of Science (AAAS), titled *Science for all Americans* (Rutherford & Ahlgren, 1989) and *Benchmarks for Science Literacy* (1993). The AAAS, the National Academy of Sciences, and the National Science Teachers Association officially adopted this definition in 1996 (Wren, 2014). More specifically, scientific literacy has been called *civic scientific literacy*, to distinguish it from practical scientific literacy (knowledge that assists in consumer decisions) or cultural scientific literacy (science as a way of knowing) (Shen, 1975). Miller (1998) has referred to the minimum civic scientific literacy as a level of understanding of scientific terms and constructs sufficient to read the Tuesday science section of the *New York Times*, or comprehend an episode of Nova, and to understand the essence of competing arguments on a given dispute or controversy. I will use the term "scientific literacy" throughout this paper to denote civic science literacy, since that is the level at which many of the measurements of scientific literacy are made.

Scientific literacy is an integral part of the wider concept of civic literacy, the knowledge of how to actively participate and initiate change in one's community and the larger society, the foundation on which democratic society functions. A low level of scientific literacy is detrimental to society because it results in less than optimal policymaking in areas requiring scientific knowledge. The essential connection of wide public scientific literacy to the making of sound policy was incisively articulated by Neil Lane, former head of the National Science Foundation: "The successful application of new knowledge and breakthrough technologies … will require an entirely new interdisciplinary approach to policy making: one that operates in an agile problem-solving environment and works effectively at the interface where science and technology meet business and public policy" (Lane, 2006).

This paper is intended to be a series of reflections on the level of scientific literacy in the United States and the relationships between scientific literacy, political and religious ideologies, and the education system within which the acquisition of literacy in general takes place. These relationships play a large role in determining the level of scientific understanding by the public and policymakers and the degree to which scientific concepts and discoveries are accepted or rejected.

MEASURES OF SCIENTIFIC LITERACY

What is the current state of scientific literacy in the United States? In a classic video made at a Harvard graduation ceremony, 25 of 29 graduates interviewed gave an incorrect answer to the question of what causes the seasons. They attributed seasonal climate change to variations in the earth's distance from the sun (such variations are real), but then were unable to explain by this answer why summer and winter are reversed in the northern and southern hemispheres (Nelson, 1999). The correct explanation is that the earth's axis is tilted 23 degrees with respect to the orbital plane. This tilt does not change over the orbital cycle, so the northern

hemisphere receives more sunlight six months out of the year, and the southern hemisphere receives more sunlight during the other six months, reversing summer and winter in the hemispheres.

While different surveys vary somewhat in their results, they indicate that scientific literacy in the United States is low. According to the latest Science and Engineering Indicators report (2014) published by the National Science Foundation, 65% of 2,200 Americans surveyed correctly answered an average of 5.8 factual items on a 9-item test, a performance that has changed little over the past 20 years since the test was adopted. Broken down by educational level, this average was attained by 45% of those who did not complete high school, 78% of those who had completed a bachelor's degree, and 83% of those who had taken three or more science and mathematics courses in college, indicating that factual knowledge of science is strongly related to level of formal education. The most amazing result, however, was that 25% of the respondents did not know that the earth revolves around the sun.

This report also compared performance from 1999-2012 on five questions designed to assess understanding of how science generates and assesses evidence; 33% of those surveyed were able to answer all five questions in both 1999 and 2012. Subsets of these questions assessed understanding of probability (two questions), experimental design (one question), and the scientific method (two questions). Sixty-five percent of those tested answered both probability questions correctly, but only 34% and 20% answered the questions on experimental design and scientific method, respectively.

Miller (2010a, b, c; 2012) conducted a 20-year longitudinal study of 5,000 adults, using a set of open-ended questions (What is a molecule? What is a stem cell?), as well as closed-ended questions (agree or disagree with a statement). He found that only 15% of American adults can explain what a molecule is, and 20% can define what a stem cell is. Even fewer can explain the differences between adult and embryonic stem cells. Nevertheless, the proportion of adults scoring 70 or higher on a scale of zero to 100 nearly tripled from 1988 (10%) to 2008 (29%). In a comparison of 34 countries, the United States was second only to Sweden with respect to scientific literacy. The bad news is that this level is insufficient with respect to the increased scope and complexity of problems today that require scientific understanding, and this insufficiency is a threat to our basic commitment to meaningful democracy, meaning that the science required to argue policy positions is incomprehensible to most citizens (Miller, 2012).

The use of textbook-type general knowledge indicators to measure scientific literacy has been criticized in favor of using a more "asset-based" approach that would measure specific subsets of knowledge, skills, and experience held by different segments of the population to find out what kinds of scientific knowledge matter to the public (Stocklmayer & Bryant, 2012). The problem with this approach is that what appears to matter most to the public is not science, but technology and how to use it, particularly electronic technology. While extremely useful and exciting, awareness of and knowing how to use technology becomes a proxy for basic scientific knowledge of the type discussed above. The best approach would measure both asset-based and

general scientific knowledge. Tests of general scientific knowledge, however, need to be re-designed to include a wide array of factual questions that encompass all broad scientific disciplines and require a greater depth of knowledge, while including more items on scientific process. Asset-based measures, to my knowledge, have yet to be designed, but might include subsets of questions from manufacturing, agriculture, business, and medicine. Finally, an important question that remains to be answered is how to define acceptable qualitative and quantitative baseline levels of scientific literacy.

POLITICS, RELIGION, AND FEAR CLOUD THE PUBLIC VIEW ON SOME SCIENTIFIC ISSUES

A survey of AAAS scientists and non-scientist members of the public by the Pew Research Center (Funk & Rainie, 2015) found that although nearly 80% of the public believe that science has made their life easier and that investments in science pay off in the long run, only 54% view U. S. science and scientists as the best in the world, in contrast to 92% of scientists. The survey also found that scientists and the public are polarized with respect to a number of scientific issues. Scientists are much more likely than the public to view as beneficial such things as vaccination, genetically modified foods, use of pesticides, and use of animals for research. They are also much more likely than the public to view climate change as caused by human activity, and to believe that humans have evolved over time. This polarization in many ways reflects the lower level of scientific literacy of the public compared to scientists, but it also reflects religious and political views, as well as fears based on false or discredited information, as illustrated by the following topics.

The MMR Vaccine

The winter of 2015 saw a nationwide outbreak of measles, a highly contagious childhood disease that by 2000 had been virtually eradicated by vaccination with the combined measles, mumps, and rubella (MMR) vaccine. The resurgence of measles was linked to a refusal by many parents to vaccinate their children against measles out of fear that the vaccine is toxic or causes autism. These fears were reflected in the Pew survey (Funk & Rainie, 2015) in which only 68% of the public favored mandatory vaccination for childhood diseases, versus 86% of scientists. The origin of the resistance to MMR vaccination was a 1998 paper by scientist Andrew Wakefield published in the prestigious medical journal *The Lancet*, claiming that the MMR vaccine was linked to autism and colitis. Several large epidemiological studies subsequently failed to confirm such a link. The paper was eventually determined to be fraudulent and was retracted, but the fear generated by the continued repetition of the falsity has been long lasting and in some cases, deadly.

Safety of GMO Foods

The Pew survey (Funk & Rainie, 2015) indicates that the gap between the public and scientists is greatest over the safety of eating genetically modified (GMO) foods. Only 37% of the public believes these foods are safe, as opposed to 88% of scientists. The Executive Summary of the *ad hoc* Working Group of the Society of Toxicology (2003) reviewed the evidence comparing GMO foods with foods derived by conventional breeding practices and concluded there is little or no reason to believe that genetically modified foods are harmful. Jon Entine,

writing in *Forbes Magazine* (2014) has drawn a similar conclusion. Yet groups that are against eating GMO foods continue to portray them to the public as "Frankenfoods" with potentially dangerous side effects.

Much of the information put out by GMO food opponents is incomplete, distorted, or completely false. Most GMOs are grains and fruits grown from seeds genetically engineered for resistance to drought, cold, herbicides, and pests to increase yields. The main GMO crops are rice, corn, soybeans, cotton, canola, alfalfa, sugar beets, and squash. They constitute a large part of the agricultural economy and are present in supermarkets across the country. The science of GMO foods is embedded in the wider topic of genetic engineering. The sentiment against them might reflect wider fears and religious attitudes toward the biomedical applications of genetic engineering.

Human Evolution

While the Pew survey (Funk & Rainie, 2015) indicated that 65% of the public believes that over time humans have evolved, this is still far below the 98% of scientists who do so. The principle of Darwinian evolution by natural selection over vast spans of time is opposed by creationism, which posits the simultaneous creation of species by a supernatural being. The hypothesis that species diversity has a supernatural cause cannot be tested, and therefore creationism is not by definition a scientific idea, whereas the hypothesis of evolution is falsifiable by geological and biological evidence if it is incorrect. In the 156 years since the publication of Darwin's *The Origin of Species*, however, evolution by the action of natural selection on genetic variation stands as the best explanation for species diversity, based on mountains of anatomical, cellular, and molecular data of extant and extinct species. [For those interested in a fascinating molecular analysis of the evolution of modern humans, see *Neanderthal Man*, by paleogeneticist Svante Pääbo (2014)].

A major issue for the acquisition of scientific literacy about origins is whether creationism, or its pseudoscientific variant, intelligent design, should be taught in the public schools alongside evolution. This issue was settled, at least judicially, in the 2005 bench trial of Kitzmiller v. the Dover Area School District of Pennsylvania (Miller, 2008). After hearing testimony from proponents on both sides of the issue, Judge John E. Jones III issued a 139-page finding of fact and a ruling that intelligent design is not a scientific hypothesis and should not be taught in the schools as science. The judge concluded that the school board was engaging in religious proselytizing under the guise of science. The full text of the ruling can be found at www.talkorigins.org/faqs/dover/kitzmiller_v_dover_decision.html.

Climate Change

The dawn of the industrial age appears to have marked the beginning of a rise in global temperature that has become progressively steeper. Most of the data presented by climatologists suggests that warming is being driven by the destruction of carbon dioxide sinks through deforestation and production of greenhouse gases by the industrial use of fossil fuels. There is a 97% consensus among climatologists that there is a correlation between temperature rise and human activity. The Pew survey (Funk & Rainie, 2015) found that 87% of

scientists (most of whom are not climatologists) subscribe to anthropogenic causes of warming, compared to only 50% of the public. Regardless of cause, the climate change discussion is important because environmental changes brought on by warming presents issues of ecosystem changes, species adaptability, and risks to coastal dwellers by rising sea levels that will have major effects on food chains, health, and economies (McNutt, 2013). Global warming has been linked to the drought currently affecting California and other western areas of the United States; it is speculated that the Central Plains and Southwest will in the future be subjected to long-lasting mega-droughts even more severe than the ones which resulted in the collapse of the Ancestral Pueblo civilizations (Cook, Seager, Miller, & Mason, 2013; Cook, Ault, & Smerdon, 2015).

