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CONTENTS

Acknowledgements ................................................................. 4

Contributors ........................................................................... 5

Erin Drake .............................................................................. 7
  Stigmatized Workers and Identity Formation: Spiritual Healers of
  Botánicas in San Antonio
  WINNER OF THE 2014 INFORMATION LITERACY PRIZE

Paige Roth .............................................................................. 22
  Counting Cucumber Hairs

Nicole Vreeland ................................................................. 38
  Low-Diversity, High-Density Intercropping: An Intermediary
  Step to Intercropping Food and Fuel Grasses

Mason Walker ...................................................................... 52
  In Praise of “Peculiar Bliss”: Adherence and Innovation in John
  Keats’s Personal Theology

Maddie Winchester .......................................................... 62
  The Right to Be White: Fighting the Persecution of Albinos in
  Tanzania
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Stigmatized Workers and Identity Formation: Spiritual Healers of Botánicas in San Antonio

ERIN DRAKE

Botánicas and Spiritual Healers

Botánicas are stores that sell herbs, natural remedies, candles, and other goods that are used in Latin American folk healing practices. Located in U.S. cities with large Latino populations, these stores can be described as “the visible door to the invisible world of folk healing” (Viladrich 2006:409). In addition to selling goods for folk healing, botánicas also employ spiritual healers that offer services such as healings, cleansings, and card-readings, among others. These healers identify themselves in diverse ways, but many are called curanderos, Santeros, or espiritistas. While the practices vary among these different types of healers, most Latino healers combine religious prayer and herbs to heal their customers in a holistic sense that combines physical, mental, and spiritual conceptions of health. Several studies have analyzed how the use of these practices relates to the health care trends of this growing population in the United States (Gomez-Beloz et al. 2001; Higginbotham et al. 1990; Fernandes 2006; Trotter et al. 2010; Andres-Hyman, 2006; Jones et al. 2001). The research conducted by Gomez-Beloz and Chavez focused specifically on botánicas and suggested that they serve as a “culturally appropriate health care option for Latinos” (2001).

Our study initially aimed to examine how botánicas function as a form of health care, but we quickly learned that the relationship between botánicas and the Latino population in the U.S. has many complexities. Botánicas are also deeply intertwined with the religion of their customers and of the Latino population in the U.S. While a variety of religions are represented among the
goods sold in these stores, the influence of Catholicism is the most prevalent. This is not surprising, considering that sixty-eight percent of U.S. Latinos identify as Roman Catholic (Suro, et al. 2007). However, traditional Roman Catholicism stands against the use of botánicas due to their associations with witchcraft and other occult practices (Gregory 1999; Beliso-De Jesus 2013; Pabón & Pérez 2007; Jacobson 2003). As a result, social stigma toward the use of botánicas is heavily present among the Latino population in the U.S. This paper will move beyond the initial aim of the study in an attempt to understand the complexities of the stigma that exists toward the “invisible world of folk healing” through the eyes of the healers themselves (Viladrich 2006:409). This paper will analyze the process by which spiritual healers of botánicas legitimize their identities in response to the stigma surrounding their practices.

**Contextualizing the Study**

There is a wide base of literature focused specifically on Latin American spiritual healers, including curanderos, Santeros, espiritistas, and other types of practitioners employed by botánicas (Press 1971; Mulcahy 2005; Koss 1977; Viladrich 2006; Ceja-Zamarripa 2007; Espin 1988). Additionally, several pieces of literature acknowledge that a stigma toward these practices exists in the United States (Gregory 1999; Beliso-De Jesus 2013; Pabón & Pérez 2007; Jacobson 2003). The Catholic Church is the primary source of this stigma within Latino communities, as it has historically “denounced [these practices] as heretic[al]” (Romberg 1998:72). This stigma causes people to perceive spiritual healing practices as primitive and dangerous due to their associations with witchcraft, sorcery, and other occult activities that are considered blasphemous. Although there are several existing studies on spiritual healers as well as literature that discusses the
stigma toward their practices, this paper will connect these themes by discussing the impact of this stigma on the identity of healers.

The stigma that causes spiritual workers to be viewed as immoral and blasphemous ties into the social theory of “dirty work” developed by E.C. Hughes (1951). According to Hughes, an occupation can be stigmatized as “dirty work” because it is “physically disgusting” or “a symbol of degradation.” Hughes also suggests that “it may be dirty work in that it in some way goes counter to the more heroic of our moral conceptions” (1951:314), and this particular concept of dirty work best describes the stigmatization of spiritual healers in botánicas. Ashforth and Kreiner, two scholars who have based their work on Hughes’s theory, would describe the occupation of a spiritual healer as having “moral taint” (1999). These authors suggest that individuals involved in dirty work are able to maintain a positive identity through a variety of “defense mechanisms,” such as occupational ideologies and social weighting (1999: 421). Ashforth and Kreiner suggest that the use of these defense mechanisms is augmented by “strong workgroup cultures” that emerge in response to stigma (1999:421). This study will recognize spiritual healers as dirty workers, according to Hughes’s (1951) theory. Additionally, the analysis of this paper will be primarily based on of Ashforth’s and Kreiner’s (1999) research on dirty work and identity formation in order to understand how these healers legitimize their identities within stigmatized practices (1999: 429).

Methodology

This study is based on eight interviews with individuals who were employed at four different botánicas in the southern metropolitan area of San Antonio, Texas. Six of these individuals identified as spiritual healers, and two of these individuals were managers of botánicas. Three individuals identified as Santeros, two
identified as *curanderos*, and one identified as a *reiki* master. Of the eight interviewees, four were female and four were male. All of the interviewees were Latino, and they ranged in age from early twenties to mid-sixties. The interviews took place during October and November of 2013. As many of these individuals were connected through a social network, a snowball sampling method was used to set up interviews. Two of the interviews occurred in conjunction with researcher participation in one healing and one card-reading. Ethnographic field notes were gathered based on these experiences of participant observation, which also contributed to our source of qualitative data. We found that individuals employed by botánicas are typically very busy, and this is especially true for the healers. This made it difficult to set up interviews, as did the fact that some individuals were hesitant to share information about their practice. One of the individuals refused to have the interview recorded. Our data would have been richer if had we been able to interview more healers, but that would have required us to have more time to expand our social networks. However, considering the diversity (with regard to gender, age, and type of healing practice) of those interviewed, our sample is fairly representative of spiritual healers employed by botánicas in San Antonio.

Prior to conducting this research, I had never heard of a botánica. Since the botánicas that we visited in San Antonio are located in a low-income region with a large Latino population, conducting this research forced me out of my comfort zone. As a white female from a relatively affluent background, I felt very much like an outsider in the world of botánicas and spiritual healing. Additionally, I had never participated in any form of traditional healing practice, so I carried certain biases regarding the legitimacy of these practices. Learning to separate these biases from my research was an important step in the data collection process. My status as an outsider was also a disadvantage in terms
of building rapport with botánica healers and employees; it took
time and patience to gain access to their knowledge about these
practices.

**Strong Occupational Culture: “I was born with a gift”**

According to the study by Ashforth and Kreiner (1999), the
development of a strong occupational culture is an important
component of maintaining a positive identity within dirty work
because doing so allows workers to withstand stigma as a group
rather than as individuals. In describing occupational culture,
these authors state that “people sharing common social category
and social pressures come to regard themselves as ‘in the same
boat’—as sharing a common fate” (1999:419). Thus, occupational
culture results from the process by which dirty workers
differentiate themselves from others. This differentiation process
is critical because it is through occupational cultures that
stigmatized workers employ defense mechanisms against the
stigma itself (Ashforth & Kreiner 1999).

When understanding spiritual healers in terms of dirty
work, it is clear how an occupational culture is formed among
these individuals. For example, several individuals discussed
spiritual healers as either being “born with a gift” or “having a
calling.” Javier, a healer who identified as a *Santero*, illustrated his
identity as a healer when he stated, “But people like me, you have
to understand... you have to be born with a gift. And I was born
with a gift.” By making this statement, Javier is not only
describing an identifying trait for himself as an individual but is
also describing an identifying trait for all healers, or as he put it,
“people like me.” In making this statement, Javier distinguishes
both himself and all healers in general from all other people. In
the theory of Ashforth and Kreiner, Javier views himself as
sharing a “common fate” with other individuals in his occupation (1999: 419).

Four other interviewees also mentioned a “gift” or a “calling” as an identifying trait of spiritual healers. These types of statements are also discussed in the literature surrounding spiritual healers at botánicas (Jones, et al. 2001; Viladrich 2006; Viladrich 2006; Mulcahy 2005). One woman in our study who identified as a Santera described another healer in her social network by saying, “...he just happened to be one of the ones, you know, he did have this calling.” According to Ashforth and Kreiner (1999), statements like these represent the process of articulating an attribute that not only identifies these individuals as spiritual healers, but also allows them to view themselves in the context of the world through an “us versus them” perspective. These articulations create a cohesive group of people that shares a stigmatized occupation, and this “facilitate[s] esteem-enhancing social identities” through two “defense mechanisms” that will be further discussed: occupational ideology and social weighting (1999:419).

**A Healer’s Ideology: “This is meant for good”**

As posited by Ashforth and Kreiner (1999), the formation of a workgroup culture is the first step in forming a positive identity amidst occupational stigma, which was exemplified among spiritual healers through their unifying identification with spiritual gifts. Continuing with Ashforth and Kreiner’s theory, workgroup cultures allow for the formation of occupational ideologies, or “systems of belief that provide a means for interpreting and understanding what the occupation does and why it matters” (1999:421). The authors suggest that there are three ways of forming an occupational ideology that counteracts the stigma toward that particular occupation: “reframing,
recalibrating, and refocusing” (1999:421). In this section, I will illustrate how spiritual healers at botánicas use the tactic of refocusing to maintain positive identities while experiencing stigma. By using the tactic of refocusing, “the center of attention is shifted from the stigmatized features of the work to the nonstigmatized features” (Ashforth & Kreiner 1999).

With regard to spiritual healers, this tactic is used to shift the focus from the “bad” aspects to the “good” aspects of their practices. Other studies have described “good” practices as those with the intent of providing the customer with protection, good luck, empowerment, and love (Espin 1988; Viladrich 2006; Ceja-Zamarripa 2007). The practices considered “bad” involve evil spirits, demons, the devil, curses, hexes, witchcraft, or other practices that intend to do harm to others (Jacobson 2003; Koss 1977; Press 1971). In this study, many healers focused only on the “good.” For example, a curandero, whom I will call James, firmly stated,

We have botánicas that work for good, only good, and we have botánicas that work with both good and bad… So we try to just, so everybody knows, that there are some places that only work good. So this practice is not for good and bad, or bad at all. This is meant for good.

In this statement, James is “willfully dis-attend[ing] to the features of work that are socially problematic,” or the aspects of folk healing that are viewed as bad, evil, or occult through the lens of traditional Catholicism (Ashforth & Kreiner 1999: 423). Like several other healers who made similar statements regarding practicing only “good” and not “bad,” James doesn’t deny the existence of “bad” in the world of botánicas and folk healing. However, he purposefully presents his own work as
positive. While he explicitly makes this shift through this statement, he and several other interviewees latently shifted the focus from the “bad” aspects of folk healing to the “good” aspects through anecdotes of extraordinary healing that they had accomplished. James discussed a woman in a wheelchair and how his healing practices helped her to walk again. Another curandera, whom I will call Fernanda, talked about a pregnant woman who had been told that her baby would die. Fernanda said that after healing her, the woman gave birth to a healthy baby. By explaining these stories in detail and emphasizing their pride in these positive experiences, the healers place their attention on the aspects of their practices that are not stigmatized among Latinos. Through this tactic of refocusing, spiritual healers develop an ideology about their occupation that “renders it more palatable” and offers them “internal legitimacy” (Ashforth and Kreiner 1999: 421).

