

Playing Spades: The Rich Resources of African American Young Men

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Introduction

This study examines the rich resources related to science that African American young men learn and develop by playing a card game called spades, a common cultural practice in African American communities throughout the United States. One goal of the research is to add to the growing literature in the social sciences and education that is shedding a positive light upon African American young men. Such research is urgently needed given the marginalized position that African American young men currently hold in education and society, a position that has been influenced in part by a long history of studies that have been “undergirded with notions of pathology” (Swanson, 2003, p. 619). In order to contribute to the growing effort to more accurately portray African American young men, the spades study takes a resource-rich view of the players. For instance, the spades players I observe in the cafeteria of a local high school show amazing proficiency at a number of dimensions of the game including language use, strategic thinking, mathematics, memorizing and counting cards, predicting the cards to be played, and the consideration of multiple variables in decision-making. By exposing these rich resources, the study hopes to help change the negative views and deficit notions that teachers, researchers, and others in education often hold of these young men. A second goal of the study is to uncover resources directly related to science, a subject in which African American young men are currently doing worse than all other demographic groups (National Assessment of Educational Progress, 2006; National Center for Educational Statistics, 2001). The study seeks to provide a foundation upon which science teachers can begin to create culturally compatible pedagogies in their classrooms that support robust forms of learning for African American young men.

The Scientific Resources of African American Young Men Learn and Develop in Cultural Practice

A rich but scant literature exists that focuses upon the resources of African American young men in relation to science. The dearth of this literature on African American young men in regards to their resources is indicative of the mostly negative views that social science research has historically taken of them. It is also indicative of the novel nature of this field of study. Given the scant research, I analyze in detail the central findings of the each of the studies reviewed in an effort to highlight what we know about the resources of African American young men in relation to science, as well as how the spades study could add to this growing literature in fruitful ways. I also draw from literature in mathematics, as this discipline is central in scientific practices.

In mathematics education, Nasir (2000, 2002, 2005) focuses on the intimate links between practice, culture, identity, and learning. Her research has uncovered a number of resources that African American young men learn through two cultural practices: playing basketball and dominoes. For example, Nasir (2000) found that basketball players perform significantly better on mathematics problems involving percentages and averages than non-basketball players when estimated answers were considered correct. Further, she found that the players used specialized problem-solving techniques that non-players did not use. Also, when comparing younger and older players, she found that high school players performed significantly better than middle school players, as they used statistics to solve problems. These findings suggest that through basketball, players learn specialized strategies for solving mathematical problems, can perform such calculations at higher levels than non-players, and that they can solve more complex

problems with more accuracy the longer that they play. Likewise, in her longitudinal analysis of African American dominoes players, Nasir (2005) found that the players used increasingly complex strategies, and used artifacts in new ways, as they played at higher and higher levels of play.

Focusing upon science education, Elmesky and Tobin (2005) take a more explicit resource-rich view than Nasir, as they employ African American youth as student researchers in a university-based program. Elmesky and Tobin studied the youths' resources used in the process of creating innovative instructional videos for describing and explaining complex natural phenomena. Like Nasir, they attend to the contextual factors that promote the use of culturally valued resources. While observing the student researchers, Elmesky (2005) initially identified elements of Boykin's (1994) Afrocultural expression including movement, verve, and orality. She also observed resources such as drawing upon social relationships to solve problems, drumming, dance, motion, "rhythm, verbal fluency, and high energy" (p. 335), "colorful and creative discourse" (p. 338), emotional expression, and student shared knowledge of the discursive practices involved in rap music. Importantly, the students became empowered as they used these resources in new ways, along with real world experiences, to contextualize and make sense of abstract physics concepts dealing with sound such as amplitude, pitch, and frequency. Further, the students used resources valued in their peer communities. In so doing, they gained the respect of their peers, a highly valued source of social capital in African American peer groups (Seiler, Tobin, & Sokolic, 2001). By gaining status and respect within their peer groups, the process of creating the video and learning science by using culturally valued resources proved empowering to these students. Their sense of

empowerment extended beyond the end of the project, as the student researchers gained respect from peers and teachers when they returned to school and acted as role models for other students working on similar projects.