Anthropogenic contribution to global warming is an issue with major overtones of economic and political ideologies. Those who oppose the human-driven warming hypothesis fear that economic interests will suffer if legislative policies are adopted curtailing the use of fossil fuels in the name of environmental protection and advocating the development of alternative sources of energy. There is a minority of scientists knowledgeable about the physics and chemistry of climate change that do not believe that warming is occurring at an alarming rate, and that natural, non-anthropogenic forces are the primary drivers of warming. The causes and directions of climate change are complex, and we need to have a much more complete understanding of climate variation than we currently possess to make major policy decisions on energy use and other issues (Ash et al., 2013). At the same time, we would be foolish to ignore planning for climate change scenarios just because we don't yet have definitive evidence to be reasonably certain of climate prognosis. Although the US Senate recently voted to state that warming of the climate is not the hoax that a number of politicians have claimed, human contribution to global warming—or even whether warming is occurring at all—is still probably our most politically-charged scientific issue.

Religion and politics, as it turns out, are major forces that both inhibit the acquisition of scientific literacy and constrain the interpretation and use of scientific facts and concepts. I will return to this problem under the topic of scientific literacy and worldview, after first discussing the major role of our educational system in acquiring scientific literacy.

THE ROLE OF OUR EDUCATIONAL SYSTEMS IN ACQUIRING SCIENTIFIC LITERACY

There are many venues by which to acquire scientific literacy: Science and natural history museums, children's museums, zoos, libraries, the Internet (though an argument can be made that access to the Internet decreases literacy of any kind), and scientists such as Neil deGrasse Tyson and Michio Kaku who inform the public through the medium of television. Public scientific presentations are made in libraries and pubs. These are all wonderful educational experiences, and worthy of support. Nevertheless, the primary avenue for acquisition of scientific literacy is our public education system, consisting of grades K-12 and colleges and universities. Our K-12 and higher education system is where worldviews are expanded and solidified, so this system is crucial for learning scientific facts and understanding how science is practiced. The impact that elementary, high

school, and university teachers have on students is enormous, as indicated by the fact that virtually everyone can remember a teacher at any of these levels who made a significant impression on them. If, as Miller (2012) found, scientific literacy has increased by a factor of three over 20 years, it is likely that formal education has played a strong role in the increase, which warrants increased effort to strengthen scientific literacy via our educational system, particularly at the elementary and secondary school levels.

Content and Organization of Science Instruction in the K-12 System

The Pew survey (Funk & Rainie, 2015) indicated that both the public and scientists are critical of the quality of science, engineering, and mathematics taught in K-12. Only 16% of scientists and 29% of the public think that K-12 science education is the best in the world. Twenty-nine percent of the public and 46% of scientists rank it as below average. Seventy-five percent of scientists say an inadequate amount of K-12 science education is a major factor in the public's limited scientific literacy, while another 22% think it is a minor factor.

The content and organization of science and mathematics curricula is of prime importance to the development of scientific literacy. Research on best designs of K-12 science curricula is beyond the scope of this paper, but I would like to make a few general remarks based on personal experiences giving talks to elementary students, judging science fairs, consulting with teachers on high school science curricula, and mentoring high school students on research projects. These experiences have led me to believe that the elementary grades are the most crucial time to begin developing science literacy and connecting science to society at large. Children are naturally curious, with many insightful questions, and have many spontaneous and interesting ideas. They respond well to interactive situations such as demonstrations or hands-on simple experiments. Teachers of elementary science should encourage this curiosity, while showing their students how to use the scientific method to answer questions about the world around them.

To strengthen scientific literacy at the high school level, I have long felt that a makeover with regard to curriculum content and organization is needed. Bruce Alberts, former head of the National Academy of Sciences, has argued that "factoid-filled" K-12 textbooks that provide only overviews of a subject should be replaced with "much shorter curriculum units, each designed to facilitate the active exploration of one important topic in depth for a month or so" (Alberts, 2012). The National Academies has published *A Framework for K-12 Science Education* (2012) that stresses minimizing the number of disciplinary core ideas to be taught to standards and instead emphasizing student participation in key science and engineering practices such as asking questions and defining problems, developing and using models, engaging in argument from evidence; and learning cross-cutting concepts such as energy and matter, cause and effect, and structure and function. Coffey and Alberts (2013) have pointed out that the Framework will require new methods and mechanisms of assessment to avoid using the wrong quantitative measures of success.

The organization of the high school science curriculum is, in my view, backwards. We begin with a general science course or with Biology as a freshman or sophomore. Historically (I am remembering the 10th grade),

Biology seems be the starting point for specific science disciplinary content because it is fairly easy to learn on a superficial level and is directly related to our own structure and function. Chemistry and Physics are viewed as two rungs higher in difficulty and are deferred to the junior and senior years, respectively. Physics last is based on the notion that physics requires four years of mathematics, which is pursued in parallel with science instruction.

Physics is the most fundamental and elemental science of matter, energy, and forces. Chemistry represents the next order of complexity, describing the structural relationships between atoms and molecules, and their functional interactions in chemical reactions. Biological structure, development, and function of individual organisms represents the most complex organization, requiring knowledge of physics, chemistry, and mathematics to understand the functional relationships among organelles, cells, tissues, organs, anatomical systems, morphology, behavior, and disease, and how natural selection evolves populations of organisms. The sequence of physics followed by chemistry, and biology is more logical in terms of organizing our knowledge of how the universe as we know it is built and evolves life, and is followed in European high schools. Clearly, the Europeans do not consider a lack of mathematics to be an impediment to learning physics prior to chemistry and biology. The American Association of Physics Teachers also advocates for Physics First in the American high school science curriculum (AAPT, 2002). Their data indicate that placing physics first in the high school science curriculum has proven equally or more successful in learning physics than the traditional sequence (see Physics First Resources at www.aapt.org/Resources/physicsfirst.cfm).

Other approaches that have been suggested are to teach physics, chemistry and biology each year from the seventh grade on as integrated subjects, or organizing science teaching around broad unifying themes such as health, environment, evolution, and energy (Steen, 1991). The AAAS (1993) and the National Research Council (1996) defined several overarching concepts that appear in all scientific disciplines and build connections between these disciplines. The concepts are (1) systems, order and organization, (2) evidence, models and explanation, (3) constancy, change and measurement, (4) evolution and equilibrium, (5) form and function, and (6) energy. For example, Kitzmann & Otto (2008) have described how these themes can be used in teaching chemistry.

Clearly, the quality of instruction, and thus science literacy, in the K-12 curriculum depends on the extent and quality of training given the teachers who will be designing and implementing science curricula. Assurance of this quality is the responsibility of the university programs that educate K-12 teachers. University teacher education programs, however, vary widely in their mix of emphasis on disciplinary content and education courses and are often looked upon by the “hard science” disciplines as lacking in rigor due to their perceived emphasis on education courses. Science instruction at the elementary level is considered ineffective by most scientists because it is too low in quality and too infrequent. This is due to an inadequate science background of elementary teachers traceable to the fact that of all their college courses, they dislike science the most and avoid it as much as possible (Tilgner, 1990). This dislike is transferred to our children and compromises their

potential to be discerning citizens. Change is possible, however, by demanding greater and more rigorous exposure to science in elementary teacher education curricula.

In my view, the best curricula for preparation of high school teachers are those requiring a major in a discipline such as biology, physics, or mathematics with a minor in education. The need for rigorous instruction in subject matter cannot be overemphasized. Berkman and Plutzer (2015) found, for example, that over half of biology teachers did a poor job of teaching evolution or avoided the subject altogether because they lacked the necessary knowledge to teach evolution properly. In addition, a lack of opportunity to explore and discuss evolution in the light of their personal beliefs also contributed to student's avoidance of the subject, leaving them unable to reconcile their religious beliefs with what they learned about evolution. Interestingly, this problem was greatest in secular universities, which were reluctant to discuss evolution in connection with religious beliefs. Students in Catholic universities, where such discussion took place, were much more comfortable with, and better prepared to teach, evolution.

Knowledge of content matter alone is not enough to ensure that someone will be a good science teacher, although the argument has been made that a disciplinary major is all that is required and that people with university science degrees should be able to bypass requirements for education courses and teacher training to become certified as teachers. Many people with science degrees only who have worked in industry or universities do have an enthusiasm and knack for explaining science, particularly to more advanced students. Most, if not all, however, could profit from research on pedagogy and the developmental and social psychology of children and teenagers, and particularly from the experience of veteran teachers. Students develop at different rates intellectually and socially and have different levels of emotional maturity that affect their response to learning situations. Good teachers understand the best ways to develop their students' mental capacities and personal maturation, and inspire them to want to learn. This requires an ability to integrate age-appropriate science and mathematics content with developmental age, a skill that requires the kind of knowledge obtained through education research.

Another problem in developing scientific literacy is the chronic shortage of high school science teachers, especially in schools that have high numbers of disadvantaged and minority students. The reasons for this are many, but include low prestige and salary, and difficult working conditions, to say nothing of the often impoverished and violent conditions in which these students grow up. Mervis (2015) has reviewed some approaches to increasing the number and quality of science teachers. For example, K-12 schools might take advantage of retired scientists within their communities as volunteers or people who desire to have second careers. The AAAS sponsors a program called Senior Scientists and Engineers (SSE) to promote this idea (Swan, 2013). The NSF-supported Robert Noyce Teacher Scholarship Program has sought since 2002 to increase the number of qualified science teachers in the poorest schools of every state by awarding scholarships to undergraduates who want to be science teachers, and fellowships to persons who already hold an undergraduate degree so they can earn MS degrees in science education. A recent evaluation, however,

indicated that the program has made little overall difference in the level of student achievement or teacher production, despite some individual successes. An argument that makes more sense is that spending money on retaining current science teachers would be more effective, particularly by identifying master teachers and paying them to become models and mentors for less-experienced teachers.

Attempts to inject politics and religion into the schools constitute another impediment to the development of scientific literacy during the K-12 years. This happens most often when teachers introduce such controversial issues as climate change. For example, teachers and administrators have come under attack in their communities for discussion of the hypothesis that human activity is playing a role in warming of the climate (Reardon, 2011). Much of the science taught in the schools is not controversial, but there is nothing wrong with having students explore and discuss controversial science, since such exploration requires more rigorous examination of evidence and thinking that can only enhance scientific literacy. Doing so does require that teachers be well versed on the issues and honest with students about what is known and not known. Scientists, for their part, need to engage with and be supportive of those who are responsible for creating the environment in which students learn.