In contrast, the Santero called Javier did provide detailed explanations of stigmatized practices. He was the only healer to describe his practices as witchcraft and to acknowledge participation in practices considered “bad.” Unlike the other healers in our study, Javier described practices such as animal sacrifice and harming others with spiritual powers—occult behaviors that are strongly stigmatized within the Latino population. However, he did make the statement, “I do have my limits,” which parallels other healers’ statements about staying within the limits of the “good.” Although Javier did not reframe his practices like the other healers in this study, that could be due to the fact that he was the youngest healer. He was still learning these practices and perhaps had not been exposed to stigma long enough to feel the “desire for social validation” (Ashforth & Kreiner 1999: 419).

By refocusing on the non-stigmatized aspects of their practices, the spiritual healers in this study form an ideology...
about their occupation that justifies the work itself. With the exception of Javier, every healer referenced this occupational ideology by making some sort of statement about practicing only “good” rather than “bad.” This ideology “simultaneously negat[es] or devalu[e]s negative attributions while creating or revaluing positive ones” so that spiritual healers can positively identify with their occupation (Ashforth and Kreiner 1999: 421).

**Moderating stigma: “Well, okay, you call that being a Christian?”**

Ashforth and Kreiner (1999) illustrate how occupational ideologies legitimize the identities of stigmatized workers, but they also discuss the importance of social weighting in identity formation. Social weighting refers to “practices that moderate the impact of stigma” (1999: 414). While the authors discuss several forms of social weighting, I will focus on the concept of “condemning the condemners” and how this tactic allows healers at botánicas to form positive identities by moderating the stigma toward their occupation (1999:424). By using this strategy, spiritual healers question the “legitimacy of critical outsiders as moral arbiters,” and thus “dismiss the condemner’s perceptions” in order to maintain positive identities (1999:424). One example of this is when a Santera, whom I will call Carla, made a statement about her sisters:

I have sisters that, oh my god, you know. No, they will not come out of the church, and I am doing something wrong. But yet, they will fight with everybody in the world. [laughs] You know, and I’m going like, well, okay, you call that being a Christian? You know, okay, you think you’re safe because you go and pray, you know, and whatever
...you do, go to mass, or whatever. And I’m goin’ like, I don’t even go to mass, not regularly all the time. And I feel like, okay, I’m like above in my openness...

In this statement, Carla discusses how her sisters reject her involvement with folk healing due to their adherence to Catholicism. By describing them as “fighting with everybody in the world” despite praying and going to church, Carla posits her sisters as hypocrites and questions their moral character. Through this act of questioning, she renders their judgments tenuous and is able to justify her identification with the practices that her sisters stigmatize.

While Carla’s statement explicitly displays Ashforth and Kreiner’s (1999) theorized process of condemning the condemners, other individuals also participated in this process by making references to the Bible. One botánica employee, Carlos, stated, “You know, they say, you shouldn’t. They say you shouldn’t do that, but in the Bible, I mean, it talks about card readings...If you look, it talks about it, reading cards.” In this statement, Carlos implies that people say “you shouldn’t” participate in the practices of botánicas because doing so goes against Catholic principles; however, he claims that these people are making this assertion without actually referencing the Bible. When he states that these practices exist in the Bible, he questions the knowledge of the people who make those assertions. In doing so, Carlos can disregard the assertions that reflect stigma and thus maintain a positive identity.

The other individual who referenced the Bible was a female card reader. Unlike Carla and Carlos, this woman participated in the process of “condemning the condemners” in an alternative way. She initially conferred a level of credibility to certain criticisms by admitting that the Bible denounces these...
types of practices. However, this woman was still able to condemn the condemners by questioning how the Bible is interpreted and by suggesting that there is a “confusion of the material, physical, and spiritual in the Bible” (Field notes 11/21/13). She could then discount any of the judgments made against her that were based on the Bible, and she was able to legitimize her own occupational identity as a card reader.

In this study, several spiritual healers made use of social weighting through the process of condemning the condemners, as theorized by Ashforth and Kreiner (1999). Healers at botánicas use this strategy in a variety of ways, whether through questioning the moral character of the condemners who consider themselves Catholic or through questioning the knowledge and interpretation of the Bible itself. In doing so, these individuals are able to lessen the effects of Catholic stigma, and this allows them to maintain positive identities within their occupation.

Concluding Thoughts

This study has built upon E.C. Hughes’s (1951) theory on dirty work by recognizing the spiritual healer as a stigmatized occupation within Latino communities in the U.S. Spiritual healing at botánicas can be considered work that is morally dirty due to its association with practices that are considered blasphemous by the Catholic Church. In addition to providing another example of an occupation that validates Hughes’s theory, this study also validates the research accomplished by Ashforth and Kreiner (1999). Our data on spiritual healers illustrate that these authors’ concepts of occupational culture, occupational ideology, and social weighting support their larger theory that individuals with stigmatized occupations maintain positive identities.

This study is a significant addition to existing literature in sociology and anthropology because it acknowledges different
cultural conceptions of dirty work. For example, a person who does not identify as Catholic or Latino may not perceive spiritual healing to be dirty work in the same way that it is perceived by people from Latin American cultures. This study was unique due to its focus on conceptions of dirty work in another culture. On the other hand, due to our status as outsiders, we had limited access to spiritual healers in San Antonio, which caused weaknesses within this study. The limited access to healers forced me to analyze all of the spiritual healers at botánicas as representing one uniform occupation. However, it should be acknowledged that curanderos, Santeros, masters of Reiki, and other types of healers employed by botánicas are diverse in their beliefs and practices. Therefore, they likely experience stigma in equally diverse ways. As this study only captured a small portion of a large abundance of sociological and anthropological data on spiritual healing and botánicas, research on this topic should continue. Furthermore, making this research available to the public could work to break down the moral stigma that healers experience by revealing the prevalence of healers that carry out their practices with solely good intentions.

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Counting Cucumber Hairs

PAIGE ROTH

When a college student comes home for summer, every adult and competitive parent asks two questions: “What are you doing this summer?” and “What are you doing with the rest of your life?” The first question must be answered with the maximum possible pretention and snobbery in order to bring honor to your family. The second question must be answered with excessive humility and self-deprecation but enough of a plan to assure your interrogator that you will not be living in your parents’ basement post-graduation. Nothing brings interrogating parents greater joy than hearing that their child is launching more successfully than you; however, if you prove that you are a wholesome, humble, on-the-straight-and-narrow, career bound progeny, they will no doubt smile coldly and reply, “Well, best of luck to you.”

The summer between my sophomore and junior year of college, my response to the first question went something like this: “I am researching the effects of nitric oxide inhibitor, l-nitro-ω-arginine, on plant tissue optics.” At which point my mother, with little to no regard for my reputation or self-esteem, would generally interject, “Oh, don’t let her fool you. She’s counting cucumber hairs and contemplating her navel.” With the embarrassment of a kindergartner whose mother packed her overnight underwear “just in case” on her first sleepover, I would meekly retort, “Well, not exactly...”

Cucumber seedlings do, in fact, have peach-fuzz like epidermal hairs that, when irradiated with UV light, seem to magically disappear. My job was to count these cucumber hairs using an impressive-looking microscope. Though my evidence was completely inconclusive—there really is no difference
between the number of hairs on a regular cucumber seedling than a sunburnt one—that was not the point. The point was that a man with all his faculties and complete prior knowledge of my capabilities has asked me to do research. And it is a truth universally acknowledged that research is the ultimate trump card with competitive parents inquiring about your summer plans.

To be clear, I am not particularly good at science. This overt characterization of my aptitude is not, by any means, meant to be self-deprecating like my future-career-plans answer. Throughout high school, teachers politely steered me away from advanced placement science and math courses in favor of my apparent aptitude for English and history. As my dad would regularly remind me, “You sing, you jog, you ride horses, you write poetry and can generally be found curled up on the couch with a book—how on earth are you going to make a living?” I would politely retort with some much needed perspective—I could be a drug addict with a tattoo, pierced tongue, drop-out boyfriend, and a short skirt—but I got his point.

To my credit, I made some halfhearted attempts at rounding out my schedule with what my dad (and apparently the majority of the adult population) considered “real classes”—like chemistry. After receiving a B in my first high school chemistry course, I mustered every ounce of confidence I could find behind my acne and sweaty bangs to ask my teacher if I should take Advanced Placement chemistry. Mrs. Boes was barely five feet tall. Her athletic build, sleek black hair, make-up-less natural beauty, knack for triathlons, evident intelligence, and soft-spoken nature proved she had everything figured out. She discreetly pulled me out in the hallway like a resident doctor giving her first, “We did everything we could” speech to a new widower. With a smooth, tanned hand resting hesitantly on my upper arm, Mrs. Boes looked up at me with warm brown eyes full of apology and
said, “Paige, you have so many talents, but science just is not one of them.”

At the time, my heart leapt. Sorry, Dad, even the teacher said I’m no good. Oh, well! Excuse in hand, my love of playwriting and singing took on a new conviction. I had a calling and a passion and should not deviate. I spent my time in choir concerts singing heartwarming pieces in foreign languages about nature and lust and God. I rode my majestic black Dutch Warmblood horse, Hershey, over rolling fields of crunchy red leaves with fall air nipping my rosy cheeks. And during my sophomore year of high school, I started writing plays at the Curious Theatre.

Curious was certainly an apt title for the little theatre built within an abandoned church in the heart of downtown Denver. At Curious, a collection of nauseatingly sentimental and hypersensitive writers (myself included) would sit cross-legged on the wooden floor in the back of the theatre. We would “move through the space” doing yoga or interpretive dance to the musical stylings of Fat Boy Slim or Enya before we “came together” to write our daily poem. Our instructor, Dee, would casually withdraw her lolling breast from her moss-green blouse and nurse her newborn baby—the baby from a very open affair with the theatre director (don’t worry, she has since left her husband and moved in with said director)—in front of the self-righteously accepting bunch of teenagers. After one such morning, though, my friend Josh Brown did quip, “Dee, there seems to be a lot more nipple in the program this year,” at which Dee laughed good-naturedly and carried on with our poem.

Dee told us we were all artists with unique stories to tell. The title “artist” seemed to grant me free rein to wear intentionally clashing colors, bandanas, red fingernails, clogs, over-sized skirts and dramatic makeup—though, at the time, I was still more comfortable in a pair of cotton shorts and a button-
down blouse. I holed up in coffee shops that prided themselves on being well-kept secrets and lost myself in characters, plots, and dialog. I angsted over the perfect line or light cue. I listened to interviews with famous playwrights and attached profound sentiment to words and language. My motto was the Mark Twain quotation, “The difference between the right word and the almost right word is the difference between lightning and a lightning bug.” During those summers, I worked with delightfully enthusiastic starving actors, wrote when the spirit moved me, laughed in the sunny corners of an edgy theater, and called myself an artist.

Then, as is the case with growing up, my first-year college advisor started asking the heavy-hitting questions. From his red swiveling armchair, Dr. Maroon (the names of the professors in this essay have been disguised to ensure my graduation) thumbed through my high school transcript as I nervously surveyed his tomes of religious texts and ancient literature in the original language. Narrowing his eyes with the attentiveness of a grandparent, Dr. Maroon asked my fidgeting, sweaty-palmed freshman self, “What do you love to do? You must do that which you have a true, irrepressible passion for and settle for nothing less.” My mind immediately jumped to those sunny summers with coffee, red nail polish, horseback rides, and artistic liberties. I recited the well-rehearsed answer: “Well, I like to write, sing, jog, and ride horses.” But soon I grew unable to roll my eyes at my dad’s mocking summation of my abilities and interests. Soon I realized that I was starting to sound rather entitled and—dare I say?—boring.