Similarly, Seiler (2001) focused upon the resources of African American young men, but did so during a science lunch program she conducted at a high school in a large eastern city. Seiler initially viewed the students' resources in terms of interests and motivations in relation to science, interests that included the construction of large structures, building demolition, pets and pet care, collecting organisms native to urban environments, and science-related topics in movies and sports. While engaging the students in activities around their interests, Seiler observed a number of resources including verbal adeptness, recall of facts and statistics, and the ability to listen to others in discussions around making sense of complex natural phenomenon. Importantly, the students showed the ability to argue both passionately and coherently, and support their arguments with evidence in the form of graphs, statistics, and videotape.

As crafting arguments is a central practice in science (Latour & Woolgar, 1979; Lehrer, Schauble, & Petrosino, 2001), Seiler's study helps us to make further connections between African American young men's resources and practices central to science. Likewise, Hudicourt-Barnes (2003) focuses upon cultural practices and argumentation with Haitian Creole students. In science classrooms, she invokes the cultural practice of *diskisyon*, a style of argumentation and conversation in Haitian Creole communities. By appealing to *diskisyon*, Hudicourt-Barnes exposes the commensurability between everyday student cultural practices, and crafting an argument, a central practice of science (Warren, Ballenger, Ogonowski, Roseberry, & Hudicourt-Barnes, 2001). In

doing so, she found that the Haitian Creole students in her classrooms were predisposed to engaging in practices central to scientific inquiry.

I draw two main conclusions from the research reviewed above. First, resources that relate to science practices are common in African American young men. The kinds of practices in which these young men engage (i.e., basketball, dominoes, and spades) are common practices for many. The everyday nature of the practices suggests that the resources gained from them are commonly found in African American young men across the country. In all of the studies cited above, these young men have valuable scientific resources that could be put to work in productive ways in classrooms. Second, a number of the resources highlighted show remarkable resemblance to resources central to the practices of science and mathematics. Mathematical skills in general, especially the problem-solving skills using statistics developed by Nasir's basketball players, are valuable resources in scientific data analysis. Further, argumentation is so central to science that experimentation, the once *sine qua non* process of science, is now seen as a process that supports argumentation (Lehrer, Schauble, & Petrosino, 2001). A scientist will have little success if they cannot use experimental results to craft an argument that situates their findings in a broader field of study. As Seiler's (2001) findings demonstrate, African American young men draw upon a host of resources to craft evidence-based arguments. Hudicourt-Barnes' (2003) study shows that cultural forms of argumentation can be implemented successfully in science classrooms. Such findings should encourage educators to realize, value, and nurture the resources of African American young men, as they are highly compatible with the practices of science.

Research from a resource-rich view of African American young men in relation to

science and mathematics has identified a number of resources of African American young men. My spades study builds upon this research by identifying resources learned and developed in a cultural practice that relate directly to science. For example, the study highlights how the players use observation and inference as a basis for deciding which cards to play. By examining the science-related resources learned and developed in cultural practice, the spades project seeks to provide science educators and researchers with an empirical basis to inform culturally affirming pedagogies that foster connections between student resources and those central to science.

Research Methodology

Theoretical Framework. I employ a cultural historical activity theory (CHAT) framework in order to place the resources of the spades players in a larger historical and cultural context (Gutierrez & Rogoff, 2003). My analysis is conducted through both a literature review of the history of African American experience with the game of spades and its predecessor, bid whist, and through the analysis of games and interviews with players. The cultural-historical approach highlights how African Americans have changed and are changing the game of spades and ties the resources that the spades players learn to a larger history of African American experience with the game. Moving past notions that the players' resources are individual traits, a CHAT lens views them as "repertoires of practice" (Gutierrez & Rogoff, 2003) that have evolved in a practice that has been passed down from generation to generation of African American card players. Further, the CHAT framework situates learning and development within cultural practices (Cole, 1996; Rogoff, 2003) therefore recognizing and valuing the significance of forms of cognition that arise in out-of-school settings. In this way, the framework

challenges deficit notions of African American culture. Further, it exposes relationships between forms of cognition that arise through cultural practice, and those that are central to disciplines like science. The theory then encourages educators to build connections between student resources learned through cultural practice and those central to science.