Public University Education Does Little to Encourage Scientific Literacy

Higher education appears to do little or nothing for scientific literacy, or civic literacy in general. In the eyes of scientists and corporate CEOs, both university provosts and students have an overinflated view of the knowledge and competency acquired by college graduates (Grasgreen, 2014; Funk & Rainie, 2015), consistent with an analysis by Arum and Roska (2011) indicating that undergraduates learn very little during their university years. In studies carried out from 2006-2010, the Intercollegiate Studies Institute (ISI, 2011) found the overall civic literacy of college freshmen and seniors to be extremely low. Furthermore, a university education appeared to exert no influence one way or another on the engagement of graduates in the political process beyond voting. Civic knowledge gained by self-education was more effective than a college degree in encouraging active civic engagement.

In a longitudinal study of young adults (Generation Xers) Miller (2012) found that 44% were scientifically literate, much higher than the general public average of 29%. Miller attributes this performance to the fact that many universities in the United States have a general education requirement to take at least one science course. I do not believe, however, that this finding indicates our universities are doing a good job of undergraduate education. There has always been a strong view that universities (particularly large state universities) are more interested in research and big-time athletics than undergraduate education (this does not apply to most liberal arts colleges, or community colleges). This view has intensified over the last two decades as tuition has skyrocketed and people have begun to realize that universities constantly try to convince " … otherwise intelligent people that their children must have a sub-par, dubiously useful product and then charge them through the nose for it" (Schlichter, 2013, p. 2).

While acknowledging the exceptions, undergraduate science teaching is particularly poor in the public research universities, which are held up as shining symbols by their states. Introductory science courses are the largest and most poorly organized and taught. For the majority of students enrolled in them, these courses fulfill a general education requirement, and they often turn off even those students who want to be science majors. They are filters rather than enablers. Quoting Steen (1991, p.19), "At their best, they offer the two-dimensional shadow of a rich, multi-dimensional world; at their worst—which is all too often—they dash motivation and produce another wave of science avoiders ready to convey their attitudes about science to their children."

To increase scientific literacy, the quality of entry-level science courses clearly needs to be improved in all public universities. The quality of more advanced instruction provided to science majors is also important to scientific literacy in general, because the professions taken up by college graduates so often intersect with public interests and issues. Many universities have adopted undergraduate research experiences (UREs) to provide hands-on learning for science majors, and these have been popular with students. However, UREs take up a great deal of faculty and student time, money and effort (Linn et al., 2015). Having been a faculty mentor for UREs, I have found their implementation to be poorly designed. Most students enroll late in their college career for one or two semesters in a mentor's laboratory. Course work competes for laboratory time, and there is little opportunity for truly independent work. To be effective, a URE needs to be part of a structured university program, not just a hit-or-miss encounter with an individual laboratory. Such a program would immerse students in research at progressively deeper levels over the whole course of their undergraduate career and carefully integrate research and course work.

An interesting and less costly alternative to UREs is C.R.E.A.T.E., which stands for Consider, Read, Elucidate hypotheses, Analyze and interpret data, and Think of the next Experiment (Hoskins, Stevens, & Nehm, 2007; Hoskins, Lopatto, & Stevens, 2011). This approach uses intensive analysis of the primary literature to demystify and humanize science. C.R.E.A.T.E. has been demonstrated to increase student's confidence in their ability to analyze primary literature, improve their ability for critical thinking and content integration, enhance their understanding of who does science and why, and enable insight into the processes of science and the student's own beliefs about learning. The purpose of C.R.E.A.T.E. is to enhance the retention of students interested in a biology career, but some version of the approach might be valuable for increasing the science literacy of undergraduates for whom a science course is a general education requirement.

I wish now to turn to a more fundamental problem, widely discussed but steadfastly ignored, that is the major contributor to poor undergraduate teaching and thus an impediment to the acquisition of scientific literacy. By far the largest share of undergraduate teaching in public higher education is done in medium-sized public universities, and community colleges. The available state resources for public university education, however, flow disproportionately to the huge research universities that have assumed the mantle of "flagships." Driven by an insatiable arms race for research and athletic prestige that has become the end-all of their existence, these universities have transformed public higher education into a dysfunctional caste system (Fairweather,

1996; Astin, 1999; Rhode, 2006; Nichol, 2008; Wilson, 2010; Stocum, 2001; 2013; Berlinerblau, 2015). The archetype scholarly history of this transformation is Page Smith's *Killing the Spirit: Higher Education in America.* Written in 1990, this fascinating book details the long-standing arrogance of the research university and its cynicism toward undergraduate education, which has become even more pronounced over the intervening 25 years.

The flagships sell undergraduate education, but reward only research that produces grants and publications (Smith, 1990; Fairweather, 1996; Remler & Pema, 2009). They have devalued undergraduate learning to the point where the prestige (and salary) of individual professors is inversely proportional to the amount of teaching they do. Sperber (2000) argued that flagship public universities substitute alcohol-fueled sports entertainment for education. Armstrong and Hamilton (2013) in their book *Paying for the Party: How College Maintains Inequality* describe how a large Midwestern flagship provides young women of privileged social status with a non-rigorous "party pathway" through the university and into subsequent careers. The quality of undergraduate education at most flagships is marginal at best, yet incredibly their "brands" set the standards for respect by which other less-resourced public universities are measured. The increasing financial and social inequality between flagships and other state universities has also resulted in a structure with two tiers of faculty: a high-paid tenured research faculty and a lower paid non-tenured teaching faculty featuring a high percentage of adjunct instructors and graduate teaching assistants. This division clearly reflects the idea that teaching is a less worthy mission than research, which undermines undergraduate education as the core mission of higher education and damages efforts to promote scientific literacy.

The caste system is justified under the euphemism of "mission differentiation," a half-baked notion that has no real educational value, but serves only to preserve and exacerbate institutional inequalities (Stocum, 2001; 2013). To increase the quality of undergraduate education across the board it will be essential to eliminate funding formulas based on research prestige and make quality undergraduate education the highest priority for state funding and use of tuition dollars. Teaching professors should be paid on a par with research professors. Reforms are needed to eliminate the inequities suffered by adjunct professors, who have assumed the heaviest role in undergraduate education. A model for such reform has been implemented at the University of Denver that hopefully will galvanize reforms elsewhere (Flaherty, 2015). We must stop overemphasizing research as a prestige marker, synergize research excellence *per se* with teaching, put research professors back in the undergraduate classroom, and decrease the size of PhD programs. More extreme solutions would be to spin the university research function off into institutes (Stocum, 2013) and big-time athletics into semi-pro leagues (Duderstadt, 2002). Where universities are part of a system, the flagships should not be allowed to dominate and suppress the development of other campuses. Ultimately, if the flagships cannot kick their addiction to research prestige, money, and power, high school students should be counseled to choose colleges that view teaching and research as equally valuable, or which make teaching their sole focus, depending on how they choose to use their resources.

In a recent book titled *The End of College*, Kevin Carey (2015) makes a case for doing an end-run around the lack of research university interest in undergraduate education by offering a rigorous, high-quality and low-cost education through MOOCs (massive open online courses—actually curricula). The lectures for such curricula would be those given by famous professors at research universities known for their teaching excellence, and distributed by platforms such as Coursera and EdX to anyone in the world who has access to the Internet. The advocates of this approach believe it is possible, based on the huge amount of data currently being collected about how students learn to use this online technology to personalize instruction. These developments are viewed by their proponents as the educational equivalent of the asteroid that did in the dinosaurs, allowing the small mammals to diversify across the globe. Because literally billions of people across the planet can be taught through the Internet in this way, the level of basic scientific literacy could be elevated. Detractors say this kind of education may be suitable for mature adults, but that most 18-22 year olds learn best by face-to-face interaction with professors. Still others (I count myself among them) think a combination of face-to-face interaction augmented by electronic learning is best. The next five years will be an interesting sorting out period.

SCIENTIFIC LITERACY IS SUBORDINATED TO WORLDVIEW

Returning to the subject of the effects of religion and politics on acquiring and using scientific literacy, scientists and educators like to think that having an open mind, data, logic, statistics, and probability will lead people to converge on correct conclusions. Social science research strongly suggests that this is not so (Suhay & Druckman, 2015). The types of science that are funded, the data gathered, the applications of scientific research, and even the way the scientific method is employed are all influenced by moral, religious, and political value systems that constitute our worldviews, or ideologies (Storr, 2014; Suhay & Druckman, 2015). This means that the general public evaluates information within the context of their worldview, or ideology.

Development of our worldview begins early in life through interactions with our parents, who we love and want to please. Their worldviews are often transferred to us and provide a context within which our intellectual and emotional growth takes place. As we mature and seek our own personal identity, our views will be both solidified and modified to some degree through interactions with peers and teachers. By the time we are adults, the worldview we will carry for the rest of our lives has been largely established by the interplay of these forces. This is not to say, however that our views cannot be changed by compelling evidence (see ahead), or intense experiences that transform our thinking.

Psychological research suggests that our worldviews are maintained by channeling our reasoning through an emotional filter designed to create self-deception (Deweese-Boyd, 2010; Bortolotti & Mameli, 2012). Thus people tend to search for, interpret or recall information that confirms their worldview, regardless of whether or not the information is true (Nickerson, 1998). This phenomenon, termed “confirmation bias” has long been known to psychologists and is the basis for the feeling of “truthiness,” a clever term introduced by Stephen

Colbert. We tend to divide along what we call left biased (liberal) and right biased (conservative) ideologies defined by the proportions of collectivist vs. individualist leanings we have. Some research even suggests that the development of left vs. right worldviews may be the result of genetic- or epigenetic-based physiological and psychological predispositions fortified by environment (Doll, Hutchinson, & Frank, 2011; Hibbing, Smith, & Alford, 2014; Weeden & Kurzban, 2014).

Confirmation bias is well illustrated in the debate over the risks posed by climate change. In general, those who think the risks are high have a liberal worldview and those who are skeptical of such risks have a conservative worldview. Kahan et al. (2012) tested whether the level of perceived risk in either group correlates with their level of scientific literacy (the "Science Comprehension Thesis," SCT) or with their ideology (the "Cultural Cognition Thesis," CCT). The scientific and mathematical literacy of all subjects was measured using the NSF Science and Engineering Indicators plus a set of 14 mathematical questions. The SCT predicted that level of scientific literacy would correlate with degree of perceived risk, whereas the CCT predicted that risk level would correlate with worldview. The result was that risk perception correlated with worldview, not scientific literacy. Furthermore, the study indicated that acquisition of more data on climate change changed no one's mind, but simply strengthened the correlation via confirmation bias. One would predict the same to be true for other controversial issues.