My impulse to pursue science reared its head during winter break of my freshman year, after a production of one of my plays in New York as part of the Stephen Sondheim Young Playwright’s competition. I’d spent most of December in historic theatres with my blue-haired dramaturge and director, whose
hooded bald head gave him a commanding Voldemort-esque allure. I immersed myself in revisions of my play, tailored specifically to the quirks and suggestions of my actors. I workshopped new plays with esteemed playwrights at the Dramatist’s Guild who asked me to keep in touch. Though everyone seemed to welcome me as one of their own, I, once again, assessed my belonging based on outward appearance. The New York native playwrights and actors donned chic black skirts, currant red lipstick, and a cigarette. I toned down my pastel skirts and floral scarves but still reeked of suburbia. And, furthermore, this whirlwind still didn’t solve the problem of what I was going to major in.

Sitting across from my mom in a diner of the outskirts of Time Square, I brooded over the coming spring semester back at school.

I looked at my mom across an overpriced Caesar salad and asked, “Well, what now?”

“You write another play?” Her slightly horn-rimmed glasses winked up from her sharp nose and fierce brunette bob.

“And then what?”

“Do it all over again.”

“Or that play isn’t good enough, and they show me the door,” I grumbled, rearranging the chicken on the salad to appear as if I’d made a dent in my lunch.

“You are eighteen. The door is still wide open. Don’t be dire.”

“That means I have roughly eighty-two more years of living in pursuit of the next production, rejection, writer’s block. And a crippling sense of inadequacy and self-doubt.”

“Not to mention financial destitution.”

“Thank you for your contribution.”

My mom shrugged casually, squirting a lemon into her iced tea and probing some undissolved Sweet-n-Low out from
between an ice cube cavern. “So, what? You go back to school and keep dabbling in other subjects until something less taxing strikes your fancy?”

“That feels like avoiding my fate.”

“Probably.”

“Devil’s advocacy is not constructive. What about horses? And vet school? And everything else I once loved.”

“You have to pick, kid. You can’t major in playwriting, veterinary medicine, and anything else that speaks to you along the way.”

“This is unsettling.” I listlessly gnawed a chunk of overcooked chicken.

“What is unsettling is indecision. You’ve taken a good run at writing. You were not a miserable failure, but your ambivalence means you need to try something else. I don’t mean dabble; I mean immerse yourself in something else—like you have with writing. It’s like marriage. You’ve got to kiss a lot of frogs and you’ve only smooched one. You can always write, but you can’t always major in science and go to vet school.”

“And if I’m a miserable failure and have abandoned my true calling?”

“So be it, but at least you know and can pick up writing again. You might just achieve something you never thought possible.”

On the plane home from New York, I mulled over the idea of attacking this seemingly insurmountable obstacle—applying to vet school—and developed an exhilarating and impulsive new sense of direction and comfort that comes with determining a clear end goal for one’s college career. I outlined an elaborate four-year plan to present to a biology advisor when I returned to campus.

Empowered by my new challenge, I strode into Dr. Black’s office with the stereotypically overzealous confidence of any pre-
med student. I wore my most professional navy blue knee-length dress and cardigan, and had curled my, at the time, lighter blond hair. When I presented the professor with my elaborate plan, calculated questions, and general pro-con list of my strengths and weaknesses as a student, he leaned back lackadaisically in his chair, rubbed his protruding belly, stared down his bespectacled nose with the engagement of a bloodhound, and said, “Let’s just take this one step at a time, sweetheart.”

My response should have been to stomp indignantly out of his office with new conviction to prove Dr. Black wrong, but, though I felt a degree of motivated underdog syndrome, my thoughts were far less logical. First, I was sure my outfit had done me in. Real science students look bedraggled. They wear athletic shorts, oversized t-shirts, running shoes, stretchy headbands pulling their distracting hair into a bun and out of their face. Real pre-med students do not wear makeup, sundresses, or have time to curl their hair. Obviously, I needed to convey that I was committing more time to my studies than my outward appearance—I supposed I could do that. Second, I was sure he could just smell my mathematical and quantitative ineptitude. He must have known that the adjective-heavy prose I used to describe my reasons for this sudden change of heart were hardly fitting for a linear, logical scientist. And, finally, why did this man have any reason to believe in me in the first place? I sang, jogged, rode ponies, and wrote poems.

Much to Dr. Black’s chagrin, I’m sure, I signed up for the introductory chemistry and biology “weed-out” courses. As to be expected, I flailed like a spawning salmon through those first science classes. I spent most of my time trying to blend in, again starting with the outfit. I bought Chacos, raggedy tie-headbands, and loosely cuffed cotton pants. Science majors apparently never slept, but I enjoyed my chamomile tea and eight-hour sleep regimen—perhaps this stubborn demand to maintain my
physiological functioning was keeping me from success? I made a point of incorporating my sleep deprivation into conversation with fellow science students. I went to office hours not to ask questions but to bond with the professors.

My strategy was to approach professors with questions about concepts I thoroughly understood so that, first, I would display a capacity for learning that they might otherwise doubt, and, second, so that we could bond when the professor felt that she had led me to the “Aha!” moment. Then we could both revel briefly in my learning and their wonderful teaching, and then we could transition casually into a conversation about their children, my hometown, and the torments of freshman year. It may have been solely a symptom of my charm, but I made it through those first weed-out classes with the wide-eyed surprise of an unnoticed burglar escaping the Louvre with the Mona Lisa.

My “I-just-slipped-through-the-cracks-and-have-no-business-being-here” syndrome dissipated, somewhat, one fateful night in biology lab. As I was diligently assigning character traits to a phylogeny of badgers, Dr. Shinkle made a blanket announcement to the whole class: “If any of you need pre-med advising, I would be happy to help you sort things out in office hours after lab.” I did not need any encouragement. I sprinted up to his office, four-year plan in hand. With no snide comments, he made a few tweaks and asked if there was anything else he could do for me. I admitted that yes, in fact, there was one tiny thing. I continued sheepishly, “I am very interested in research. I don’t exactly know how one gets involved, but apparently it’s something I need to do.”

Without missing a beat, Dr. Shinkle replied, “Well, I suppose you could work in my lab.” I looked around the disheveled lab and immediately felt at home—specifically because there was a coffee maker in the corner with a collection of notes from the building supervisor about not drinking coffee in a lab.
full of toxic chemicals. Dr. Shinkle blatantly ignored common sense and rules—this was someone I could work with. Glassware covered the lab benches. Shelves were a hodge-podge of Dr. Who tchotchkes, dried plant samples, big band jazz records and miscellaneous amber bottles of solution. Half of the lab was taken up by a twenty-foot long dark room comprised of six sets of black curtains that separated various light locks with different growth conditions.

Dr. Shinkle is the sort of person I cannot picture doing anything other than biology. He rarely makes eye contact and sports short-sleeved button-down checked shirts, slightly disheveled khaki pants, and adventure-ready sneakers. I later learned of his talent for darts, love of Ursula LeGuin stories, and repertoire of intricate scientific or political puns. When he comes to a great conclusion, he strokes his grey beard with increased frequency, and his voice climaxes in a high-pitched falsetto. That evening, at one such moment, Dr. Shinkle continued, “I study plants. Some people don’t find plants very interesting, but you don’t have to kill anything, except cucumbers of course, and that’s why I like them.”

“I think plants sound fascinating!” Clearly I lied, but I was not about to pass up the opportunity. Today when people ask Dr. Shinkle how I came to work in his lab, he always replies with a good-natured guffaw, “Well, she just weaseled her way in!” And weasel I did. On my first day in the lab, while Dr. Shinkle started explaining the complicated foundation of our research project, I took to tidying up the lab as he gesticulated wildly—full mug of black coffee in hand. By the time he was done explaining the photo-optic effects of various UV wavelengths on plants, I had washed and organized the glassware, refilled the pipette tip holders, made neat stacks of charts on the desk, sterilized the lab bench, and started a fresh pot of coffee. Dr. Shinkle didn’t seem to mind my manic cleaning, and I rather enjoyed his in-depth
explanation of plant morphology. I liked to think we could exist as fairly symbiotic organisms.

The beginning of research felt as if someone had blindfolded me, spun me around, coated my hands in Crisco, and asked me to swing at a microscopic piñata. I could not rely on scientific explanations and had to use my own words. When Dr. Shinkle said, “Due to the absorptive properties of LNNA, we should observe decreased curvature of the hypocotyl tissue when exposed to UV irradiation,” I eventually translated: “LNNA is plant sunscreen. If plants wear their sunscreen, they will not shrivel in the sun.” One night Dr. Shinkle told me to “design a time course measuring the optimal absorptivity by cucumbis sativus of LNNA in a five percent solution of hydrochloric acid and methanol.” Again, I deciphered this foreign language: “Treat plants with the LNNA solution. Guillotine plants in three-hour increments. Marinate guillotined plants in the solution from large clear bottle. Use spectrophotometer (the machine that looks like a printer from the nineties) to see how much LNNA juice the plants exude into the marinade.” When describing the nitric oxide signaling pathway, Dr. Shinkle drew out a complex map of inhibitors and promoters; I drew out a cartoon-looking diagram comparable to a Pac-Man game.

Although I am a creature that prides myself on making interpersonal connections, Dr. Shinkle was a hard nut to crack. In the evenings when I bounded enthusiastically into lab, my charming small talk fell subject to critical analysis. Dr. Shinkle critiqued my overcommitted schedule, commented on how I could improve my performance in chemistry, or told me that I should go out every once in a while to get some balance in my life. I meticulously planted my cucumbers according to his protocol and promptly processed data in desperate hope that he would affirm my fledgling scientific confidence. I even remembered to wear my sciencey clothes, like athletic shorts, t-shirts, and closed-
toe shoes meant for frantic motion. Fishing for compliments proved to no avail. Perhaps this efficient exchange was scientific? I was used to the gushing comments from my English teachers on the ends of my essays or their thoughtful, keen insights during office hours. But this was not English. Science was efficient, and fluff, like compliments, was unnecessary. I could work quietly and efficiently. There was no one else in our lab, so how could I know if Dr. Shinkle had picked a favorite other than me?

Once I learned my way around the microscopes and reflectance spectrophotometers, I would walk quietly into lab, sequester myself in my designated corner of the lab bench next to a coat rack draped with Dr. Shinkle’s PhD regalia and green protective face shield that loomed over my shoulder. From behind safety goggles that resembled a scuba mask, I clicked on the purple UV lamp, which glowed like a cucumber tanning bed in the dark room. When they were done frying, I arranged the stems under a microscope that reeled in and out of focus like a trombone. A fluorescent cactus-like figure came into focus on the screen and that was the money shot. I applied colorful filters to the cucumber hair images so that they looked more like toxic amoebas than garden vegetables, counted the spiny hairs, and did real science—in isolation.

Walking home from the lab one night, I called my mother to provide the very mature and astute observation, “Mom, I don’t think Dr. Shinkle likes me.”

“What does it matter?” she responded in her hardened, journalistic tone.

“Well I don’t want him to completely resent my presence.”

“And what makes you say that?”

“He just sat there tonight on his computer playing solitaire while I measured my plants! I have never felt like such an inconvenience! As though I were disrupting his solitude! He’s probably thinking his Nobel-prize-worthy thoughts over at his

*The Expositor* | 32
desk while this snot-nosed kid who can barely work the pH meter fumbles around his dark room!”

“What is he doing in the lab at 10:00 at night? He is a tenured professor. He’s perfectly allowed to go home.”

“He lives really close to campus, so he said he would come in case I needed help.”

“Paige, the man came in at 10:00 at night to help you and keep you company. You are not twisting his arm.”