Research Methods. In order to closely examine spades as it is played in naturalistic settings in the school cafeteria, I conducted a qualitative study using ethnographic methods. I observed games and conducted player interviews in the school cafeteria. Games and interviews were tape-recorded and/or field notes were recorded. I called a number of games card-by-card into a hand held digital audio tape recorder in order to recount the play of the game and the dealt hands of the players. For this paper, I focus upon one game of spades recorded during the spring of 2007. After completing a play-by-play analysis, I reconstructed the actual hands using a deck of cards. During a focus group interview, I had the players replay the game card-by-card and tell me their reasons for making particular plays.

Research Setting. My spades study is part of a larger research project being conducted by Dr. Nancy Ares. Called the WideNet Project, Ares' research examines student cultural practices in mathematics classrooms using networked technologies. As a research assistant for the project, part of my responsibilities was to observe students in the cafeterias and common area of the school, paying particular attention to cultural practices. During these observations, I noticed the game of spades at Biddie Mason High School in the spring of 2005, and I have been conducting observations of games ever since. During the fall of 2006, Dr. Ares encouraged me to pursue an in depth analysis of the practice for my dissertation.

Biddie Mason High School (a pseudonym) in Rochester, NY, is located in a large urban school district that has been designated as the neediest in the state, surpassing districts in New York City, Buffalo, and Albany in the proportion of students who are living in poverty. The New York State Department of Education reported that in 2003, the school served ~2200 students, 60% of whom are African American, 26% Hispanic, 12% white, and 3% Asian, Native American, Alaskan, and Pacific Islander; 36% received free or reduced lunch, and 11% were designated as English language learners. The demographics of the school reflect those of the surrounding community. Over the last three years, only ~14% of students have received Regents diplomas that lead to post-secondary education, and ~18% were designated “noncompleters.”

Specifically, research took place in the school cafeteria. The cafeteria is divided into two sections, a south side for older students, and a north side for younger students. Initial observations have revealed that most spades players are juniors and seniors, so most observations and interviews will take place in the South section. The cafeteria has a typical arrangement for a school built in the late 1950s. The south section is a large rectangular room, with a main entrance on the West end, and food serving lines at the east end. The students eat and play cards at large, brown cafeteria tables that seat 12 people. Spades players typically sit at an end of a table in groups of four.

Participants. The research participants for this study were four African American and one Hispanic-Italian young man ranging from 16 to 18 years of age. Participants were selected based upon their consistency of playing spades and their willingness to be a part of the study. Although I studied games taking place at different tables, my

observations overall focused upon one core group of players who engage in the game on a daily basis.

I chose to focus upon African American young men for both convenience and need. First, almost all of the spades playing community at Biddie Mason consists of African American young men. Further, according to the achievement gap data, African American young men lag behind all other demographic groups in science (National Assessment of Educational Progress, 2006; National Center for Educational Statistics, 2001).

A Brief History of Spades

Spades finds its roots in the game of whist, a popular trick-taking game played in the gambling houses of London in the 1700s (Morrison & Lamb, 2005). European settlers brought the game to America where it went through sufficient modifications to warrant a change in its name to American Whist (Hoekstra, 1883). During the Civil War, Union soldiers brought American whist to the South introducing the game to African Americans. According to Morrison and Lamb (2005), African Americans added the practice of bidding and changed the name of the game to bid whist. With the help of African American soldiers, sailors and sleeping car porters on trains, the game of bid whist spread quickly to African American communities across the country where it gained in popularity, especially in the rural south among farmers (Morrison and Lamb, 2005). During the Great Migration from 1914-1950, many southern African American farmers resettled in industrial cities in the north to find work. In these urban centers, bid whist became a staple of African American family reunions and rent parties: gatherings at apartments where occupants charged small entry and drink fees in order to help pay the

rent (Jaynes, 2005). Bid whist reached its height of popularity in the 1940s and 1950s, but is currently seeing a resurgence, especially on the internet and on college campuses. Presently, bid whist remains virtually unknown outside of African American communities (Jaynes, 2005).