In his insightful book *The Unpersuadables*, Will Storr (2014) describes several cases of extreme belief in the "truthiness" of unlikely things such as alien abduction. Storr probes the psychology underlying such beliefs, using insights gained from interviews with the believers themselves and the research of those who have written on the subject of confirmation bias (e.g., Nickerson, 1998; Klein, 2011). He makes the case that as we develop, the brain uses our experiences to build and use virtual models of reality for us to exist in. These models have a high unconscious emotional content and are defended throughout life; they serve to preserve positive emotions, deny unpleasant or disturbing facts, or satisfy some other pressing psychological need. We preserve mental models through confabulation, the generation of powerful stories and false memories to explain and justify what we do and believe, becoming the Hero who thinks we control our own destiny. In essence, we are delusional, which explains, as Storr writes, " … why intelligence is no force-field and facts are no bullets (Storr, 2014, p. 310).

Is the existence of confirmation bias inevitable? The answer, I think, is yes. The only totally objective beings are the fictional Mr. Spock and Mr. Data of *Star Trek*. Is it an incurable disease? Yes, it is incurable, but it is not a disease. As much of an impediment as it may seem, I would argue that evolution has built confirmation bias into our DNA. On the individual level it aids us in forming and maintaining relationships; on the population level it serves the purpose of generating group cohesiveness. Furthermore, the existence of confirmation bias can serve the function of forcing us to think more deeply about our ideas and concepts in ways that lead to replacing old concepts with better ones. This is certainly what the professional lives of academics in general is based upon, and which in the form of the scientific method, or other means of acquiring evidence, can change

worldview. The history of science and philosophy is replete with examples, such as the work of Kepler, Galileo, Descartes, and Newton in the 17th century.

THE SCIENTIFIC METHOD CAN ALTER WORLDVIEW

Anyone who has worked in science knows that scientists have their own worldviews and confirmation biases about what is correct and what isn't, based on the current state of the evidence, and on their own ego-involvement. These biases change as new ideas emerge that are able to reconcile seemingly opposing sets of data and which have greater explanatory and predictive power. The reputations of scientists depend on their ability to see when ideology opposed to evidence and predictive power no longer makes sense. Adherence to the scientific method, willingness to take all the evidence into account, and peer review is what keeps scientists honest. The scientific method is the reason why, despite the impediments of confirmation bias, we have been able to advance our science and technology over the last four centuries. This is perhaps the major reason to foster scientific literacy to the greatest degree possible.

At any given time, we have "settled" science vs. "unsettled" science. Settled science rests on evidence that points consistently in one direction. Thus, there is high consensus among scientists and to a lesser extent the public for the correctness of ideas such as the big bang theory of the origin of the universe, movement of tectonic plates, climate change over hundreds or tens of thousands of years, mass extinctions, and the sequence of bases in DNA as the blueprint of life. In mathematics, rigorous proofs have established the correctness of many theorems.

Unsettled science, on the other hand involves data that can be interpreted in multiple ways; for example data collected on the effects of diet on heart disease, which have been wildly contradictory (Harcombe et al., 2015). I wish to point out here that a central tenet of science is that every scientific consensus is nevertheless provisional and must be modified if new evidence demands it, and/or new ideas prove to have better explanatory power than established ones.

When radical new ideas threaten the scientific status quo, a struggle erupts and the innovators know they will be subjected to the intense critique and demand for proof necessary to supplant an old idea with a new one. In the end, the new idea, if successful, is stronger for the vetting it must endure. Any confirmation bias, no matter how strong, must crumble in the face of greater evidentiary strength and explanatory power. (This does not necessarily apply, however, to confirmation bias scientists may hold in arenas other than science!)

A good example of how a strong scientific confirmation bias has been broken by a new idea is illustrated by the search for the cause of spongiform neurodegenerative diseases, which include Kuru, once suffered by inhabitants of the northern highlands of New Guinea, bovine spongiform encephalitis (BSE, mad cow disease), and its human counterpart Creutzfeldt-Jakob disease. These mysterious ailments are infectious and take a long

time to develop. A staple of biomedical science is that microorganisms transmit infectious diseases; thus infection by a slow-acting virus was postulated to be the cause of these neurodegenerative aliments. However, all attempts to isolate the virus (or any other infective microorganism) and demonstrate its infectivity were unsuccessful.

In the 1980s, Stanley Prusiner at UCSF postulated a radical new mechanism of infectivity in these diseases: the mutation of a cell membrane protein called the prion protein to a form that enabled it to recruit and convert normal prion proteins to the mutant form. In his fascinating autobiography *Madness and Memory* (2014), Prusiner recounts his experiments that proved the prion hypothesis to be correct, for which he was awarded the Nobel Prize in 1997, amidst the bitter opposition of those who clung to the slow virus hypothesis. Mutant prions could be transmitted by ingestion of the tissues harboring them, allowing them to spread their molecular subversion. The transmission of Kuru was due to the practice of ritual cannibalism, in which the living ate the brains of those who died from the disease. Kuru disappeared once this practice had ceased. The prion hypothesis has provided a unifying framework to explain the increasing chance of developing a neurodegenerative disease with age. Today, Parkinson's disease, Alzheimer's disease and amyotrophic lateral sclerosis (ALS, Lou Gehrig's disease) are also strongly suspected of being prion-like diseases (Polymenidou & Cleveland, 2011; Jucker & Walker, 2013).

CONNECTING SCIENCE TO SOCIETY

The evidence suggests that *convincing people to change their minds* on contentious issues through more and better science alone is not the most viable approach to the creation of rational policies that require scientific knowledge. While we should always strive for elevating the public level of scientific literacy and giving more accurate and better-explained science to policymakers, the notion is growing that scientists should listen as well as speak (Leshner, 2015), and frame their communications and arguments with the public and policymakers in terms of their relevance to things that are common to, and have a clear connection with, the basic needs and aspirations of people rather than stressing the idealistic "rightness" of the arguments (Nisbet & Scheufele, 2007). These frames predominantly revolve around economic, physical, and social wellbeing. Kahan et al. (2012) suggest that science communicators should adopt methods of communication in which accepting the best available science does not threaten any group's values. Effective strategies would include using communicators whose affinity with different communities enhances their credibility and framing policy solutions that resonate with diverse groups. We need to include in our discussions how alternative policies on issues such as environmental protection, renewable energy and climate change would affect us economically, health-wise, and socially. Perhaps most importantly, scientists and policymakers alike need to respect each other's knowledge base and insights.

Hoffman (2015) points out that most scholars do not see a role for themselves in public engagement and are reluctant to make their voices heard on matters of public policy and decision-making. Quoting Hoffman,

"Academic success lies in publishing academic journal articles that make incremental contributions to theory, not in summarizing the broader contributions of the community of scholars" (Hoffman, 2015, p. A48). Academics are fixated on being "brick makers," rather than policy shapers. Joanne Carney, Director of Government Relations at AAAS, has pointed out that many younger scientists would like to contribute to the intersection between science and society by becoming better communicators to lay audiences (Carney, 2014). She stresses, however, that to be effective requires understanding the broader context within which the debate over science policy is conducted, and cites the success of the AAAS Science and Technology Policy Fellowships in fostering effective communication.

Nisbet and Scheufele (2007) bring up another problem getting in the way of effective communication with special interest groups, citizens, and stakeholders. In their chase for grant funding, publication, and prestige, scientists too often engage in hyperbole and false spin. In framing our arguments, we need to present the evidence for and against hypotheses without hyperbole, and be honest about what is known and what is not. Related to this problem is the tendency of many science writers to inject too much wow-factor into their reports for newspapers, press releases, and other short publications. This is to be contrasted with serious first-rate science journalists such as Natalie Angier, Gina Kolata, Nicholas Wade, and Cynthia Fox, who avoid uncritical wonder-of-science stories, are willing to analyze or comment on controversial issues, and also do a public service by exposing the seamy side of science involving unproven and unethical cures for diseases, vested interests, and outright frauds (Watts, 2014). And it goes without saying that good science journalists constitute a wonderful source of science literacy to the general public.

CONCLUSION

Scientific literacy is essential to live fully in a society that has been constructed on science and technology. Our current measures, however, indicate a low level of public scientific literacy in the Unites States relative to the scope and complexity of the issues we face that require scientific knowledge. Politics, religious beliefs, and fear cloud our ability to evaluate important scientific issues such as vaccination, GMO foods, evolution, and climate change. Information, regardless of its validity, is used to support ideology, making voting decisions and the formulation of legislative policies requiring scientific knowledge more value-laden than objective. Our worldview, however, may be essential for our individual psychological wellbeing and social cohesiveness, and thus must be taken into consideration in connecting the dots between science and society. Though scientists themselves are ideological, the necessity to follow the scientific method ultimately favors evidence over ideology, and can trump worldview. Our educational system is the primary venue for developing scientific literacy, but will not be maximally effective until changes are made in K-12 teacher education curricula and the elimination of the public university caste system that devalues undergraduate education. Meanwhile, scientists can do much to promote science literacy and help connect science to policy-making through communication with schools, civic organizations, and governing bodies.

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Civic Identity, Public Education, and the African-American Community in Indianapolis: Mending the Fracture

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INTRODUCTION

> *...People were being detained for more than 24 hours without seeing a commissioner [they] were being held illegally. Knowing all of this, I was still not prepared for what I saw when I arrived. The small concrete booking cells were filled with hundreds of people, most with more than ten people per cell. . . . Many had not been able to reach a family member by phone. . . . Not only had these women been held for two days and two nights without any sort of formal booking, but almost none of them had actually been charged with anything.* (Johnson, 2015)

This scene recounted by a public defender in Baltimore, Maryland, during recent unrest over the untimely murder of Freddie Gray, is disturbingly similar to scenes recalled in rural Mississippi throughout the 1960s; missing the reverberation of voices singing, *"On our way to victory, We shall not be moved, We're on our way to victory, We shall not be moved*." The grandchildren of the young women and men who were involved in

organizations such as the Student Nonviolent Coordinating Committee (SNCC), are the contemporaries of those jailed for participating in what some have deemed uncivil disobedience. The most significant difference between those jailed is the 54 years that have elapsed between their false imprisonment, revealing the relevance of historical context to the reason for and modes of civic engagement.