Once I stopped sputtering my “butts” and “I don’t knows,” convincing myself that I was a black-sheep burden in Dr. Shinkle’s otherwise prestigious existence, I thought back to the time Dr. Shinkle helped me reach a box off the top shelf of the lab because he knew I was too short to reach. I remembered the time he hovered over my shoulder while I made a graph for another class offering feedback for a class he wasn’t even teaching. Besides keeping me company in the lab at night, Dr. Shinkle came in at 4:00 AM when I ran a time course of plant tissue absorbance so that I could get a full night’s sleep. He babysat my beta fish over Christmas break, gave me pointers when I learned to drive a stick-shift, schlepped a mini-fridge up four flights of stairs so that I could keep my lunch in the lab, and even bought a floor-to-ceiling glass cabinet because he “knew how much I liked organized glassware.” For my first semester of research with Dr. Shinkle, I fixated on the things he said, the quotable, citable words as opposed to what he did. In this way, Dr. Shinkle taught me my first real science lesson—watch more carefully.

That summer, I behaved like a true scientist. I drove a 1996 black stick-shift Honda Civic with a bike rack to various abandoned properties throughout Texas. I good naturedly scaled fences, dodged guard dogs, traversed rocky quarries, and picked stickers out of my socks, all to sit in the one-hundred degree heat with sweat pooling on my lower eye-lashes and measure the amount of UV in the ozone that day. When I returned to the lab
after a day in the field, I could usually find Dr. Shinkle blaring big band jazz with the coffee pot in full burble. And that summer was satisfying. With no grade looming overhead or need to slink into lectures with my tail between my legs, I could start to see how people liked science. Research clicked together. Sure, I wasn’t designing an experimental “Primate Model of Parkinson’s” like the lab next door or engineering a wonder bra to detect breast cancer—in lieu of annual mammograms—like the guys living a floor below me, but I understood exactly what I was doing. That summer, I started to feel the calm belonging that smiles through the blinds at you on early mornings and says, “You know where you’re going.” And with my fledging sense of being where I needed to be came an even more hesitant feeling: pride.

My parents seemed wary of this new emotion. As if I were dating a backwards cap-wearing motorcycle mechanic, their tones were colored with a hue of “just be careful…” anytime I found conclusive evidence or a new sense of self. Unlike most parents, they did not box my ear into medicine. In fact, they were admittedly careful about appearing overzealous regarding any particular career path because they didn’t want to influence my decision too heavily. This “playing coy” was terribly inconvenient when I asked them to just tell me what to do with my life but was far less embarrassing than the parents who ask the probing, “What are you doing this summer” questions. In their way, I know they were proud, but they were rightfully wary of the storm cloud of daunting classes that they saw looming in my sunny midst.

The culmination of my six-month research was a poster presentation in front of not only all my fellow research peers but also every science professor at the University. The day of the presentation, I tacked my glossy poster onto the corkboard with jittering, over-caffeinated fingers. Dr. Shinkle grilled me with potential questions like a football coach leading a power huddle.
before the big game. Eyes locked in fierce determination, I fired back answers like a Jeopardy contestant.

For the rest of the conference, Dr. Shinkle nervously patrolled a twenty-foot radius trying to engage casually with other presenters while supervising me out of the corner of his eye. Sometimes, he would bring me a cookie or a third glass of ice water from the refreshment table as an excuse to make sure that my vital signs were still stable.

Wielding my Venti coffee cup in my right hand, I successfully fielded questions from my peers and polite parents. Then, after twenty minutes of warm-up, I caught the attention of a biology professor. Like a gazelle meeting the stealthy gaze of a lion across the open savannah, I knew there was no escape.

Dr. King took one look at my lime green dress and quipped, “Were you trying to match your cucumbers in that dress?”

I laughed nervously, knowing this was just the small talk before the big trial. As the inquisition began, I rattled off experimental procedures, unconventional methods, unexpected results, and major findings with the rhythm of a Shakespearian sonnet. Then came the big question, “It is my understanding that the nitric oxide signaling pathway has not been well-researched. What is your hypothesis for the interference of LNNA in this signaling pathway?”

At the mention of a signaling pathway I felt my spinal disks fusing. Then I reminded myself, “Don’t think about this like a scientist—think about this like you.” “I imagine it looks something like this,” I said. I grabbed my coffee napkin off the window sill and, with the professor watching over my shoulder, sketched out a Pac-Man like design of the nitric oxide signaling pathway against the wall next to my poster. When I handed the professor my napkin sketch, he looked it over and said, with a
pleasantly surprised eyebrow-raise, “Well done Miss Roth. I look forward to seeing you in my class in the future.”

With my chest puffed out like a swan duckling that finally shed its downy feathers, I glanced across the convention to where Dr. Shinkle looked on with smug approval.

I will not bore you with a catalog of the science courses I had to take at Trinity University; suffice it to say that they were hard. When I say hard, I don’t mean a satisfying challenge like climbing a Fourteener. I mean I wrote paragraphs where I should have drawn diagrams. I saw test scores better suited for a Walmart super savings deal than a letter grade. I wondered what the professor thought about my personal investment in their course as conveyed by my wardrobe and facial expressions, rather than the material on the lecture slide. I compared myself to the effortless, scruffy blond, baggy-t-shirt-and-cargo-short-wearing boys who studied for two hours and aced the midterm. By mid-semester, I had typically excavated a deep cavernous pit to claw my way out of. I was a pureed pulp of self-doubt and inadequacy, but, as Dr. Shinkle would say, “like a cross between a terrier and a politician,” I “didn’t let it go.”

On one such day, after two rock-bottom test grades, I dragged my quivering lower lip into Dr. Shinkle’s office, red binder clasped to my chest like an emergency floatation device. With my most resilient tone, I sputtered, “I swear I’m not a failure. I don’t want my professor to think that I am out late in some skanky club blowing off studying and showing up to his test hung-over. Grades like this are thoroughly disrespectful. I don’t mean to be disrespectful! I want to go to office hours to apologize for my ineptitude and misunderstanding so that he knows that my poor performance is by no means a reflection of his teaching capabilities. I don’t want him to take this personally. And I…” Dr. Shinkle, over-stimulated by this irrational emotional montage, stood bolt upright and shot his left arm out to the side. I briefly
considered the gesture, categorized it as a hug, and positioned myself so he could reassuringly pat my shoulder with minimal physical contact. As my stiff upper lip dissolved, Dr. Shinkle said, “You have one active imagination.” I sniffled apologetically, and he continued, “If that professor thinks any of those things, I know you’ll prove him wrong just like everyone else.”
Low-Diversity, High-Density Intercropping: An Intermediary Step to Intercropping Food and Fuel Grasses

NICOLE VREELAND

Current industrial agricultural practices are rapidly depleting soil nutrients, making much arable land unusable. With today’s exponential population growth, it is more important than ever that croplands are reconstructed to allow for sustainable food and fuel crop growth. Fuel, in particular, is a major concern, due to the eminent increase in energy usage that has contributed to a continuing rise in atmospheric greenhouse gas concentration. Closely observing agricultural practices of indigenous cultures that use intercropping provides a model for sustainable crop growth; this model can be developed and tested over an extended period of time. Once a successful practice is established, the biomass that is produced efficiently can then be converted into ethanol as an alternative fuel source. Although development of successful intercropping agriculture can take up to fifty years to complete, an intermediary step that can be taken in the meantime is low-diversity, high-density intercropping. In particular, pairing grasses with a nitrogen-fixing legume is optimal. The following studies show examples from agricultural research; however, the intermediary step proposed is optimal for use in cellulosic biofuels.

The implications for agricultural practices include the fact that “sophisticated management must be based upon recognition of likeness between ecological units” (Posey 1985). The likeness referenced is the interaction between biological units which forms an interconnected system of ecology. With this understanding, sustainable agricultural practices can be developed. The current industrial practices of agriculture prove to be unsustainable due to
soil diversity loss, use of petroleum products, and need for pesticides, stemming from a lack of emphasis on beneficial ecosystem interactions. Therefore, farmers and agronomists alike might better seek other more ecologically fitting crop systems. Across the world, indigenous peoples have been using sustainable agricultural practices since the domestication of plants. For example, biodiversity is increased in the largest forest on the planet, the Amazon, by the Kayapo Indians. They manage and conserve forest patches based on temperature, moisture, and shade level requirements of desired plants and have processes for utilizing the secondary forest growth. For them, knowledge of the plants and the environment in which they grow is crucial. With this knowledge, the Kayapo use ecological zones within the forest to create areas known as *apete*, including *apete-nu* (newly formed vegetative clumps), *apete ngri* (forest plot with some trees and large shrubs), and *apete* (*kumrenx*) (“real *apete*” with shade from tall trees). They begin by making their own mulch that includes living ants and termites, which not only make the mulch nutrient-rich, but also fight off unwanted predators such as leaf-cutting ants. Every part of the *apete* has a use, whether for food, medicine, materials, fuel, shade, or protection. Annual controlled burns rid them of pests and weeds. By intercropping, the fields can be utilized for up to forty years; beyond those forty years, the secondary forest has use, too. In order to modify effects of secondary forest growth, they utilize a sort of companion planting, where species mutually benefit from one another’s growth. For example, banana trees provide a microclimate for tubers and medicinal plants.

The Native Americans also traditionally utilized intercropping. The southwestern tribes planted a mosaic of corn varieties which created an over story for plants such as grain amaranths, squashes, beans, chilies, tomatoes, and greens. When planting, they spaced each plant apart from the next, creating
room for each individual plant to flourish (Nabhan 1992). Both of these historical examples of intercropping show past successes that can function as a model for implementation in modern systems of agriculture. In particular, the use of mulch to ward off pests and weeds and the use of specific species combinations to boost biodiversity and biomass yields offer significant benefits for long-term crop production. The following agricultural studies support this beneficial claim.

Agricultural systems of the industrial world are currently dominated by monoculture fields. Single species growth allows for the rapid and efficient harvest of crops. Additionally, a farmer can spray herbicide and pesticide on the crops that will kill any living organism other than the crop itself. The consequences of using these chemicals on single crop systems are, however, drastically affecting the local fields by creating biodiversity loss, nutrient-dead zones, water waste, and soil loss. Monocultures “lack the inherent protection against fungi, bacteria, viruses, anthropods, and weeds” and therefore require pesticides and fertilizers (Cox and Jackson 2002). Due to this loss, fields are rapidly depleted of usefulness, and, in turn, more land must be converted into agricultural space. Arable land, however, is not infinitely available on earth. Monocultures also affect the environment on a large scale due to the excess amounts of fertilizer and pesticides running off into nearby ground and surface water, reducing the water’s quality (Glover 2003). These contaminated waters then flow into the oceans, creating hypoxic zones where no life can thrive. For example, a shocking 20,000 square kilometers of ocean in the Gulf of Mexico is currently a dead zone, which is a three hundred percent increase in nitrogen load in the past fifty years (Glover 2003). Scientists are currently studying more effective agricultural practices, including perennializing food crops; high-density, low-input fields; and bicultures. Additionally, important solutions for pest control and
increasing biomass yields are being researched, from soil contents to species pairing.

The Land Institute is currently working to perennialize food crops. This innovative idea for new crops provides an avenue for future intercropping of grassy species that can serve as both food and fuel. This reversion can serve to prevent soil nutrient loss, conserve resources like petroleum and water, manage pests and weeds, and create high yields of both food and fuel crops. In order to mimic the native vegetation that once covered the majority of the land that is now America’s crop land, researchers at the Land Institute are both perennializing annual crops (such as wheat, sorghum, and sunflower) and domesticating wild perennials like Illinois bundleflower, wheatgrass, and compass plant. They chose these particular plants since they are good candidates for perennializing by breeding for many traits rather than genetically modifying them for a single gene. The Land Institute predicts that the process of perennializing species will take anywhere from twenty-five to fifty years to complete (Glover 2003). In the meantime, there are intermediary steps that can be taken.