As bid whist spread throughout African American communities in northern cities, spades arose out of the Cincinnati area in the late 1930s (Andrews, 2000); however, it remains unclear whether or not African Americans were involved in creating the game. Regardless, the presence of bidding in spades bears the mark of African American influence upon the game. Called “baby bid” (Morrison and Lamb, 2005, p. 83) by bid whist players, spades is a simplified version of its predecessor. Currently, spades is an immensely popular game and ranks as one of the most played card games on the Internet and on college campuses nationwide.

The Game of Spades

By combining data from literature searches, direct observations of games, by playing spades myself, and through interviews with players, I have discerned three versions of the game of spades. Traditionally, spades is played as a 4-person, 2-team card game. Similar to bid whist and bridge, it is a trick-taking game (4 cards/trick, 13 tricks per deck) in which “every player puts one card from his or her hand into play. ... Once each player has played a card to the trick, they are turned face down and removed from play” (http://en.wikipedia.org/wiki/Trick-taking_game). Spades ‘trump’ or outrank all other suits in taking tricks; the higher cards within suits outrank lower cards (e.g., king outranks ten). Further, traditional spades is an “Exact-prediction trick-taking game ... [that rewards] players for predicting (usually after knowing their hands) how many cards

they will take”. Teams that accumulate ten tricks or ‘bags’ above their bids lose 100 points from their total score. Games begin with a round of bidding (no minimum bid) during which players announce how many tricks they think that they will take. Partners add their bids together and work cooperatively to achieve their bid. If a team gets set (does not make their bid), they lose a total of ten times the number of their bid. Most games are played to 500.

According to the players at Biddie Mason, members of their communities engage in three versions of the game: traditional, old school and new school spades. For the most part, the players’ caregivers play the traditional and old school versions whereas the students play new school spades. Mainly, old and new school spades players have changed the game by adding trump cards and eliminating bag limits. In old school, the trump cards are as follows, listed in order of decreasing strength: big joker, little joker, two of diamonds, two of spades, and then the ace down to the three of spades. Two threes are removed from the deck in order to maintain a total of 52 cards. During interviews, the players revealed that they played old school spades when they first arrived at Biddie Mason as freshmen. One student introduced new school spades into the community in 2004 and they have been playing that version ever since. In new school, the trump cards are as follows: big joker, little joker, deuces of each suit (hearts, clubs, diamonds, spades), then the remaining spades in descending order with ace being high. The addition of spades to the deck increases the probability of two occurrences: that each player will be dealt spades and that any player or team will be dealt a dominant hand. The players claim that the addition of spades makes the game more fun, as it increases the chances of getting good hands.

The historical analysis presented above demonstrates that African Americans share a long history with the game of spades and its predecessor bid whist. Taken as a whole, the games have been passed down from generation to generation for nearly 150 years. Consequently, the students at Biddie Mason are engaging in a cultural practice that dates back to the Civil War Era. What I show in the next section is that African American young men, by becoming experts at spades, have developed advanced forms of cognition that are relevant to science. The historical analysis places such forms of cognition in a historical context. In other words, these forms cognition have arisen in practice, are culturally and historically derived, and have been appropriated by African Americans for many generations.

Play-by-Play Analysis

I audio-recorded the game shown below in Table I card-by-card. The notations stand for particular cards (i.e., ac = ace of clubs; LJ = Little Joker, etc.). Each line read left to right represents the dealt hand of each player and each column represents each trick (or book, as the players call it). Cards in bold type represent the lead card played in each book. After completing my own play-by-play analysis of the game, I reconstructed the actual hands using a deck of cards. During a focus group interview, I had the players replay the game and tell me their reasons for playing particular cards. I was especially interested in plays that were puzzling to me as a researcher and an amateur spades player. The order of play for the first book is Kevin, Moe, Abe, and Sid. Kevin and Abe are partners, and they are playing against Moe and Sid. Moe was not present at the interview, so Jonah took his place.