Much of the extant research on civic engagement and civic identity failed to consider the impact of race and time on the expressions of civic behavior. Verba and Nie (1972) have been credited with expanding the notion of civic engagement beyond myopic constructs, such as voting patterns that dominated scholarly work on topic. These scholars challenged the common narrative of political participation as the only measure of civic engagement. In contrast to previous studies, Verba and Nie (1972) found four modes of civic engagement that included non-electoral activities such as communal activity and particularized contacting in addition to civic activities centered on campaigning and voting.

In this qualitative study we investigate how relational groups of African-American community members in Indianapolis understand their sense of civic identity, its unique formation, and its relation to contemporary public education. Participant responses to interview and focus group questions related to their historical sense of the connection between public education and civil society provide the point of departure for an investigation in civic literacy beyond standardized measures, voting data, and political party membership. The development of new theoretical understandings of civic engagement within the local African-American community—grounded in data collected from those who have exhibited a commitment to civic engagement in that community—holds the promise of more nuanced conceptions of historical and contemporary civic relations from the perspective of citizens outside of the dominant social order. Our hope here lies in moving beyond deficit narratives and reflecting modes of engagement that may be missed in more traditional studies.

LITERATURE REVIEW

Through the years the idea of civic engagement has captured the scholarly attention of political and social scientists (Anderson, 1988; Beyerlein & Hipp, 2013; Payne & Strickland, 2008; Costa & Kahn, 2003; Watts & Flanagan, 2007; Hahn, 2003). The definitions of civic engagement are as diverse as the perspectives of scholars who have devoted attention to the phenomenon (Adler & Goggin, 2005). Peter Levine (2007), Philosophy scholar and Director of the Center for Information and Research on Civic Learning and Engagement (CIRCLE), reviewed 10 different conceptualizations of civic engagement and observed variations among the definitions that include:

- Characteristics of citizenship (deliberating, advocating),
- Scale (local, national, or global),
- Emphasis on civil rights versus civil responsibility,
- Emphasis on significant relationships and their dynamics, and
- Manifestations and outcomes.

Ehrlich (2000), offered a definition of civic engagement most relevant to the present study:

> Civic engagement means working to make a difference in the civic life of our communities and developing the combination of knowledge, skills, values and motivation to make that difference. It means promoting quality of life in a community, both through political and non-political processes (p. vi).

Research supports Erlrich's argument that civic engagement involves political and non-political activity. Ehrlich's definition makes assumptions that are well supported by the empirical and theoretical literature:

1. Civic engagement is contingent on some kind of knowledge
2. Civic engagement involves action of some kind
3. Civic engagement is significantly shaped by connection to community and others belonging to that community.

African-American Civic Engagement

The inequality serves as a unifying agent within the African-American community; the similarities in their daily experiences engender trust that plays an important role in civic engagement (Uslaner & Brown, 2005). According to King (2010), blacks in America have engaged in politics in various ways; they were precluded from equal participation in the American democratic society. Consequently, the shared social marginalization forced African Americans to empower themselves within their communities, so they could challenge the "political institutions" that served to maintain hegemony by denying them rights enjoyed by white Americans.

Historian Steven Hahn (2003) shares examples dating back to the early 1800s, of ways that enslaved people asserted themselves as political beings to change and challenge the institutions that denied them equal participation. For instance, Hahn described African-American churches as a mobilizing and unifying agent that created a network of communication with an expansive geographic reach, thus making the African-American church a political institution. These alternate and informal political institutions were shielded from the oppressive influence the slaves experienced most of the time. Work by Melissa Victoria Harris-Lacewell (2010), builds on the theme of the communal nature of civic participation among African Americans. In *Barbershops, Bibles and BET,* Harris-Lacewell offers more contemporary examples of how seemingly ordinary spaces are transformed into political institutions because, in those spaces, African Americans interact in ways that often shape political attitudes; she asserts:

> To more fully appreciate the political thought and action of African Americans, it is imperative to understand that these interactions are more than social. They are the spaces where African Americans jointly develop understandings of their collective interests and create strategies to navigate the complex political world (p. 1).

There is also a large body of work that examines political socialization of black children, thinking through the role racial discrimination and black institutions play in developing their civic engagement capacity.

Civic Identity

"Researchers of adolescent development identify the transition into an active and contributing citizen as an important developmental marker of adulthood" (Mahatmya & Lohman, 2012, p. 449). One's civic identity is shaped by "a variety of sources, including existing constructions of ethnicity, race, gender, and social class" that influences the way one sees him or herself in the world and makes meaning of it (Rubin, 2007, p. 450). Therefore, civic engagement and the variety of activities and outcomes it encompasses cannot be fully understood without some discussion of the development of a civic identity. Many scholars have focused on the diverse experiences that influence the formation of an individual's civic identity (Atkins & Hart, 2003; Youniss, McLellan, & Yates, 1997; Rubin, 2007). One study by Mahatmya and Logan (2012) explored the impact of childhood neighborhood characteristics, family structure changes and social capital on the civic engagement behavior during early adulthood. The scholars found that higher levels of social capital acquired by students during childhood positively influenced civic behavior exhibited as adults.

Some scholars have attributed the development of civic identity to formal structures, such as schooling and community service (Galston, 2001). Other scholars have acknowledged more informal influences including interactions with "civic agents" such as police and teachers (Rubin, 2007) and interactions with friends (Putnam, 1996). According to Rubin (2007), "students have civic experiences on a daily basis, both within schools and beyond, that shape their understanding of what it means to be American citizens and participants in the civic life of a democracy. These experiences may differ sharply depending upon how students are situated socially, historically, and culturally" (p. 451).

The worlds of politics and education have historically overlapped for African Americans. One needs look no further than the historical African-American struggle for equal citizenship and educational opportunities in the United States as evidence. An examination of these struggles reveals a convergence of each of the aforementioned domains of civic engagement: community service, collective action, political involvement, and social change. Few studies have examined the process of development of civic identity and the subsequent civic engagement among educational leaders. Farmer (2006) explored the role of social organization and diversity of friends on the involvement on the civic engagement of African-American men. This study found that involvement with church organizations was less influential over the civic engagement than participation in nonreligious organizations.

Few studies have examined the process of development of civic identity and the subsequent civic engagement among educational leaders. This void in the literature limits our understanding of the experiences that motivate individuals to be committed to education reform in communities that suffer from gross inequalities. The present study aims to contribute to this body of literature.

METHOD

A grounded-theory approach guided the design of this study and provides the opportunity for theory-building emergent from the data collected as opposed to testing hypotheses or confirming existing theoretical frames. As little is presently known about how members of the African-American community of Indianapolis have come to understand their sense of civic identity and, further, how that understanding guides their commitments to education reform in the city, individuals were selected who have publicly exhibited civic behaviors through their careers and/or participation in community organizations tackling educational issues. As this study investigates how members of the African-American community of Indianapolis understand the formation of their civic identity and its relation to contemporary education discourse, research questions included: *What experiences influenced your views on civic responsibility? In what ways do you think public education plays a role in civil society? What do you need to know to engage effectively on issues related to the politics of education reform?* and, *What particular issues are important for the African-American community in Indianapolis as related to public education and civil society?*

From the onset, we as researchers shared an understanding of the importance of fluidity and flexibility throughout this investigation. Equally important is the involvement of the research participants in the design and implementation of the study that serves to empower participants and produce rich data (Lather, 1986). During the conceptualization of this undertaking, the researchers decided to conduct one-on-one interviews with participants as the primary data source. However, what emerged is a data collection strategy we have found to be unique, *relational groups*, a change initiated by one of our program participants. The first participant approached to be involved in the study suggested to the investigator that a third person, a friend with similar experiences in the Indianapolis Public School system, join the conversation. Borrowing from tenets of postcritical ethnography, we embraced the role of the participant as collaborator in the research design and honored the request (Hytten, 2004). The second participant, upon being asked to join the study, also asked if similarly situated friends could join the group. Subsequently, we asked the other participants if there was a friend or other significant other that should join the conversation, thus taking on both a snowball sampling and an emergent methodological approach. The relational groups consisted of two or three participants who belonged to the same generation and worked closely together on issues related to education reform in Indianapolis.

We believed the relational groups were distinct from focus groups because of their size and the closeness of the personal and working relationships of the participant in each group. Similar to focus groups, the relational groups provided a more conversational, open dialogue allowing participants to prompt one another and either confirm, modify, or reject perceptions of shared experiences. However, the personal connection of the participants in each group set them apart from focus groups. There was an intimacy among the participants in each group similar to that explored by Bjørnholt and Farstad (2014) that offered promising benefits to

interviewing couples together in the field of family research. Most relevant to this study is the premise that this interviewing method provides participants with a "common reflective space that resulted in the production of rich data" (p. 15). Bjørnholt and Farstad argue the richness of data can be contributed in part to the nuances of data material revealed by individuals with varying perspectives of the same phenomenon, which in this study is involvement in education reform in Indianapolis. While there are fundamental differences between the dynamics of married couples compared to the relationship between participants in this study, an important similarity is the trust inherent to both types of relationships.

Data Analysis

A thematic analysis of the relational groups was conducted utilizing the constant comparative method (Glaser, Strauss, & Strutzel, 1968; Lincoln & Guba, 1985) in which information is coded and sorted into categories, and then additional information is compared to and integrated with the emerging categories. NVIVO9 © qualitative research software was utilized for coding of themes and reporting prevalence of codes and themes for use in analysis. Researchers coding and analyzing data met intermittently during coding to discuss the relationships among codes, to compare memos, and to combine similar codes and memos into broader patterns or themes (Creswell, 2012).

Sampling

Purposeful sampling methods were used to select individual cases that would enable us to gain an in-depth understanding of civic engagement among African Americans in Indianapolis, primarily intensity sampling (Patton, 2005). Intensity samples include information-rich cases that exhibit strong examples of the phenomenon we chose to study—civic engagement—and required selection based on some prior information to identify an appropriate pool of participants (Patton, 2005). In the present study, prior knowledge of individuals who have been involved in educational reform discussions in Indianapolis was essential to identify a pool of participants who have exhibited exemplary civic engagement around educational issues (Patton, 2005).

Participants

Participants, who included members of the Indianapolis African-American community, were selected based on their involvement in public conversations regarding education in the city. Each participant at one time represented the NAACP Education Working Group, The Urban League, Indianapolis Public Schools, and/or faith-based organizations focusing on the education of African-American young people. These individuals were asked to participate because they are deemed by the researchers to exhibit exemplary civic engagement in the community. Emerging organically as part of the relational group strategy, the participants were interviewed in generational groups with each representing an age category: Emerging (30-40), Middle (41-60), and Elder (61-80).