In a ten-year study done by David Tilman and a team of researchers on low-input, high-diversity grasslands, the findings suggest that a switch from monocultures could be beneficial in biomass yields. The research was carried out on nitrogen-poor sandy soils, which were previously devastated by agricultural use. This is a significant model of how previously misused lands can be made biologically diverse and viable once more. The team planted combinations of one, two, four, eight, or sixteen species of perennial herbaceous grasses on 168 plots. Each year, biomass yield measurements were taken for each plot, and both soil and root CO₂ sequestration was calculated. Over the span of ten years, the amount of biomass produced and carbon dioxide sequestered increased. With the increase in species numbers on each plot, the
biomass and CO₂ sequestered increased, too. Higher biomass yields mean more crops to convert into energy or food. Another positive aspect of higher diversity is a decrease in greenhouse gases, CO₂ in particular, through root and soil sequestration.

Additionally, the fruitful results from poor soils mean that new land does not need to be cleared for energy crops and that energy crops will not compete for land with food crops. Perennialized food crops could even be integrated. The study found that the plots of single species required fertilizers and pesticides to have high yields, while highly diverse plots did not. This result is, in part, due to the presence of nitrogen-fixing legumes in higher diversity treatments. Also, these diverse plots were seventy percent more stable than their monoculture counterparts (Tilman et al. 2006). It is important to note the experiment time period and that it was done on a very specific soil type and climate area. This means that many experiments will be required to find the right combination of plants for every soil type across the United States, and this will take time. Through data analysis, Tilman et al. (2009) have also shown that biculture plots do well when a grass was paired with a legume. This pairing proves to be an effective intermediary step for biofuel grass fields while research continues on soil and climate stipulations for ideal intercropping systems.

When thinking about intercropping species, it is important to consider the optimal combination rather than the highest amount of diversity. This notion is backed by results from the Tilman experiment: “[I]n the first two years, biomass was greater in the 2-species plots than 16-species plots… [and] was similar in later years” (Tilman 2009). These plots had “near-maximum biomass yields” and sequestered more carbon (Tilman 2009). For efficient harvesting, the legumes could be planted in clumps evenly spaced throughout the field. This biculture system could
eventually be effective with the perennialized crops being created by the Land Institute or other research groups.

A similar study by Andy Hector and Robert Bagchi (2007) on “biodiversity and ecosystem multifunctionality,” presented the same conclusion as Tilman’s (2006): that biodiversity has a positive effect on ecosystem productivity and stability. In this experiment, both above- and below-ground net biomass production and nitrogen levels, along with light availability and decomposition of lignin and cellulose in multiple grassland ecosystem sites, ecosystem functions, and species were considered. After identifying the specific ecosystem processes that each species affected, they planted species in subsets according to the specific ecosystem process desirable to each site. Results expressed a mean number of species per process as 3.2-6.6. The number of species affecting above ground biomass ranges from 4-8 and the spectrum of unconsumed soil nitrogen is 2-7. This means that different processes, such as yield and sustainability, are affected by multiple species, and therefore biodiversity is important in maintaining a multifunctional ecosystem. A multifunctional ecosystem, one with multiple species filling various niches, would provide everything crops need to flourish: light (resulting from varied species height and density), nutrients (nitrogen and other products of decomposition), and sufficient water flow (with increase in robustness of soils).

The issue of biodiversity encompasses not only crop yields but also weeding requirements. Expanding on the above research, Hector et al. (2007) published the paper entitled “Biodiversity and ecosystem functioning: reconciling the results of experimental and observational studies,” which discusses the controversies around the BIODEPTH experiment by Thompson et al. (2005), and similar experiments and surveys on biodiversity. This paper focuses on the issue of legumes; it agrees with Tilman that nitrogen-fixing legumes positively affect biomass yields and claims they have an
effect on species’ richness. Weeding had a huge effect on biodiversity experiments and observational studies. Once weeding was ceased, low-density fields gained biodiversity and high-density fields lost biodiversity due to the invaders. It is important to note that the Tilman experiment did have weeding in place, which is highly artificial. This leads to another conclusion, which is that competition and environmental conditions play a large role in biodiversity results. In order to find optimal species combinations, which could prevent the need to weed, it is important to conduct time-consuming studies at every site that is chosen for high-density intercropping. This research therefore demonstrates that a low-diversity, high-density intercropping system could be used productively in the meantime.

In order to solve the issue of weeding by increasing biodiversity, a study on competition of neighboring plants was conducted in 2009 by T. Wyszomirski and J. Weiner. Ecosystem conditions affect plant size, and there is a positive correlation with neighboring plant size. This can be attributed to local density dependence (also available nutrients), mortality patterns, genetic relatedness, or facilitation. In contrast, there is a negative correlation between neighboring plant size due to the death of smaller, outcompeted plants and spatially uniform crop rows, in the manner that most monocultures are arranged. This is another explanation for the lower biomass yields of monoculture fields. Spatial uniformity, like the Native Americans utilized, is also a solution for weed control, which will be explored later.

The importance of finding ideal crop combinations relates to issues of nitrogen leaching, soil carbon accumulation, and invasion by pathogens and pests, as well as weed prevention. Weiner et al. (2010) also researches species combinations to eliminate weedy species. He suggests that group selection rather than individual selection is necessary for achieving this in fields, even though it is not commonly seen in nature. Agriculturalists
must know not to reduce or remove genetic variation in a population, as this can lead to individual selection. Selecting genotypes that better the community under any agricultural conditions will vastly affect yield, which is a variable of the population and not the individual. Good candidates for selection include those plants bred to have increased sustainability or yield and are therefore not advantageous to the individual plant. In the article, the authors also argue that higher density will not only increase competition but also allow the opportunity for cooperation between plant species as they grow at different rates and to differing heights. This mutual aid can lead to a decrease in the amount of weeds in a crop field. Weeds, when present, vastly reduce yields (Weiner et al. 2010). This is similar to the strategy of the Kayapo Indians who use species pairing in their native agricultural practices. The plants they choose to plant near one another provide necessary variables for one another; for example, the banana trees provide shade for tubers and other shade plants (Posey 1985).

Specifically regarding weed suppression, the study by Weiner et al. (2010) suggests four guidelines to finding success in crop choices. These are 1) good competitive ability; 2) initial size advantage over weed species; 3) advantage of large initial size that increases with density; and 4) total biomass production that does not decrease at high densities. Increased spatial uniformity may also play a crucial role in weed suppression among high-density crop fields. High density may increase the spread of some disease; therefore, uniformity would prevent the spread of others. This can be attributed to an increase in the availability of resources allotted to each individual plant, since space where these needed vectors are found is increased via uniform planting. Additionally, the initial allotted space will allow for the plants to outcompete the smaller weed seedlings before growing into mature plants, at which time they will begin to compete with one another. They
suggest that cereal crops are the most successful. It is interesting to note that the crops The Land Institute is working to perennialize are cereal crops. The elimination of the need for herbicides could possibly outweigh the need for new harvesting methods of high-density fields. It will also decrease the labor (both human and machine-performed) needed to suppress weedy species, since the diverse species planted would do the work (Weiner et al. 2010).

Weiner also notes that sustainability is a desired variable in the group of species selected. The article discusses high biomass’s leading to an increase in sustainability. It follows that higher biomass means higher amounts of decomposing plant materials, which contribute to soil fertility. This is true of natural habitats but not those created by the agriculture of today, when the excess biomass is cleaned from fields after harvest (Weiner et al. 2010). Just as the Kayapo Indians would make their own mulch containing ants and termites, it is very important to have knowledge of soil composition and its effects on sustainability and biomass production (Posey 1985).

Another ecologist, M. Scherer-Lorenzen, agrees that decomposition plays a significant role in ecosystem functioning and adds that decay is influenced by diversity. These ecosystem functions resulting from below-ground biodiversity include yield and sustainability, which are necessary for successful development of biofuel crops. He begins by stating that different species breakdown at different rates and that decomposer (fungi, bacteria, and soil fauna) activity is affected by differing species and habitat conditions. He predicted that functional variability rather than taxonomic variability will create the biggest control on successful, high-yielding ecological processes. He performed a two-year experiment measuring the decompositional rates of standard materials and plant litter with increasing functional diversity. The results proved that legumes significantly increased
decomposition rates and showed that furthering biodiversity in general affects decomposition. The decomposition in turn adds to the success and abundance of productivity. Nitrogen in the soil, presumably from legumes, increases decomposition rates and encourages decomposers like earthworms to enter the area (Scherer-Lorenzen 2008).

The findings of Scherer-Lorenzen (2008) support the earlier findings of Tilman et al. (2006), showing that legumes grown in combination with grasses in bicultural fields affect both yields and decomposition rates. It therefore follows that this combination also increases the amount of litter available to be decomposed. Since the processes of nutrient flow that further sustainability are cyclical, the amount of detritus leads to either a deficiency or an adequate amount of nutrients in the soil that can reenter the cycle through new plant growth. Adequate nutrient availability leads to rapid growth and also rapid decomposition, making turnaround times for harvest more rapid and abundant (Scherer-Lorenzen 2008). These feedback loops will need to be studied for each specific site in order to create an ideal ecosystem of combined species. This is another time-consuming effort which can be mediated by high-density bicultures of legumes and a grass species.

In addition to soil composition from decomposition, the presence of arbuscular mycorrhizal fungi (AMF) increases above-ground biomass of grasses. AMF is another below-ground vector for sustainable yields; it is a fungus that grows in the roots of certain plant species. When competition between plants begins to occur, AMF can allow for nutrient uptake to be more efficient, possibly allowing for greater survival of a greater number of plant individuals. This is true if competition for space occurs at the roots where nutrient uptake occurs or if nutrients are not highly available in the soil. In a study done by Zhang et al. (2010), high AMF concentrations led to a higher above-ground competition,
which resulted in an increase in biomass production and decrease in density of individual plants. They also found that low AMF concentrations were very effective in increasing root biomass and would also cause a decrease in density, although less so (Zhang et al. 2010). For agricultural practices, the goal is to maximize above-ground biomass. Therefore, a high concentration of AMF should be encouraged in order to grow on chosen crop plants.

In order to determine how soil types affect the ability of AMF to increase above-ground biomass, Wagg et al. (2011) executed their study in two different soil types. In their research, the team discovered that effects on biomass were similar in soils with high and low sand components. This means that even under different environmental conditions, AMF can affect biomass production even though they perform different functions. These functions are determined depending on the need for a single or multiple AMF species (Wagg et al. 2011). This suggests that the particular soil upon which crops will be planted needs to be tested in order to identify the ideal AMF species for maximum biomass production. Additionally, there are many other species which can affect the soil composition best suited for crop growth. This may take some time to demonstrate; for example, this particular experiment only lasted twenty-five weeks. Knowledge regarding long term effects would be essential, and in the meantime, bicultures would be an ideal intermediary step, particularly bicultures that include nitrogen-fixing legumes and a grass.

Finding an effective method of agriculture is particularly pertinent to the field of energy studies. Cellulosic biofuels are an effective alternative to oil, and processing techniques are becoming cheaper and more efficient. These fuels are produced by converting plant biomass into usable energy forms. A goal when producing a sustainable energy crop is for it to “have no—or preferably positive—impacts on biodiversity,” as is the goal for all agricultural systems explored in this paper (Zegada-Lizarazu et al.)
High-density, low-impact agriculture (like that studied by Tilman), perennialized crops (like those that the Land Institute is creating), and the knowledge of plant and plant soil composition interactions all play a role in the future of biofuel crop development. The sustainable fields suggested by Tilman; long-term, high-density, high-diversity fields; and short-term bicultures would be ideal models for biofuel grass production. This is true since grasses are principally used for converting into biofuels, and Tilman’s experiments deal particularly with grasslands (Zegada-Lizarazu et al. 2013). A long-term goal could be to integrate the perennialized crops from the Land Institute with the fuel grasses and legumes. While scientists determine ideal crop combinations and soil microbe interactions, the bicultures of fuel grasses and legumes would be the short-term goal for reaching sustainable fuel crop production.