I begin with the analysis of the first book of the hand displayed above. Kevin led the first book with his ace of clubs. Ace leads early in the game are typical. As Kevin

Player	Book Number												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Kevin	ac	9h	4c	7c	6d	3s	10d	7s	8c	2d	8s	as	10s
Moe	10c	qh	6s	4h	9d	7h	kd	qd	js	jd	2h	LJ	5d
Abe	6c	kh	qc	jh	ad	8h	8d	3d	5c	6h	qs	2c	ks
Sid	9c	ah	jc	5h	7d	10h	4d	kc	4s	2s	5s	9s	BJ

Table I. Spades Game - March 3, 2007

states: “Cause, that’s my only ace, pretty much. It’s my first book.” Sid adds: “Well usually, it’s a definite book.” Players lead aces early as the probability is high that all players are holding at least one or two cards in each suit. As a result, an early ace lead almost always takes a book. The other players throw low cards in the suit, but hold onto their higher cards in hopes that they might take a book. However, Sid, who played the 9c in the original game, was going to play a jc during the interview. This is how he explained his new strategy: “I was gonna play the jack so I could play a little bit high, but not low, so they be like, well he got a lot of them over there. You gotta try to confuse.” Sid wanted to play the jack in order to make other players think that he was holding fewer clubs. The higher the card a player throws off, the fewer cards in that suit he typically has. If players knew that he was holding many clubs, they could have exploited this weakness. For instance, knowing this might tell an opponent what cards their partner is cutting. If Sid has many clubs, his opponent’s partner may have a small number of clubs or none at all. So even when following suit, expert players like Sid often play cards strategically to either hide, or in some cases reveal, what they are holding.

In the next play, Kevin, who took the first book with his ace, leads a 9h. Early in the hand, players often lead a low card in hopes that their partner has the ace, a 33.3% chance. If it does not work, not much is lost, so the risk is very low, but the reward is potentially high. Also important to consider is that Kevin is essentially telling everyone that he does not have the ace.

Moe follows Kevin's lead with a queen of hearts, a play that the other players critique during the focus group interview. Jonah asks this question of Moe's play: "He had three hearts, why would he play the queen?" What Jonah was suggesting was that since Moe has a partner in last position, that playing a medium high heart is a waste. Moe must know that if neither Kevin nor he has the ace, then one of the next players must have it. Either way, he will not take the book with his queen, so playing a low card here (playing off) saves his queen for later.

But playing the queen sets in motion an interesting play by Abe: the king of hearts. He obviously knows that Sid in last position has the ace, but he plays the king knowing that it will get taken. Why sacrifice his king here when he could play a low heart and perhaps take a book later after the ace has been cleared? Here's how Abe and Sid explained this strategy:

Al [Me]: Now what would you [Abe] play here?
Abe: I gotta play the king, so the queen won't walk.
Al: Right now you [Sid] would play the ace. Exactly. That's what happened in the game. Now my question is why would you [Abe] play the king of hearts there, 'cause you know it's not gonna take it cause...
Abe: Yea, cause if the queen walks, that's an extra book that they woulda had with the ace.
Sid: Yea, I'm just gonna play up under him.
Abe: If I wouldn't have played the king, his queen would have walked, and he [Sid] would have played a low heart instead of the ace.
Al: Oh.

Sid: He'd still got that in his hand. If he hadn't have played that [the kh], then I could have played this [a low heart].
Abe: Then the queen would have walked, and then the ace would have walked.

So Abe's play was defensive: it kept the other team from taking two books: one with the queen and one with the ace. His opponents were attempting to maximize their winnings given their cards, while Abe played the king to minimize his team's losses. To do so, he considered a number of pieces of evidence that he either knew or inferred: the cards played by the two previous players, the cards he is holding in the suit led, and what cards the player in last position is likely holding given what cards have been played. Given this evidence and the inference made, Abe predicts possible outcomes given his choices (kh, jh, 8h, 6h). If he plays a card lower than the queen, the last player will lay off, then Moe will take the book with the queen. Moe will then likely lead a heart, knowing that his partner has the ace. Since it is early in the game, and hearts have only been played once, the probability is still high that the ace will walk. However, if Abe sacrifices his king, Sid will have to play his ace, and the opposing team will take only one book. So by considering evidence, by drawing inferences about what cards players are holding based upon what cards have been played by whom, and by predicting various outcomes given one's choices, the players construct strategies that either maximize gains or minimize losses. Such strategic thinking goes beyond a focus on the current book being played considering it within the context of previous books played and what books might play out in the future given particular choices.