FINDINGS

Contrary to scholar William Galston's (2001) suggestion that traditional, classroom-based civic education should be the focus of efforts to raise political knowledge and promote civic engagement, findings from this study suggest the formation of the civic identities of African Americans active in education reform efforts in Indianapolis were shaped by knowledge acquired outside formal curriculum. For these education activists, civic education or knowledge was transmitted through their families, communities, and own personal experiences inside and outside school. Consequently, their civic identities became firmly grounded in essential lessons learned at young ages that ultimately guided the participants' occupational choices and civic behavior. Our findings illuminate: the importance of *generational*, *community.* and *experiential* knowledge; the essential lessons acquired that ultimately guided the participants' occupational choices and civic behavior; and their perceptions of a fracture in civic engagement of youth today.

Sources and Types of Civic Knowledge

According to Galston (2001) civic knowledge is important because it helps citizens understand the role of individuals and groups in democratic society, political institutions and processes, and the importance of political participation. Traditionally, formal education has transmitted such knowledge through courses centered on topics including the U.S. Constitution, functions of the branches of government, and political due processes. While there is general agreement about the importance of civic knowledge, there has been some debate about the utility of school curriculum in providing all knowledge deemed essential for civic engagement. On one hand, scholars such as Butts (1980) argue that schools have a unique role in educating for citizenship that includes: "1) providing continuing study of and commitment to the value of claims of political democracy; 2) imparting realistic and scholarly political knowledge; 3) teaching participation skills required for the maintenance and improvement of the democratic political system" (p. 126). However, critics of this viewpoint, such as Rubin (2007) contend more informal structures and interactions impart that same knowledge within marginalized communities.

Responses from the participants in the present study lends merit to Rubin's claim; their civic identities and subsequent civic engagement were more strongly influenced by knowledge transmitted by their families (generational knowledge), community networks (community knowledge), and own personal experiences (experiential knowledge).

Generational knowledge. All of the participants in the study referred to the role that family played in imparting knowledge and values that guided their personal, educational and civic lives. For example, one participant from the Middle relational group shared:

> The family was always about, taught you have a black tax to pay. Taxes that you have to work harder. Do better. Be smarter just to be considered like an average white person. So I always worked. that is what I was taught. You have to work harder, be smarter and stronger.

After noting the work ethic instilled in him by his parents, this participant went on to describe the civic lessons he learned through his father's service to the community that earned him a key to his city after his death:

> His focus was keeping them out of trouble, off the streets and in school. . . . And so in my family, that has been the norm. You engage yourself in your community. You make things better but mostly work with the youth.

A participant from the same relational group shared that her mother modeled the importance of giving back to the African-American community through her profession:

> My mother was a counselor at Children's Bureau and the Juvenile Center. She would come home with these stories and I was like 'how can you deal with that?' I mean that is so sad and it is heartbreaking, how do you do that? And then I found myself getting involved with families in the Marion County Juvenile System that I'm working with and the Children's Bureau. It was so funny. When I first started working at the Girl's Prison, and she worked with those kind of kids, too.

This admission also exposes the influence of a parent's occupation on the career choices of their children.

Several participants in all relational groups spoke of the role their grandparents played in shaping their understanding of African-American history and the dynamics within the African-American community in the state. One participant from the Emerging relational group recalled:

> What my grandmother always talked about was the fact that half-assed Negroes in this state, because what happened is that folks were fleeing Jim Crow. That when they crossed the Ohio River and came into Indiana, she always said the Mason Dixon line that Indiana was the middle finger of the Mason Dixon line [laughs]. . . . But she always talked about that Indiana was really a northern southern state. But folks who were really fleeing from hardcore like engrained Jim Crow, they got to Indiana and it wasn't perfect and it wasn't great but it was so much better than where they were. They just kind of settled.

Community knowledge. Across our conversations, the lines between family and community were often blurred; given the dynamics of racial segregation, families often lived within close proximity to each other and closely connected networks developed. A participant from the Emerging relational group described this tendency:

> I am a long time or a lifelong resident of the near eastside of Indianapolis. I grew up three blocks east of Sherman. Lived there my whole life. At one point my grandparents, parents, aunt and uncle, everybody was on the same street. And so I attended IPS [Indianapolis Public Schools] schools from kindergarten through 12th grade. My kids have been in IPS and always public schools, so either IPS or charter schools. I have a strong sense of community related to that place and although I'm no longer on that particular street, I'm three minutes away.

This statement describes how family roots within the community bolstered the sense of community felt by the participants in the present study. A strong sense of community engendered the idea of community responsibility within African-American communities in Indianapolis. Participants from the Elder and Middle relational groups both reported that they learned the importance of using formal education to give back and to empower the African-American community at large to address issues of educational inequality. Participants acquired this knowledge by observing the behavior of leaders who lived in their neighborhoods. A member of the Elder relational group described the way a local African-American attorney, Frank Beckwith, assumed a leadership role in bringing about changes in racist educational policies like busing through litigation:

> No black person who lived in Indianapolis, certainly those with high educational levels, could exist in this community without knowing these things. The fact that he took it up or he was finally able to take it up because of his educational background, his sensitivity to it. He was not the only person who had similar reactions to the situation that we all were living with. But he had risen to the position, education and politically, where he could use what he knew.

This Elder uses Mr. Beckwith as an example of the ways that the highly educated people became an asset to the communities in which they lived because they used their educational training to improve the conditions of their neighbors:

> They would lead us in many ways. The fact that they usually had businesses or professions but we all lived in the same community. Right down the street was Dr. So and So—right over here. Everybody in the black community was affected by the segregation. Everyone knew something about somebody who had a little bit more money. He wasn't something exceptional beyond his profession. He was just somebody, he was our neighbor.

The case of Beckwith also provides an example of the ways that communities united to solve problems experienced by African Americans in urban settings such as Indianapolis. One participant from the Middle relational group recalled his early experiences with civic engagement as he witnessed how the community also banded together to promote voting within his neighborhood:

> Civic engagement? I have always been involved. I think it is instilled in me through my parents. They helped run voting stations and all that throughout my life. I remember in grade school the coolest thing to happen was the day before elections when they started rolling in these machines that they voted on that sounded like trains because they were on these big iron casters. And over the marble floors it just sounded like there were trains moving in. . . . They were doing the whole thing at that time. Making food. The precinct would hire people to make food. They would make food for the poll workers and it would be hot, smoking what you would like for a 12-hour day.

Another participant suggested the communities also played a role in alleviating some financial stress that African Americans were forced to endure because of racially discriminatory practices in hiring and compensation:

> The main guiding thing was economics. We had to have so much money, whatever it was. I don't know how he managed to feed and clothe and house us off of $25 a week. He was always taking extra jobs. He had friends that also were in the same boat so they could get together and do things collectively and divide up the resources in whatever way possible.

A sense of place, leadership, and the ways in which the community rallied together in response to structural constraints characterize the ways in which the relational groups responded.

Experiential knowledge. Daily experiences with teachers, police, and other civic agents have been found to be important in shaping the civic identities of young people from socioeconomically marginalized groups (Rubin, 2007). This held true for the participants in our study. Many of our participants described knowledge imparted to them through their educational experiences, in effect shaping their civic identities.

For example, participants from both the Elder and Middle generational groups learned the value that their teachers placed on teaching students about black history. Teachers were committed to imparting valuable cultural knowledge on the students. One participant, a graduate of Crispus Attucks High School described the teachers of her school as those "who had their PhDs from black colleges. They were our teachers. So we had the best of the best. In a way they gave us more than they thought they were giving us." During the relational group interview, her classmate explained that the teachers gave the students the gift of black pride. She reflected on a teacher who created a black history club to expose his students to knowledge they would not have gained through the mainstream curriculum:

> He had a PhD in history. He had the after-school black history club. We couldn't do it on school time. If you remember [stated to classmate], we met after school for an hour. That is where I got the knowledge and the interest in black history. When he started telling us how many things we used the sewing machine and so many things were invented by black people then I started looking it up myself. He brought us so much information that we used to wonder how that little black man could have all that knowledge that he was imparting in us. This was after he taught American and European history in the classroom. The black history thing was after school because it was not a part of the curriculum. He did that because he wanted to. But it opened doors and minds for us that are with us until this day.

Essential Lessons

Persistence of inequality and racism.

The fact that my mom was graduated from Crispus Attucks in 1939 and we had a conversation when I was older about bussing and how that related to education and access in Indianapolis. And she said no, bussing is not new. I'm like, 'excuse me?' New to me!

In discussing civic knowledge and education, a general theme was dominant—the persistence of racially constructed inequity. All relational groups addressed this specific component of understanding the civic life of African Americans in Indianapolis; although, certainly, the historical context of these recollections does matter. Casual conversations between our study participants and members of their families exposed the longevity

of racist policies that impacted the African-American community in Indianapolis, such as bussing as part of a segregated school system.

One participant who attended IPS schools in the 1930s noted that students made the best of unjust circumstances created by the racist underpinnings of the educational policies that required busing. She stated, "A crowd of us would be walking together and having fun if it was cold, throwing snowballs, it didn't seem like that much hardship until we would sit down and our parents would talk about it and that is how the movement got started." This participant stressed the importance of generational transmission of knowledge, while emphasizing the role of informal and familial networks in negotiating both the civic constraints of the time and strategies of resistance and resilience. "The movement" referenced here relates to the strategies the community had to employ to get their children safely to school and subsequent organizing around appeals to the state for transportation support. Another participant added, "we knew there was racism because our parents talked about it. My mother would come home from doing housework and talk about what she would experience." But these civic lessons were also cautionary and strategic. For example, one male participant from the civil rights generational group shared:

> We knew about racism when we came in contact with it. My mother emphasized don't look them in the eye. Yes sir. No sir. If you are confronted by the police and all of that. I had those type of skills. Always smile. All those kind of things were embedded in me.

In addition, a female participant noted how this approach continues on in her adult life:

> They had information that they imparted to us that we could not have gotten anywhere else. I have been able to pass some of that on to my kids and my grandchildren.

Awareness of the African-American condition.
It was that classic: Teach one, reach one. You have to.

Central to participants' understanding of the civic life of African Americans in Indianapolis—regardless of generational group—was a deep attention to the conditions of the larger community both in contemporary and historical terms. Participants gained knowledge and developed values that seem to be fundamental to civic engagement related to education in the African-American community in Indianapolis. Nearly all participants referenced the role that their families played in the acquisition of that knowledge and a broader sense of community engagement. One noted:

> And so in my family, that has been the norm. You engage yourself in your community. You make things better but mostly work with the youth. . . . It has always been in my family. You work and engage civically and in education. Whether it is the public school system, Catholic school system, whatever.