Where monocrops fail, intercropping can succeed. Intercropping leads to increased biomass, sustainability, decreased pesticide use, decreased herbicide necessity, and more robust soils compositions where AMF and other soil species that assist nutrient uptake can flourish. Following these facts, intercropping of high-density, high-diversity, low-input fields are a common goal of agriculture for food crops and fuel crops alike. While finding ideal crop combinations for each specific soil type and ecosystem niche will take years of research, there is an intermediary step. The best solution for the short-term production of sustainable crop fields is evenly spaced, low-diversity, high-density, low-input cropping systems.
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In Praise of Peculiar Bliss: Adherence and Innovation in John Keats’s Personal Theology

MASON WALKER

The title of John Keats’s 1816 poem “Written in disgust of vulgar superstition” makes it plain to the reader that the work embodies a spirited invective against religious faith. The poem spends most of its fourteen lines bemoaning the incessant sound of the ever-present bells, which “call... the people to some other prayers/Some other gloominess, more dreadful cares” (2-3). Keats hopes that these bells, along with the countless churches of which they are a part, will soon be “dying like an outburnt lamp” (11). He also declares that, in their absence, he hopes for “fresh flowers... and many glories of immortal stamp” (13-14). If the poem’s preceding lines are a potent mixture of disgusted diatribe and despairing lament, its final two constitute a wholly surprising expression of hope.

They also prompt a significant question: Just what are the “fresh flowers” that Keats seeks? For what new kinds of transcendence would the destruction of conventional religion pave the way? An examination of Keats’s body of poetic work and his letters, along with modern scholarship concerning both, will help us construct an answer. By utilizing these various sources, I maintain that John Keats, though not conventionally religious, had a highly creative and compelling personal theology of his own. More specifically, it is important to note that while this theology, like most Christian ones, sees suffering as a possible aid to redemption and salvation, its conception of what redemption and salvation entail diverges significantly from traditional Christian thought. Keats’s personal theology, by contrast, centers on the ability of human beings to secure their own singular
redemption and salvation, and on the unique types of figurative immortality afforded to us by our knowledge of our own transience. Ultimately, this personal theology is, for all its rebelliousness, structurally dependent on Christianity; after all, it was by opposing Christian teaching that Keats slowly but surely formed spiritual and philosophical opinions of his own. While establishing and arguing for the existence of Keats’s own personal theology, I also argue that these “fresh flowers” of religious thought grew from decidedly Christian soil.

I. The Value of Suffering

“There are no crown-wearers in heaven who were not cross-bearers here below.” Charles Spurgeon, Baptist minister

When Christianity first emerged, one of its revolutionary currents of thought was a radically new attitude toward suffering, one rarely heard prior to the time of Christ. The ingenuity of the Christian solution resided in the way it saw value in suffering without dismissing or belittling the agonies that such suffering caused. With his abiding love of nature and intense interest in self-transcendence, Keats would be easy to regard as a sort of proto-Buddhist. However, in his response to human suffering, it is much easier to claim that he was a pseudo-Christian.

Keats’s response to suffering was formed over the course of several years of protracted and powerfully engaged thinking. After all, a man whose family ranks are filled with the diseased and dying will likely ruminate upon this question. Yet Keats knew not only of external suffering but also of the internal torments of the mind; in “Ode to a Nightingale,” he bemoans that “to think is to be full of sorrow/And leaden-eyed despairs” (27-28). As such, dealing with the problem of suffering was essential to Keats’s own emotional and mental well-being. In Keats, Skepticism, and the
Religion of Beauty, Ronald A. Sharp suggests that Keats was aware of the need to reckon with this recurring obstacle, and he concludes that a significant amount of Keats’s work can be read as an attempt to work out a philosophy that would serve as a “solution to the traditional religious problems of suffering” (25). While Sharp correctly identifies the problem of suffering as a central conceit in Keats’s poetry, he is wrong to call Keats’s response to the problem of suffering “a solution” to the traditional Christian approach. In fact, Keats’s response to suffering is highly Christianized. Like the traditional Christian, Keats sees suffering as an aspect of existence that is assuredly permanent, always difficult, and yet often an integral part of that which is good.

This belief is most clearly and overtly outlined in “Ode on Melancholy,” with its memorable statement that “Ay, in the very temple of Delight/Veil’d Melancholy has her sovran shrine” (26-27). Keats’s diction here is nothing short of brilliant, with a multiplicity of meanings that relay clearly and powerfully the interconnectedness of his two subjects. The use of architectural language implies that Delight and Melancholy are, quite literally, part of the same structure. In addition to being architectural, the language is also resonantly religious. In the world of John Keats, it is as if one enters the temple of Delight to pay tribute to Melancholy—to give thanks to her for often making Delight and other positive emotions possible. Here, Keats expresses a notably Christian outlook on suffering. He does not praise it in and of itself but instead acknowledges that it is inseparable from much that is worthy and desirable in this world. While “Ode on Melancholy” is Keats’s clearest expression of suffering’s potential value, he does address the subject in several other poems, including “Ode on Indolence.” In that poem, he begs the winged spirits of Love, Ambition, and Poesy to leave him alone: “Ye cannot raise/My head cool-bedded in the flowery grass” (51-52). The spirits are attempting to stir Keats to energy and productivity,
but he knows that now is no time for urgency. If the insistent spirits were to remove his head from the grass and drag him back to the bustling activity of the world around him, he would have little to produce. It is this state of slow and lazy sadness, contemplation, and isolation that will ultimately give him the ability to create “visions for the night” and “for the day” (Keats 56-57). Only keeping his head in the dark of the grass will eventually ignite the light of inspiration that he needs in order to write well. Keats is not praising indolence simply for its own sake; wallowing in despair with a decided lack of reason is not an intrinsic good. But once again, Keats acknowledges that such suffering can be inseparable from some kinds of desired emotions. In this particular case, the emotion under examination is inspiration.

In both pieces, Keats adheres in no small part to the Christian response to suffering, which may be summed up thus: suffering, while not a good in and of itself, can be necessary to secure that which is in fact good. Keats’s personal theology, like that of Christians, holds suffering as a necessary difficulty that allows access to the ultimate “goods”—redemption and salvation. That said, his conceptions of redemption and salvation differs significantly from those of Christianity.

II. Beauty: The Great Redeemer

“The moon is utterly reasonable; and [yet] the moon is the mother of lunatics and has given to them all her name.” GK Chesterton, Anglo-Catholic apologist

Like Christian theology, John Keats’s personal theology includes the idea of redemption. However, in the realm of Keatsian thought, the word “redemption” denotes something very different. While Keats’s religious conception is not a Christian
the same basic concern as the above statement by a famed Christian apologist—namely, the concern that reason and logic, when left unchecked, will levy serious difficulties upon mankind. We need the mysterious, the numinous, the wondrous. We need the beautiful. Indeed, Keats’s sonnet “To Byron” contains a line uncannily similar to the Chesterton quote. Praising his fellow poet, Keats states that Byron’s beautiful words make him feel “as when a cloud a golden moon doth veil/Its sides are tinged with a resplendent glow” (9-10). This is an excellent symbol for Keats’s overall idea of beauty: Beauty is that which veils the frigid rationality of Chesterton’s moon and thus introduces strangeness, variety, and wonder into a world filled with cold, uncaring reason. Beauty temporarily enriches a relentless reality. Temporarily is the operative word, for Keats reminds us time and again in his work that this redemption of the world is only momentary. In “Ode to a Nightingale,” Keats bemoans the pain brought on by this transience: “Forlorn! the very word is like a bell/To toll me back from thee to my sole self” (71-72). The almost funereal tone of the passage conveys the powerful feeling that the author’s transcendent experience is dying away and that he is returning to the sobering confines of the rational world. In negative terms, the suggestion remains that we cannot live in these moments of beautiful transcendence forever, but much of Keats’s work also restates this conclusion in positive terms. We can, after all, live in such moments every now and then. Describing Keats’s overall idea of beauty, Sharp states, “Beauty... is life affirming... and it is consoling. Beauty exercises an ameliorating effect on human suffering—not a permanent eradication of it but a soothing of the distressed spirit” (29). The critic is right to proclaim that, for Keats, beauty’s temporary ability to soothe and console is exactly what makes it useful. It is not a permanent condition one may live in but a temporary balm to be savored. Sharp is also correct to note that Keats’s idea of
beauty does not include the eradication of that which is ugly or undesirable about the world; as previously noted, Keats believes that only temporary redemption of this strange and damaged place is possible. The critic’s claim that Keastian beauty “ameliorates suffering,” however, does not pay sufficient attention to a provocative paradox in Keats’s personal theology. Yes, for Keats, beauty does “ameliorate suffering,” but it also often emerges from suffering. After all, the beautiful temple of Delight has Melancholy at its center, and the poet’s “beautiful visions” are a product of the quiet despair felt in the darkness of the grass.

Having concluded the discussion of Keats’s personal theory of beauty, we may now provide a general summary of his theology. Like Christian theology, Keats’s theology has a Great Redeemer. Yet unlike Christianity, with its promise of permanent redemption through Jesus Christ, Keats’s redemption is only temporary; beauty comes and goes. What is more, Keatsian redemption is not won through any intermediary but rather by each individual who perceives unique patterns of beauty in the world. The idea of securing a subjective road to temporary redemption is a thoroughly un-Christian one, and yet, in order for Keats to be un-Christian, Christianity had to be there first, ready to be rebelled against, a structure to be dismantled. We see once again that Keats’s “fresh flowers” came, in some ways, from old soil.

III. Salvation and the “Vale of Soul-Making”

“I am intent upon this one purpose… and with this goal in view I press on, eager for the prize, God’s heavenly summons.” St. Augustine of Hippo, Catholic theologian

We come at last to the ultimate end, or telos, of John Keats’s personal theology: the possibility of salvation. It is here that Keats
most definitively diverges from the Christian blueprint, emerging with a conception of salvific potential compatible with the rationalism of his century and the mystic leanings of his mind. This aspect of Keats’s theology needs examination, for it is here that his insights are the most creative and expansive. Sharp argues that Keats, while far from a flat-out rationalist, did build his idea of salvation upon a foundation of skeptic humanism; for Keats, “rewards, if any, must be experienced in this life” because Keats’s theology functions “only in this kind of fully human framework” (51). Indeed, perhaps the phrase which best describes Keats’s radically un-Christian sort of salvation is “fully human.” Crafting any sort of salvation was, as Keats knew, a fundamentally unscientific, empirically unverifiable quest. Yet he still wished for his idea of salvation to reflect his so-called rational rejections of the Christian system of thought and the humanist conclusions to which those rejections had carried him.

While Keats’s ideas regarding salvation may be seen in some of his poems, most especially his two Hyperion fragments, it is in his 1819 letter to George and Georgiana Keats, that he most clearly outlines his vision of a “vale of Soul-making.” Keats introduces it as follows: “The common cognomen of this world among the misguided and superstitious is a ‘vale of tears’ from which we are to be redeemed by a certain arbitrary imposition of God and taken to Heaven—what a circumscribe[d] straightened notion! Call the world if you Please ‘The vale of Soul-making’” (505). First, it is worth discussing precisely why, within Keats’s theology, the “common cognomen” is ultimately wrong. The Christian system of salvation may be otherworldly, but it does feature a strange lack of mysticism that is actually anti-Keatsian. For when the “vale of tears” is wiped away, all is revealed—every facet of a Higher Kingdom, every great truth about the world, every conceivable question regarding our ways of being and thinking and believing. For Keats, who in “To Homer” praised the
strange perceptivity of those with “triple sight in blindness keen” (12), there is something seriously important about mystery, about the strange way humans are situated between the un-seeing of animals and the all-seeing of a Higher Power. This is a uniquely human position, and, as Sharp reminds us, Keats aimed for his personal theology to be a uniquely human creation.