The sixth book reveals how the players infer what cards players are holding by what they play. Abe leads the book with the 8h, and his partner Kevin takes it with the

3s, a trump card. Abe had a number of cards to choose from, so I asked him why he played the 8h. Kevin responded by saying, “Cause he knew I was cutting.” Then Abe said, “Cause he played off last time when the jack walked.” If we look at the fourth book, Abe led a jh. He knew that the ah, kh, and qh were all played in the first book clearing the way for the jack to take a book, a somewhat rare occurrence in new school spades. Then Sid plays the 5h, and then Kevin, Abe’s partner, played off with a 7c. Kevin did not trump here because his partner Abe had already won the book. Trumping now would be going over his partner, not maximizing the use of their cards. Also, by playing the 7c, Kevin essentially told Abe that he was ready to trump hearts. So they took the book with Abe’s jh, and two plays later, when Abe had the lead and had a number of cards from which to choose, he strategically played the 8h knowing that Kevin would be cutting hearts. By playing as a team then, they maximized the use of their relatively low cards (jh, 7s) and took two books.

Another example of this form of advanced play comes from another critique of one of Moe’s plays. During the ninth book, Kevin led with an 8c and Moe followed with a js. Here’s what the players said about that play:

Al: [To Jonah.] Now what were you gonna play?
 Jonah: I would have played off ‘cause I know that Sid couldn’t.
 Al: Tell me that again. Explain that out.
 Jonah: I would have played off because I knew that my partner is cuttin’...
 Abe: Cause he played off with the king of clubs.
 Jonah: ...and he would have won the book anyhow cause he’s cuttin’.
 Sid: Moe don’t know what he be doing so...
 Abe: Remember the last book he [Sid] played off with the king of clubs?
 Al: Right.
 Abe: So that means that he don’t got no more. So Jonah wouldn’t cut. He’d just play off so his man could take the book.
 Al: Cause he’s got position.

Abe: Yea.
Al: And he can throw a low spade on there and take it.
Abe: Yea.

Again, the players can infer from previous plays what their teammate is holding and what he will likely play. They use this information to maximize the combined strength of their cards. To make an expert level play, Moe should have known that Sid was cutting clubs, then saved his js for later and played off with one of his diamonds. This would have allowed Sid to take the book with the lowest spade possible saving the js for another book.

The above analysis indicates that to be an expert in spades requires that the players learn and develop a number of resources. The players learn to read their hands, not only to assess their strengths and weaknesses, but also to draw inferences about the other players' hands as well. For instance, if a player is holding a high number of cards of any given suit, then the probability is high that someone will be cutting that suit. They subsequently read the cards other players are playing to see who will be cutting. If a player throws off a high card in that suit, then that player may be the first one cutting. If that player happens to be your partner, then you know to lead that suit so that he will play trump.

The players also learn to communicate using the cards. Such communication involves "reading" cards: not only making an observation about a card being played, but also inferring what it means about the cards the player is holding. Kevin describes this form of communication as "Some kinda subliminal shit going on" involving no language, only cards played in context. Of course, the players consider cross boarding, or the direct communication between teammates, as cheating and it is greatly frowned upon at these

tables. As a result, the expert players have developed ways of knowing what their teammates are holding based upon the cards they play. However, as part of the continual arms race going on at these tables, players like Sid play cards designed to send inaccurate messages to confuse their opponents. As all of the expert players have developed the ability to read the cards, some begin to jam that communication by playing cards to make opponents draw incorrect inferences which could prevent them from capitalizing upon one's weaknesses.

Going hand in hand with this form of communication, the players have developed a selective memory of cards played. It would be virtually impossible for a player to remember every card played. Consequently, they have learned to read cards played at particular times. Remember above when Abe inferred what Kevin meant when he played off with the 7c: "I am ready to cut hearts, so if you get the lead, throw me a heart!" He remembered this card two books later when he led with his 8h.