Influences ranged the gamut of political activism, from the Indiana Black Panther Party (BPP), to Nation of Islam and Malcolm X, to the broader Civil Rights Movement. A participant clearly draws the connection: "My father also was a big fan of Malcolm X. So I was taught from early that you must do things in your community. You must because you come from a position that you are able to do that. You must do that." Another participant recalled the influence of the BPP in her early experience with civic engagement around education:

> And so still in high school. . . trying to find a way to be radical, I picketed our school librarian. I was picketing because she didn't carry the Black Panther newspaper. It is so hilarious. Then I was engaging civically with education but then I was going towards radical education. Be more global or universal. What is going on in the world? So then I really, I said I have to step it up. So I was in junior high school . . . . I got the first afro for a woman in the city.

She obviously felt empowered by the outreach of the Black Panther Party and learned from them the importance of education for global citizenship. She went on to describe how this belief continued to guide her subsequent personal and professional lives:

> I go off to college, Knoxville College. I met my first husband and he was from New York and they are very much involved in black empowerment. His brother was a captain in the Black Panther Party in Harlem. So I got very involved in upstate New York radicalism. I worked with a lot of people, particularly some Jewish communities, the Panther Party, Silver Panthers . . . I'm being radical. It has always been in my family. You work and engage civically and in education. Whether it is the public school system, Catholic school system, whatever. In my case, global education. Learning about what is going on in the world. My thing was the struggles of other people and other countries and the whole like that. So I teach my kids and grandkids the same thing.

This participant's observations describe the way that community, generational, and experiential knowledge interacted to shape the development of her civic identity and guide her subsequent involvement in education reform efforts and community development.

Participants noted other examples of ways they learned civic lessons primarily from example. Observing how their elders responded to the challenges in their community proved to be the strongest teacher. Emphasizing the connection between self-knowledge and community knowledge, one participant reflected:

> Well, growing up I went to a black elementary school. I went to a black middle school. I went to an all-black high school. So there was always, even in the South, the need to be self-knowing.

However, each family took up different strategies for working with the youth of their communities. One Elder emphasized practical engagement with both school and work structures:

> My grandmother, her thing was teaching. She was teaching young women how to be beauticians. They could open up their own shop and be self- sufficient. She had an 8th grade education [but she was] smart, smart, smart. So was always educating: learn, go to school, do this, get a skill, help your family, help your community. So it was that classic: Teach one, reach one. You have to. Upward mighty race. You have to."

While another supplemented those structures with extracurricular programs of his own:

> As far as civic, my father worked with youth in the neighborhoods. Now he always had drill teams. I have some newspaper articles about that. He would gather kids, we had a beauty shop. So we were able to help other families. My father started this drill team and their motto was we would rather drill than steal.

Stories like these ran through each of the participants' responses. Older generations took great care in creating access to opportunity for the next generation. Two further examples exemplify the approach:

> When I moved here permanently in '63, my grandfather, who was the first black bail bondsman in the state of Indiana, his focus was making opportunities for black folks in the field of insurance. I had the same thing. You must engage in your community. My dad and his barbershop, I can remember black men, white men and women apprenticing in his barber shop so they could go out and open their own shops.
>
> **Confidence and high expectations.**
> *I am so secure in my blackness today because my blackness was made secure from the very beginning.*

Participants from the Middle generational group frequently expressed the importance that black pride played in developing their self-confidence. One participant shared, "I grew up with you are capable of anything and to this day in my body and my soul, I feel no limits. I never have. . . . What our parents did for us, we had confidence. They made sure we had confidence. We had to. So we didn't have any problem stepping out there doing stuff because we knew you could do it. You better do it." This sentiment demonstrates parents were aware of the importance of setting high standards for their children. Confidence provided a buffer that was essential to the success for blacks who encountered oppression in various forms on a daily basis. Participant stories reflect that civic and racial identity were interconnected and the result of both school and community-based resources. The role of Crispus Attucks High School—the segregated secondary school opened in 1927—cannot be overemphasized but continually the curriculum is presented as supplementing lessons from families and other organizations in the city.

The Civic Fracture

As one might expect, the role and expression of civic engagement has evolved over time. Dalton (2000) examined the relationship between citizen attitudes and civic behavior in the aggregate and noted generational differences in attitudes and values that create a divergence in political thoughts and behavior.

He observed:

> Older generations remain more likely to emphasize traditional material social goals such as economic well-being, social security, law and order, religious values and a strong national defense. Having grown up in an environment in which these goals seem relatively assured, the young are shifting their attention towards post-material goals of self-expression, personal freedom, social equality, self-fulfillment and maintaining the quality of life. (p. 917)

For example, one participant from the Middle generational group emphasized the importance of working within the educational system to bring about educational equity as she described addressing the problem of inequitable punishment in her school:

> I saw that the white teachers did not seem to embrace our children based upon what I'm used to. So as a Dean of Students, I took my role as not to punish the kids. My role was to help *educate the teachers* [participant's emphasis]. So I kind of started doing that as I was working with the students but I found that was a hard nut to crack. It really showed me the institutional problems in education because when I would try to work with the principals, after I left the black principal and it was a white principal at [another school], he seemed not to get it. And so I would write proposals and then finally I wrote him up and sent it to the central office. . . . I just felt like I said, my mother raised me to. You see something wrong you make it known. You do. Sometimes I knew. I wrote a large proposal on alternatives to suspensions and that was back in 1982. I got some teachers onboard with it. But the principal wouldn't move on it. So like I said, I sent a letter about him downtown. So the next year, they came out to interview the staff from downtown and he got removed.

A participant from the Emerging relational group similarly acknowledged becoming a teacher to address another problem he experienced as a student in the educational system—the invisibility of some African-American students, exacerbated by low expectations held by teachers for their academic achievement:

> Basically, I got passed from one teacher to the other with the idea of you don't scare me or tear up my classroom then I'm not going to fail you and have to deal with you for another year. . . . it wasn't until I walked into a speech class, that this guy heard my voice before he saw the poor kid. Before he thought about the black kid. It was the voice and he was a speech coach and he knew he could do something with that. I did nothing short of harassment like he followed me from class to class and called my mom, my grandmother. Until I was harassed into joining the speech team. It was at that point that I finally found something that I was good at. That really changed everything. He and his wife had me tested and that is when we really discovered that I had a learning disability but they hid it. They kept it out of my academic records because tracking was so profound at that time that if it had been common knowledge that I had this learning disability, I wouldn't have been allowed to have taken any college prep classes. . . . So I decided I wanted to be a teacher because one saved me.

Though there appears to be some consensus in the political thought, the participants in this study suggest that a fracture has occurred in the sources of knowledge participants draw on to inform their civic agendas. The

most glaring difference between the groups is the near absence of the transmission of generational knowledge regarding the importance of education. For example, the under-educated parents of the Middle generational group often discussed and reinforced expectations for educational attainment. One such participant, who was the first in her family to attend college, expressed:

> I grew up with 'you are capable of anything' and to this day in my body and my soul, I feel no limits. I never have. I feel absolutely no limits. That is the way my body and mind operate. So I'm always just striving for the whole world.

In contrast, a participant from the Emerging generational group shared:

> I didn't think about college any other way. . . . It was just not a conversation. I was in all college prep classes when I was in high school but no one in my family had gone to college. So people kept talking about it like it was this abstract thing but it was no different for me than people talking about going to the moon.

In hearing the contrast in these stories across generational groups, we are left with lingering questions around what changed. Dalton's (2000) characterization of shifting to "post-material" goals does not seem to hold as continued inequity in the city in regards to race remains.

Nearly each participant in our study offered valuable perspectives on the current state of civic engagement within the African-American community in Indianapolis and sources of fracture. Their observations also illuminate changes in *generational, community,* and *experiential knowledge* over time, which has had negative impact on civic engagement among youth today.

One participant from the Elder relational group suggested the breakdown in the relationship between African-American churches and youth has contributed to the lack of youth civic engagement:

> We talk about influence of churches and we have skated around with it. But you can drive around this city, you see churches everywhere. But there seems to be a lack of a universal approach to the children coming from all the churches.

The other participant of this relational group echoed that sentiment:

> [Churches] alienate people and they don't tell those young people the things that are fundamental. They are more intent on identifying with this or that. Unfortunately, there are some things that are universally accepted throughout humanity. Our kids need to know this is the way it is supposed to be everywhere. Call yourself what you want to call yourself but you've got to always permeate your humanity with those ideas which are fundamentally and universally accepted by humanity. I think that is where we are missing the boat.

A participant in one of the Middle relational groups pointed to a fracture in family structure that has resulted in low parent engagement and civic engagement among youth today:

> The parents that have to become engaged. When the parents become engaged things turn around. Because it is not all on the school.

However in the absence of parental involvement, this participant went on to say that the community should step up, as in generations past:

> The community is where these different things that we talked about earlier, if you can ever get some of those folks it doesn't really have to be the parents. It can be the community raising the child. But then we talked about other folks being engaged. Not parents because if the parents aren't engaged, it is going to be folks who are serving and giving and if we don't teach people how to serve and give, we are going to wear ourselves out and become less effective than we are now.

A member of the Emerging relational group suggested that socioeconomic and political marginalization negatively impacts youth inclination towards civic engagement:

> I think that there is a lack of knowledge in terms of how things work but if you couple that with like I don't know how to explain it. It's almost like a feeling that certain communities don't matter. So if you are a person who is disenfranchised where the system has never worked for you and maybe never even worked for your parents or grandparents, then what is the point in educating yourself about the civic engagement or taking steps to become more engaged when you don't feel like ultimately your voice will matter anyway?

However, conversations with this study's participants—representing cross-generational perspectives of African Americans in specific—suggest more of a convergence in the political thoughts and behaviors than Dalton suggests.

DISCUSSION

Conversations with the educational activists in our study revealed useful information regarding the precursors to, expression of, and barriers to civic engagement among members of the African-American community in Indianapolis. Our hope remains that these stories might guide efforts to address the civic engagement gap among African Americans in more nuanced ways. In fact, our findings suggest this is not just a gap, but a fracture; one created as a result of both segregation and the structural resistance to desegregation. Based on our conversations the following has become clear:

1. Civic identities are engendered through implicit and explicit messages sent by members of a young person's family and community.

2. Trust and shared commitments to address educational inequality—both in historical and contemporary contexts—have motivated civic engagement efforts among African Americans.

3. Though essential civic knowledge and subsequent engagement is shaped by historical and social contexts, a broader understanding of the conditions in which African Americans engage with the civic provides a critical foundation for agency.