Keats also took offense at the idea of God’s “arbitrary imposition” of redemption. As critic Robert Ryan notes, Keats’s attempt to make a blanket criticism of Christianity based upon this issue is flawed: “What Keats is rejecting is, apparently, a Calvinist understanding... he does not seem to be aware that there are other authentic theological traditions—the Catholic and the Arminian Protestant, for example—that place a higher value on personal spiritual development” (199). Keats does seem wrongly to ascribe some aspects of pre-destination to all of the Christian faith, not just certain denominations. But it is not clear that a denomination which places “a higher value on personal spiritual development” would have ultimately won Keats over. In his writing, he places the *ultimate* value on personal spiritual development. As he attempts to craft a “fully human” personal theology, there is no room for the idea that those humans need some sort of all-powerful intermediary to save them. Indeed, when Keats does discuss the idea of God, he *integrates* it into this most human of salvation theologies by locating the deity within the human mind. “Intelligences,” he states, “are atoms of perception... in short they are God” (505). This is not to say that man is akin to the all-powerful Christian God—to say so would negate Keats’s emphasis on half-seeing. But man’s intelligence, like God, helps to provide him with the wisdom needed to secure salvation. There is no “summons,” to use a phrase from the above Augustine passage. We are, ultimately, saved by our own singular human traits.

Equally offensive to Keats’s idea of salvation is the sort of
“Heaven” that God would summon us to. In addition to being a place of everlasting clarity, this Heaven would also be a place of everlasting joy, of eternal sharing in God, who is objectively the greatest good. But rather than this everlasting bliss and understanding, Keats suggests that a salvation theology should concern itself with the following question: “How then are these sparks... ever to possess a bliss peculiar to each one’s individual existence?” (505). This understanding of salvation centers around one of our most singular traits as a species. Part of what makes humans unique is the fact that, unlike, say, nightingales, our songs are not the same. We are capable of producing different perspectives on the world and, as such, are capable of unearthing wildly differing ways to find beautiful redemption and meaning in it, thus saving ourselves from a dull and despairing life. We see now that, for Keats, a fully human salvation is fully individual and therefore rests in finding “a bliss peculiar to each one’s individual existence.”

Ultimately, the salvation aspect of Keats’s theology is built upon our unique human qualities: our singular faculties of perception, our chronic lack of surety, and our certain appointment with death. For Keats, salvation is won via an individual’s own ability to find “bliss peculiar” and to redeem the world in his own way. Of course, like all other aspects of Keats’s theology, it cannot be entirely new; it relies on the Christian beliefs it resists. But Keats’s theory of salvation, his establishment of a telos that celebrates “the pain alone, the joy alone, distinct” to being a human being (174) is perhaps the most richly unique—the most exhilaratingly and most exclusively Keatsian—of all the man’s theological conceits.

Conclusion

In today’s age, many object to Christian theology on the
grounds that it is insufficiently rational. So did Keats. Yet he also objected, in a way, to its excessive rationality. To Keats, Christianity promoted superstitions that insulted the intelligence, but by attempting to erect a thought system that would categorize and explain all of life, it also possessed an inherent lack of mystery, along with a serious dearth of possibilities for individual discovery. Ultimately, Keats held on to the greatest piece of wisdom he could locate within the system of Christianity: the value of suffering. Then, by rejecting the rest, he began to form a system of his own, one that insists that we redeem and save ourselves by making our own unique and beautiful responses to a world that is uniquely and beautifully mysterious to us. In Virginia Woolf’s *To the Lighthouse*, a work also replete with discussions of seeing, a character realizes that “[t]he great revelation perhaps never did come. Instead, there were little daily miracles, illuminations, matches struck unexpectedly in the dark” (Woolf 161). According to John Keats, these “matches struck in the dark” are the stuff of our hard-earned salvation.

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The Right to Be White: 
Fighting the Persecution of Albinos in Tanzania

MADDIE WINCHESTER

Introduction

As the thirty-first largest country in the world, Tanzania supports a population of over forty-six million people (CIA). Demographically, Tanzanians represent a wide variety of cultures and languages. In addition to the over 130 Bantu tribes that make up most of the mainland population, thirty-five percent of the nation holds indigenous religious beliefs, and the country is home to over half a million refugees, mostly from Burundi and the Democratic Republic of the Congo (CIA). Add to this the fact that Tanzania shares borders with eight different countries, and it becomes apparent that a vast number of interests, cultures, and languages exist throughout the nation, sometimes in harmony and other times in conflict. The country faces natural hazards ranging from flooding to drought, as well as a host of social and environmental problems (CIA). Tanzania is threatened not only by deforestation and the ivory trade (CIA) but also by a deep-rooted racial discrimination against the country’s albino people.

The Problem

Throughout the world, one in 20,000 people suffers from Albinism, a recessive genetic disorder that affects skin pigmentation and leads to pale coloring, poor eyesight, and hypersensitivity to sunlight (Brookes, Burnett). In contrast to the worldwide average, one in every 1,400 Tanzanians is albino (Burnett). The high concentration of albinism in Tanzania has several possible explanations. The country may be the place of
origin for the genetic mutation; also, most albinos who live long enough to marry ultimately marry one another due to the constant discrimination that albinos face (Burnett).

Longstanding superstitions in the area fuel the belief that albino body parts have magical properties that, when made into a potion by a witch doctor, help to ensure a catch of fish or a good place to dig for minerals in the ground (Burnett). Some also believe that the magic is stronger if the albino victim is alive and screaming when he or she is dismembered, a notion that has led to incredibly gruesome attacks and discrimination in more than a dozen African countries (Salinas, Burnett). Some other myths associated with albinism in the country are that albinos disappear instead of dying; that albinos are ghosts or aren’t human; and that having sex with an albino woman can cure AIDS (Salinas, Brookes). Because of these superstitions, more than one hundred albinos in Tanzania were attacked between 2006 and 2012, and many more face continuous discrimination and feel unsafe because of the superstitions associated with their skin color (Burnett). Estimates for the values of albino organs and other body parts range from several hundred dollars (von Planta) to a hundred thousand dollars (Salinas), but the actual prices are hard to determine because of the underground nature of the market.

In addition to taking limbs from living albino people, some wealth-seekers have resorted to grave robbing to find bones and body parts. Others rape albino women in an attempt to cure diseases (Pisik, Brookes). There are families that send their albino children to boarding schools for their protection, hide them inside, or are even forced to give them away “before they can bring bad luck to the village” (Pisik). Unfortunately, some parents also contribute to the violence by selling their own children’s bodies and by helping to attack them (Spell of the Albino). Since the large majority of Tanzanians live in rural communities, their isolation fuels the perpetuation of stereotypes and belief in witchcraft,
which is directly related to the indigenous religious beliefs held by much of the population (CIA, Gettleman). This isolation also means that many victims of attacks against albinos die before receiving medical care, and a lack of law enforcement allows the majority of attackers to get away with their offenses (United Nations, CNN). Many Tanzanians, however, condemn this focus on witchcraft. Native journalist Richard Mgamba is among the disbelievers:

If you look at my country, the Sunday Citizen published an article on the front page saying “Juju Nation.” Every five people out of ten have visited the witchdoctor for the purpose of getting remedy or seeking the fortune. Now, when you have half of the population believing that kind of thing, the challenge is how do we move out of this. Because, if witchcraft was working, Africa would have been fine in terms of development, Africa would not be begging for aid from Europeans, or from America. But people have to understand that it doesn’t work. We have to move forward, it doesn’t work at all. We have to stop it, we have to abandon it. (*Spell of the Albino*)

Whether the exact number of believers is the thirty-five percent reported by the CIA or the fifty percent estimated by Mgamba, it’s clear that superstition is deeply ingrained in Tanzanian society. Combating the mistreatment of albinos will require a change at the most basic level. People with albinism must begin to be seen as human beings instead of dollar signs.

The discrimination against albinos and the trade of their body parts throughout much of Africa has many implications for international communication. Tanzania alone shares borders with eight other countries, which makes the black market trade of albino charms difficult to stop (CIA). Peter Ash, founder of the
Canada-based albino advocacy group Under the Same Sun, also describes an Internet trade in albino body parts (Salinas). Because only eleven percent of Tanzanians have access to the Internet (“Report on Internet” 24), the online trade could point to involvement with more developed African countries. Ideally, something good could also come out of this cross-country market. In July of 2009, nine people were sentenced to either prison or jail time in neighboring Burundi for murdering albinos and selling their body parts in Tanzania (BBC). Hopefully, as Tanzania’s neighbors continue to prosecute the perpetrators of these killings, the country will feel pressure to respond with equal force, as it has already begun to do.

In this year alone, four albinos were attacked in a sixteen-day period during January and February (Salinas). Three of these attacks were against children, including one that led to the death of a seven-year-old boy and his ninety-five-year-old grandfather, who tried to protect him (Salinas). Even while the attacks that the United Nations has deemed “abhorrent” (Salinas) continue, the treatment of albinos in the country is slowly beginning to change due to increased awareness and legislative action (Burnett). Advocacy groups work to educate people about albinism and skin cancer, which kills ninety-eight percent of albinos in Tanzania before the age of forty, and albino celebrities and members of parliament are attempting to give a voice to their people (Burnett, McConnell). As the issue moves further into the open, the goal is to transform this visibility into action to make Tanzania and its neighboring countries safer places for all people, regardless of the color of their skin.

The Solution

There is no one perfect way to stop the discrimination and attacks against African albinos, but a combination of efforts can
help to eliminate the problem over time. A multi-pronged approach, beginning with awareness and leading to action, is needed to fight the deeply ingrained beliefs at the grassroots level through empowerment. Melkote and Steeves define empowerment as “the mechanism by which individuals, organizations, and communities gain control and mastery over social and economic conditions (Rappaport 1981; Rappaport et al. 1984); over democratic participation in their community (Rappaport 1987; Zimmerman and Rappaport 1998); and over their stories” (355). This approach is ideal because empowerment is a sustainable solution that allows the persecuted to identify their own problems and the best way to solve them, which serves to create leaders who truly understand the needs of the community. The idea of a sustainable approach is directly related to Melkote and Steeves support of participation as an ends through Participatory Action Research, which focuses on allowing local people to take control of their own problems and to find solutions in their own way and as equals (342-4). Only when the community joins together can it begin to repair the damage that has been done by the many years of treating the albino people as though they are not human. The best chance for a solution will come with the ability to integrate existing and new efforts to protect Tanzanian albinos and begin changing stereotypes through awareness and action.

Awareness

The first step in addressing the problems of Tanzania’s albinos is to create awareness within the country and around the world. This consciousness should focus not only on making known the plight of the albino people but also on bringing to light all of the existing efforts to combat injustices. An increased level of awareness creates worldwide attention and puts pressure on the
Tanzanian government to address the problem and begin protecting its people. Several creative consciousness-raising campaigns, ranging from the musical to the technological, are already underway within the region.

Music has always been a way to bring people together and expose social issues; consider the songs of the Beatles to the philanthropic involvement of U2 front-man Bono. Malian singer Salif Keita was shunned by his own father from birth because of his pale skin and light hair (Brookes). Keita played music in the streets for two years before being discovered and beginning a successful multi-decade career in the music industry (Odidi). A lifelong activist for a variety of causes, Keita has formed two nonprofit organizations, founded a hospital for skin cancer patients in Mali, and helped to deliver textbooks, glasses, and thousands of tubes of sunscreen to African albinos (Brookes, The Salif Keita Global Foundation). Despite years of fighting for those with albinism, Keita only recently began using his music as a means to this end, saying, “I wanted to live my life without complaining about my albinism as if it was a handicap. But now, so many things are happening to albinos, massacres, and human sacrifices. It is too much. I had to say something” (qtd. in Odidi). Keita recently released a song, entitled “Folon,” that he has dedicated to albinism awareness (The Salif Keita Global Foundation). Translated to English, “Folon” demonstrates the struggle of Tanzania’s albinos to find a voice amidst changing times:

Today, you are supposed to take part
Today, I’m supposed to take part
Today, we are all supposed to take part
Today, whatever’s happening
we’re all asked to take part
Today, people want to know
In the past, people did not want to know (translated in Gamzeu)

“Folon” shows us a changing time in which people are beginning to address the issues of albinism, though the wounds have yet to heal from a past in which “people did not want to know” about albinos’ struggle. Through his words, Salif Keita gives a voice to a number of voiceless people. He demonstrates Melkote’s and Steeves’s ideal of empowerment by serving as a model of everything that people with albinism can accomplish and giving back to those who share his stigma through his activism and philanthropic commitment.