To these players then, a game of spades is akin to solving a mystery. At the beginning of the hand, they see only their hands, a part of the bigger picture. Every card played subsequently provides a piece of evidence about what cards are being held by which players. By making observations and memorizing which players have played which cards, and by inferring what that piece of evidence tells them about the cards the other players are either holding or not holding, they begin to form a picture of the puzzle, one more complete than shown by the cards played. They use this picture to make plays to maximize the number of books taken while minimizing the number of books lost.

As seen above by the difference between the players in the interview and Moe, using observations and inferences to base future decisions separates the experts from the

novices. The expert strategies and resources highlighted above are designed around an ethic of conservation: taking books with the least amount of expenditure of the value of one's cards. The expert players are essentially conducting a cost-benefit analysis by expending the least amount of cost for the maximum benefit to the team. Any player can take a certain number of books with a hand full of aces and jokers; however, such hands are rare. The expert players at Biddie Mason have developed resources that help them win books even with modest hands.

The analogy to science is striking. Scientists try to solve mysteries about nature. They do so by collecting and connecting pieces of evidence gathered through a host of practices (i.e., research, modeling, and experimentation) to form a more complete picture or model of a phenomenon. Like the spades players, scientists always operate from an incomplete picture of reality. Successful scientists are those who combine their understanding of empirical evidence and use their imagination and creativity to see past the evidence at hand and use it to make inferences about an imagined reality. They then make choices about further investigations that will lead to further evidence to form a more complete picture. The above analysis shows that spades players do something very similar in their world of spades, and therefore, come well-equipped to science classrooms to solve such mysteries. They come equipped with the ability to make and memorize observations, draw inferences based upon their observations, use probabilistic reasoning in context, and make decisions that maximize gains and minimize losses using the least amount of resources.

Further, the cognitive resources that these players learn and develop are intimately tied to spades: a cultural practice that, along with bid whist, dates back nearly 150 years.

It would be short sighted then to view the cognition in practice that we saw in the above analysis as traits of the individual players. Borrowing from Gutierrez and Rogoff (2003), it is helpful to view such resources as repertoires of practice: the shared and dynamic forms of practice, and their associated forms of cognition, that have evolved over time in cultural practice. The fact that bid whist and spades are quite common supports the notion that the kinds of resources relating to science exhibited by the players at Biddie Mason are widespread throughout African American communities in the United States and date back 150 years. Interestingly, these resources of the spades players may actually be somewhat simplistic compared to those of expert bid whist players, as that game is much more complicated than spades. Further, bid whist and spades are not games played only by the intellectual elite. During their inceptions, southern farmers played bid whist and working class African Americans played spades in urban centers in the north. As a result, the kinds of cognition identified above have arisen from a working class cultural practice and are likely common across both gender and class in African American culture.

Discussion

Taken together, the historical and play-by-play analysis presented above speaks to two issues raised early in this paper: the deficit views often held of African American young men and the connections between cultural and scientific practices. First, the advanced forms of cognition highlighted above, along with the historical analysis, challenge deficit views of African American young men and their communities. The findings should encourage educators to rethink and reflect upon the identities that they project upon African American young men and women, especially those practitioners and

researchers involved in science education. Boykin (1994) held that recognizing and eliminating cultural deficit views is the first step to creating cultural compatibility in classrooms and improving achievement for African American students. By maintaining pedagogies based upon a deficit model, Boykin argues that “outlets for intellectual competencies will continue to be denied; [and] existing skills will be overlooked,” resulting in the construction of “impenetrable cultural borders” (p. 251) leading to academic failure. Boykin thus challenges us to move from deficit to asset-based views of African American young men and calls for creating pedagogies that legitimize and build upon their resources. The resources identified above should serve as fertile ground to nurture pedagogies in science education that build upon specific resources that are commonly held across African Americans in general, and apparently, have been for quite some time.

As science educators, the questions that we might ask are: 1) in science classrooms, do we actually engage students in solving mysteries through inquiry-based learning, and 2) do we recognize the resources that students like these spades players bring into our classrooms? Insights into these questions may provide a basis for creating science pedagogies that legitimize, rather than marginalize, the valuable resources that African American young men bring into our classrooms, but tend to go unrecognized in so many cases.

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