Notable in this inquiry, these stories also seem to represent a generational shift in the ways in which educational expectations are conferred to young people. Certainly, more data need to be collected to pursue this more fully, but the stories of our participants point to what might be seen as an unintended consequence of desegregation. Perhaps ironically, the segregation of the city of Indianapolis formed tightly-knit communities of necessity that took up the project of civic identity in response to a fundamentally inequitable social structure. This study took up these questions within a relational group approach to begin the work of collecting these stories. We found rich, powerful experiences that point to the generational, community, and experiential components of the formation of civic identity that underlie the inextricable ties between public education and civic engagement in the African-American community. Without question, at the time of this writing, the recent actions of young people, communities, and activists in Ferguson and Baltimore suggest that the time has come once again to examine the phenomenon of civic identity development and civic engagement within the African-American community. To mend the fracture, a radical openness to new forms of research method such as relational groups holds the possibility of new understandings of the ways in which people make sense of the civic and their connection to it.

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Seeds of Change: Using the Tools of Today to Empower the Leaders of Tomorrow

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Six 11th graders bang their fists on the desks in unison setting up the background beat for what's to come. "*Nisa on the beat…Molly from the streets.*" The first two chant. Molly starts rapping—*"I was just takin' my prescription. I don't see why everybody havin' a conniption. Chill Lewis, stop tripping. I tried to explain. It didn't work. I fought and they took me to me to the Supreme Court. They haven't decided yet but I hope it's in my favor. I apologize for my allegedly suspicious behavior but I have rights that's intact. In fact, that's a violation of the direct Fourth Amendment…this discussion should have been ended*." Who's Molly? Molly is possibly the name of the petitioner in this year's Marshall-Brennan Constitutional Literacy Project moot court problem, or the name of a street drug that has led to a number of recent overdoses in Capital City, Old Columbia—a fictional moot court jurisdiction. Anyway, the students are engaged and that is what matters to us most.

At the Marshall-Brennan Constitutional Literacy Project (The Project) we teach high school students to care about important issues and we connect those issues to the U.S. Constitution. The Project was started in 1999 by Professor Jamin B. Raskin to address the well-documented constitutional illiteracy and civic disengagement of America's high school students by mobilizing the idealism and energy of law students. We are a part of a

powerful movement that seeks to reframe the issues present in the daily lives of youth as legal issues that must not be ignored if we want to have an active, questioning, democratic citizenry.

The Project began with 25 upper-level law students, designated Marshall-Brennan Fellows in honor of the late United States Supreme Court Justices Thurgood Marshall and William J. Brennan, Jr., and, with the support of their widows, Mrs. Cecilia Marshall and the late Mrs. Mary Brennan. Today 36 students are teaching 15 classes in 10 different public high schools in Washington, DC, with 18 other law schools across the country forming Marshall-Brennan chapters to join in this work.

All Fellows promote democratic engagement, constitutional literacy, and leadership by teaching the importance of constitutional rights and responsibilities in our democracy. They use interactive techniques with their students to promote creativity, problem-solving, collaboration, and critical thinking. Research tells us that high school students who participate in experiential civic education programs are more likely to become engaged citizens and contribute to society. Students benefitting from critical early involvement with civic education programs are less likely to drop out of school, have higher rates of academic achievement, are more likely to participate in school activities, volunteer more in their communities, advocate for their needs, and are less likely to become incarcerated.

The key to success in The Project lies in the relationships formed between the high school students and the law students as they grapple with the question of how to teach what the law *says* to members of disempowered communities where the law may *mean* something very different in those students' community. The close-knit relationships formed between the law students and high school students as they face these questions together are reciprocal in nature, providing a deep understanding about our society for both high school students and law students; an understanding that will shape perspectives as active citizens and advocates for justice.

The Fellows open up the space to connect the frustrations felt by many of their high school students in the face of events like the deaths of Trayvon Martin, Michael Brown, Eric Garner, and most recently, Vonderrit Myers, Jr., to specific amendments in the Constitution, by validating the experiences of their high school students, and acknowledging that race, class, and privilege have affected the ways in which people interact with the law and the criminal justice system. As the Fellows get more comfortable in the classroom and listen to the needs of their students, Fellows begin to tailor their lesson plans to the interests and learning styles of their classroom.

Two specifically designed texts and a moot court problem form the backbone of the basic curriculum. *We the Students: Supreme Court Cases For and About America's Students*, written by Professor Raskin, covers important Supreme Court cases relating to the lives of students at school: locker searches, drug testing, censorship of students' or student newspapers and yearbooks, school desegregation, prayer in the classroom and at football games, gender discrimination and other issues. *Youth Justice in America*, written by Professor Raskin in collaboration with Professors Maryam Ahranjani from the University of New Mexico School of Law

and Andrew Ferguson from the University of the District of Columbia's David A. Clarke School of Law, closely examines cases involving the Fourth, Fifth, Sixth, and Eighth Amendments with the goal of teaching high school students about the criminal justice system. Through this powerful curriculum, engaging lessons and strong relationships, The Project has made a concrete difference in the lives of young people in cities with some of the lowest high school graduation rates in the country.

On day one we tell Fellows to have fun with the law. We give them permission to leave the box of law school thinking and get creative in designing their lesson plans. As an example of this creativity, for this year's moot court problem we commissioned a graffiti artist to design our graffiti drawing for the case. Yet this creativity does not only involve The Project and its Fellows. As I mentioned earlier, The Project is part of a growing civic education movement whereby members of the legal community are investing time working with high school students across the country to ensure that this generation of students grows to become an action-oriented generation that has the civic knowledge necessary to make a real difference in our society.

Once such example comes from my experience before joining The Project as Associate Director, when I taught at Georgetown University Law Center as a Clinical Teaching Fellow in the Street Law Clinic. Headed by Richard (Rick) L. Roe, the Street Law Clinic has brought practical law alive for high school students since 1972. There are two Clinical Teaching Fellows who teach and supervise the law students alongside Rick. Rick always encouraged us to leave the box ourselves when it came to curriculum design, teaching methodology, or when choosing topics for the mock trials we wrote for our citywide mock trial tournament. One year, we spent weeks researching gang tattoos so we could come up with a tattoo design that could either be interpreted as a gang tattoo or a 'matter of public concern' as defined by the First Amendment. Once we were satisfied, we called up a tattoo artist and had him draw it up. We had 300 fake tattoos made so our high school students who played the plaintiff in the case could wear them to the trial.

The following year we stepped up our game and moved from visual to audio. We took on the realities of cyberbullying and the question of how far schools can go regulating what students do in cyberspace. The question we tackled was whether a student who writes a rap song and posts it on a personal website could be subject to school discipline after the song was used by another student to bully a third student at the school. We drafted our facts and then enlisted a New York City rap artist to bring our idea to life. The result was hundreds of students across the District of Columbia listening to and analyzing our rap song *Stupid Money* to see if it violated our fictional school bullying policy. We witnessed students in both the lowest performing and highest performing high schools write their own lyrics to respond to *Stupid Money*. One school even went so far as to choreograph and perform a dance based on the original song and a response song.

Using hip hop to teach law leads to success in most classrooms because high school students are able to connect with the legal topics in very concrete ways that are familiar to them. Although it's now a throwback to the nineties, Jay Z's *99 Problems* is a song that is used consistently to teach students about Fourth Amendment law. It isn't what Jay Z gets right in this song that matters most; it's what he gets wrong (Mason, 2012). In his song, Jay-Z gets wrong a crucial aspect of Fourth Amendment law when dealing with car searches. He says "*you gonna need a warrant for that*" when the police officer asks whether he can search the trunk of the car. Police officers don't need a warrant though. They just need probable cause to believe they are going to find evidence of a crime in the trunk (Mason, 2012, p. 581). That's a really big distinction. It matters. Many of our students experience racial profiling on a daily basis and knowing Fourth Amendment law is an important part of navigating police interactions.

This knowledge comes in handy in everyday school situations as well. Urban schools across the nation have a heavier police presence now than they ever have before. School Resource Officers, who are part of the Metropolitan Police Department, are stationed at public high schools across the District of Columbia. The question brought to life in this year's moot court problem is a very real one. Students are routinely searched at school by School Resource Officers. One of the main questions of our problem—whether the fictional Officer Lewis was acting as a school official or a police officer at the time of the search—is a key question related to the legality of searches occurring on school property of which students should be aware. The impact an increased police presence has on a school's learning environment is an issue students deal with on a daily basis. It's also a constitutional issue. At The Project we work tirelessly to invite students to connect the dots and get involved in the issues that matter in their lives.

By educating youth about their rights, law-related civic education programs are giving students the tools they need to answer the very questions the recent events around the country are creating. When George Zimmerman was acquitted of the murder of Trayvon Martin our students were angry. At least in that case, we could look at the Florida self-defense statute and use it to analyze the difference between *objective* statutes, written so that the jury members must consider what a "reasonable person" in the situation would do, and *subjective* statutes, written so that jury members predominantly consider how the perspective and feelings of that particular defendant at the time of the alleged crime. Having an understanding of how the ways in which statutes are written can affect the outcomes of trials opened the door for us to have meaningful discussions about how laws are made, who makes them, and what we can do to influence how laws are written.

Now we are working with our students to try and make sense of a system where grand juries in two different states decided not to indict police officers in the killings of two men of color in a span of less than 10 days. The terms *grand jury* and *indictment* are on the lips of people across the country but we have to remember the incredibly important role the prosecutor played in both situations. In both Missouri and New York, head prosecutors are elected officials. This is where our Marshall-Brennan Fellows come in. How can we change the system? We can understand how the system works and mobilize to elect prosecutors whose understanding of what justice is and who it is for is rooted in ideals of social justice. As civic educators our Marshall-Brennan Fellows are planting the seeds of change by giving their students the tools to take advantage of these painful moments in time, connect the dots, and get involved with what matters most in their lives.

Melinda Cooperman is the Associate Director of the Marshall-Brennan Constitutional Literacy Project and an adjunct professor of law. She directs the national and international expansion of The Project, oversees the program's efforts in DC public high schools, teaches an advanced constitutional law seminar to the Marshall-Brennan Fellows, and supervises their work in the classroom. Melinda is a passionate advocate for justice and dignity for the most marginalized members of our society. While at the Street Law Clinic, Melinda, alongside her colleagues and students, developed an Innocence Project curriculum to teach students about the causes of wrongful convictions. Melinda is a proud graduate of the City University of New York (CUNY) School of Law where she was a Haywood Burns Fellow in Civil and Human Rights. She also served as a Peace Corps Volunteer in rural El Salvador and directed a youth and family education program at a transitional homeless shelter in San Francisco with the San Francisco Urban Service Project. For more information about the Marshall-Brennan Constitutional Literacy Project we welcome you to contact Melinda Cooperman at melindac@wcl.american.edu.

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