In 2012, French author Michel Picquemal published a children’s book, La Voix d’Or de l’Afrique, about Salif Keita’s life (The Salif Keita Global Foundation). In many ways, a children’s book makes a lot of sense as a way to reach out to a nation and start changing dangerous beliefs. While only one in ten Tanzanians have access to the Internet, almost seventy percent know how to read (“Report on Internet” 24, CIA). In a country where technology is still lacking an infrastructure, books remain an important means of communication. The use of books like La Voix d’Or de l’Afrique can help, starting in childhood, to raise awareness of the persecution of albinos and to dispel the myths attached to the lack of skin pigmentation. Stories written by African albinos would further follow this model of empowerment and create a way to show people that albinos are just like everyone else. In this way, more leaders would follow in Salif Keita’s footsteps and bring awareness to the fight of the albinos by serving as spokespeople and beacons of hope for others who share their struggle.

In a gesture unlike Keita’s musical campaign, Deputy Minister for Communication, Science, and Technology January Makamba is using communications to help combat corruption in
Tanzania through a new mobile phone service (Kellaway). Makamba has created an anti-corruption campaign based on text messaging that works to expose bribery throughout the country: “Only 6.9% of corruption cases are currently reported. We want to solve the problem…At a hospital you are asked for a bribe. You have a USP code, you enter the location and details of the bribe and send it to a web platform: it will appear as a dot on a map so everyone can see that at a certain hospital a bribe was asked for” (qtd. in Kellaway). Because more than half of Tanzanians had a mobile phone in 2012, solutions based on telecommunications make sense for the nation (“Quarterly Telecom Statistics”). By making some changes to Makamba’s cellular operation, a similar idea could be used to catch witch doctors using albino body parts or albino attackers, even in rural areas. Unique solutions like Makamba’s text message-based campaign are examples of the way communications can be put into action to help fight problems in Tanzania and all over the world.

Another way in which Tanzanians are working to fight discrimination based on skin color is through participation in documentary filmmaking. Award-winning Swiss filmmaker Claudio von Planta recently released Spell of the Albino, a twenty-four-minute documentary, in collaboration with Africa Investigates and Al Jazeera (von Planta). While von Planta admits that he was originally skeptical of the reports of the albino attacks, he began to change his mind after witnessing the aftermath of two assaults firsthand. In his film, von Planta used native Africans, both black and albino, as investigators. Anas Aremeyaw Anas, a famous Ghanaian investigative journalist, partnered with Tanzanians Richard Mgamba and Isaak Timothy, an albino, to investigate the issue and confront witchdoctors (von Planta). After visiting several victims of albino attacks, the men ordered a fake albino arm from a special effects company, and Anas took the fake arm to a witch doctor, pretending to be a client hoping to get rich.
Through a combination of fear tactics and verbal assaults, Anas convinced the witchdoctor to stop making potions from albino body parts, something he then hoped to do in other villages. By allowing the Tanzanian people, and in particular a Tanzanian albino, to tell their own stories and to fight their own fight, von Planta exemplifies the use of empowerment to enact change.

Based on everything that has already been done with music, books, and cell phones, it’s apparent that communications hold a key part of the solution to Tanzania’s problem. Though the country is lacking a communication infrastructure in many ways, the influence of Keita’s words and Makamba’s fight against corruption are making a difference even with the small amount of people they reach. Improving the quality of roads and telecommunications throughout the country would allow more people to benefit from this increased awareness and to pick up their own fight against injustice. In this way, a more advanced communication infrastructure in Tanzania would help to dispel the myths associated with albinism, and greater access to books and the Internet throughout the country would force people to rely on facts instead of superstitions, making Tanzania a safer place for its albino citizens.

The only way in which awareness can make a difference is if it inspires people to take action against injustice. Awareness begins with empowerment, and more specifically with people controlling their own stories (Melkote and Steeves 355). The key to change in many instances can be as simple as allowing people to tell their own stories, and we have seen the impact of this through Salif Keita’s music and Isaak Timothy’s powerful words in Spell of the Albino. These stories embody the idea of empowerment with the purpose of change, and both the government and several non-governmental organizations are attempting to use the awareness created by the narratives of the albino people to enact change within and outside of Tanzanian borders.
Action

Once awareness has been promoted, the next step is to take action to protect African albinos. This action should work to combine the efforts of governmental and non-governmental organizations, and to help albino people of all ages. Through empowerment and awareness, action begins to form at the grassroots level, and people with and without albinism in Tanzania can learn to coexist peacefully.

Several non-governmental organizations are working to combat albinism stereotypes in Tanzania. Groups like Under the Same Sun and the Tanzanian Albino Society fight to dispel myths, create awareness, and educate both albinos and non-albinos about life with albinism in an African society (Burnett, “Learn”). At the same time, organizations based outside of Tanzania, such as The Salif Keita Global Foundation, work to provide Tanzanian albinos with life-saving sun protection (The Salif Keita Global Foundation). Dr. David McLean, secretary-general of the International League of Dermatological Societies, has been visiting Tanzania for the past twenty years to help grow the Regional Dermatology Training Centre, which trains dermatologists and controls a mobile skin care clinic that visits albinos living nearby (Miller). Dr. McLean has also been integral in the formation of the project “Hats On for Skin Health,” which works to provide wide-brimmed hats to Tanzania’s sun-sensitive albinos (Miller). The hats, which cost around $2.50 apiece to produce, are expected to last for ten years and will be distributed by the Regional Dermatology Training Centre (Miller). Something unique about this project is its focus on education and empowerment. The Regional Dermatology Training Centre works to train local
doctors, and the mobile skin care unit brings awareness and educates albinos and their families in remote villages (Miller). In addition to this, the factory where the hats are produced is located in Moshi, Tanzania, and staffed primarily with albino workers, which serves to empower the albino population to take control of protecting themselves from the sun (Miller).

Melkote and Steeves encourage the formation of alliances, which can bring different groups together based on a common interest and contribute to their success (292). There are many different organizations and individuals fighting for those with albinism in Tanzania, and an alliance between the established nonprofit groups could make a huge difference. The Tanzanian Albino Society survives on just $15,000 a year, while the Salif Keita Global Foundation received almost $100,000 in donations in 2009 alone (Gettleman, The Salif Keita Global Foundation). Economic disparity is an unfortunate reality that keeps human rights organizations from living up to their full potential, but a combination of efforts can increase success. Additionally, these organizations experience technological gaps in conveying their ideas to the world. All of them have websites, but given the region’s low Internet penetration, they are probably most effective in communicating their messages to more developed countries than to the Tanzanian people and their elected officials. Melkote and Steeves utilize Allinsky’s definition of power as “organized money or organized people” (353), and with a combination of the Tanzania Albino Society’s local network, Under the Same Sun’s international ties, and the Salif Keita Global Foundation’s image and funding, the groups would have the power to accomplish great things for albinos throughout Africa.

In addition to progress made by NGOs, the Tanzanian government has been taking steps to protect the rights of its albino citizens. One way that the government has increased awareness about the plight of the albino people is through the inclusion of
albino Tanzanians in the country’s parliament. In 2008, Tanzanian President Jakaya Kikwete appointed Al-Shaymaa Kwegyir to parliament (“It is easy”). Kwegyir runs the Office of Albino Affairs and fights for the rights of fellow Tanzanian albinos (“It is easy”). Serving as a member of parliament puts Kwegyir in a good position to help pass laws to stop the persecution of albinos, something fellow parliament member Salum Khalfani Bar’wani has already committed to doing (McConnell). The first albino parliament member to be elected by a popular vote in 2010, Bar’wani wants to change the situation of the albino people in his country (McConnell). Bar’wani says that he “joined politics to represent people who have disabilities” and that he hopes his election can help to start changing the reality of the albino people (McConnell).

The Ministry of Education has also taken action by starting to educate teachers and professors about albinism and how to help the albino students in their classrooms, since those students frequently have vision problems (Burnett). Institutions such as schools and law enforcement agencies are integral in both preventing albino abuse through education and in finding and prosecuting attackers. Police officers in Tanzania have begun creating lists of albinos in their regions and escorting children to and from school to protect them from potential attackers (Gettleman). The help of schools and police in confronting the problem is an important step for the elimination of the persecution of albinos in Tanzania, but more must be done to ensure everyone’s safety and stop the attacks.

The United Nations reports that out of the seventy-two documented cases of the murder of albinos since 2000, only five have been prosecuted successfully (Salinas). It’s also important to take into account the number of attacks that go unreported, perhaps due to rural isolation or fears for the lives of family members (Ng’wanakilala). In 2008, the Tanzanian Government

The Expositor | 73
made some progress by informing the people that “the torture and killing of an albino would be prosecuted in the same way as any other murder” and also by recently banning witchdoctors from running their businesses (Pisik, BBC). Just a year later, a court sentenced several men to death by hanging for killing an albino boy and taking his legs for use in witchdoctor potions (BBC). The victories for the albino people continued in 2010 when a man received the death sentence for cutting off the legs of a five-year-old girl, drinking her blood, and leaving her alone to die (Ng’wanakilala). Parliament member Al-Shaymaa Kwegyir welcomed this sentence, stating that “the court ruling should serve as a lesson for others” (qtd. in Ng’wanakilala). While the convictions of albino killers demonstrate progress for the country, the sentences remain more severe on paper than in practice; as of 2009, no one had been executed in over fifteen years, despite there being over one hundred criminals waiting on death row (BBC).

Awareness sets the stage for future action, which is what will help to change the fate of Tanzania’s albino people. Non-profit groups working together can raise more money and reach a greater number of people, and the government can create and enforce laws to enact change. In a similar way that awareness is created, through legislative changes and the involvement and coordination of non-profit groups, the region can become a safer place for those lacking skin pigmentation.

Conclusion

In the year 2013, it’s hard to imagine a place in which people are still killed for the color of their skin. In a manner reminiscent of the discrimination against African Americans in the United States, Tanzanian albinos face threats and are even slaughtered and used in potions simply because they look different than their black relatives and neighbors. As a nation,
Tanzania seems divided between the third world and the first. The country supports a large population and maintains a level of telecommunications penetration and literacy that is impressive in the region, yet at the same time a large number of Tanzanians believe in witchcraft and don’t view albinos as human. According to Melkote and Steeves:

Empowerment is a process that is well suited to deal with social change in general and with inequitable structures in particular. It provides individuals, communities, and organizations with the necessary skills, confidence, and countervailing power to deal effectively with social change in a world that distributes needs, resources, and power unequally. (365)

Tanzanian albinos experience a reality that is very unequal; they suffer violence, discrimination, and abuse almost constantly for a condition that they can’t control. Only through empowerment can Tanzania’s albino people take back their lives and feel safe in their own country. Some steps have already been taken to raise awareness by musician Salif Keita and filmmaker Claudio von Planta, and other programs could be adapted to further raise consciousness. This awareness provides the fuel for action that we see in the work of non-profit groups and the Tanzanian government, which is making space for albino officials and enforcing laws against albino killers. Even with all of these steps, the persecution of the albino people in the region is still a reality. As long as people continue to believe in witchcraft, the attacks will continue. We must take the steps to empower the Tanzanian people, and in particular the Tanzania albinos, to control their own stories and enact change. Through empowerment and awareness, Tanzania and its neighboring countries can take action...
against stereotypes and become safer places for all people to live, no matter the color of their skin.

Works Cited


