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EDITORIAL STATEMENT

LOGOS: A Journal of Undergraduate Research is dedicated to the publication of scholarship and artistry by undergraduate students (or undergraduate students coauthoring with faculty) of Missouri State University. It is open to submissions from all undergraduate students at the university and conforms to the highest standards of scholastic integrity in a blind, peer-review process conducted by distinguished undergraduate students and faculty.

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DEDICATION

In Memory of Dr. Jane Hoogestraat (1959–2015)



PLATH'S TOO DARK

"I still don't teach Sexton or Plath, / make jokes about poetry and gin, or laugh
with those who do. / I know that tulips can be cold / but I've not seen them black."
- from "Winnowing Our Souls" by Jane Hoogestraat

I first met Jane Hoogestraat during one of the lowest points in my life.

After completing my first Masters degree (in theatre), I took furtive steps into the business world, hoping to parlay my experience as an actor into a corporate training job or some such, only to become an admissions coordinator at a proprietary "college"—one of the kind that might advertise during "Judge Judy"—because they were the first to call me back after papering the area with resumes.

The job was a soul-killer. Every quarter, I was expected to meet an enrollment quota. As the High School Admissions Coordinator, my marks were students who didn't feel junior college or university was right for them. Instead, I pitched programs in the exciting world of Dental Assisting, Medical Assisting, Office Assisting...lots of "assisting." I didn't mind travelling and giving presentations, but I hated the sales aspect of the job. I had to convince potential students and their families to drop thousands of dollars in hopes little Johnny or Suzie could land a job any untrained GED recipient could land.

On a bitter cold day in late November, the day before most colleges were getting out for Thanksgiving break, I pulled onto the lot and felt as if I were going to vomit. I was having a crisis in conscience and no longer believed in the programs I was selling. Too many of my students had graduated, only to find themselves in the same types of job they were working prior to enrolling. One student even stopped me in Wal-Mart and said, "I can't find a job, despite the school's promises, only now, I'm \$30,000 in debt. You should be ashamed to work for them." She said it not with anger, but with a cool matter-of-factness that dug deep and planted a seed inside of me. That seed sprouted, spreading doubt.

I sat in my car for a while, then in my Spartan office, then in the hallway outside the president's door. I thought I'd ask for advice, tell him I was losing faith in the company, and perhaps request a pep talk, a sort of "pump me up, coach" kind of thing that seemed to work for athletes.

But I hated this guy. He was arrogant, distant, and seemed interested only in the numbers. When I knocked on the metal frame to his office door, he stuck his finger up to indicate I should wait a minute while he tapped away at his computer. I was sure he was playing Tetris and found some perverse

delight in stalling me. By the time he finally deigned to look my direction and witheringly uttered, "Yeah?" I was fuming.

"I hate you," I blurted out.

"What? What did you say?" he said.

I was stunned. "Did I say that out loud?"

"Yeah. Yeah, you did."

"Ah. Well. Fine. I'll just go with it. I hate you. I hate this job. I think we're a terrible school with a shitty product. I think I need to take my two week vacation to recharge my batteries."

"I think you need more than two weeks," he said.

Within the hour, my office was packed and I was standing in the parking lot with a box full of office knick-knacks and my severance check, which would be enough to sustain me through Christmas. Maybe.

Knowing I couldn't go home and tell my then wife and child that I was without work during the holidays, I drove around Springfield for a bit to do some soul searching. I found myself walking into the English department offices at Southwest Missouri State University. "Can I see the English grad director?" I asked the jovial woman behind the desk. She directed me to this dingy office in the old Pummill Hall. The office was cluttered, the books stacked in crooked towers and the piles of handwritten and typed papers formed not a stuffy academic office but the disorganized hovel of an intellectual, and in the center of the maelstrom was this woman, quiet and unassuming, her blue blouse rumpled and dusted with chalk - the last faculty member working that evening. She was reading her way through a thick stack of stapled and crinkled papers, smiling and scribbling comments in the margins.

She squinted at me through large, plate glass spectacles and listened as I told her my sordid tales depicting the unhappy life of a salesperson and grinned widely when I pushed my transcript in front of her and said, "So, do you think I have enough Shakespeare classes to be an English major?"

She chuckled. "Well, I think you'll find there's more to it than that." She took my joke seriously. I laughed, too. She had a way of disarming and relaxing me few have ever mastered. Suddenly, I was a graduate student again. Although I could've made more on unemployment instead of serving as a graduate assistant, for the first time in a long time, felt I was where I belonged.

Jane made sure I continued to feel that way, guiding me until graduation, serving as a second reader on my thesis, and periodically urging me to drop my graduate assistantship in the Study Away Office to work for the English department (I never did). During my journey, I enrolled in as many of her poetry classes the department would allow, and ran afoul of her wishes once

when I declared I would write my term paper in her 20th Century American Women's Poetry class on Sylvia Plath. "No one gets an A writing about Plath in my classes," she said. "Plath is too dark, her experience too distant and removed. I feel depressed reading her." But her classes had inspired me, teaching me that poetry was a powerful tool, one that shattered boundaries and challenged the secure notions regarding our lives, so I found an angle. I studied Plath's influence on teenagers who identified as Goth and discovered that, despite Plath's darkness, these often disenfranchised teens found hope between the lines of strained allusions and depressing allegories. I gathered a dozen Goth high school kids in a local Pizza Hut and we shared our favorite Plath poems and examined them through the lens of their lives. The paper became my first conference presentation—one of many—and earned me that coveted A in her class.

Eventually, she wrote me a letter of support and I was hired at SMSU to teach in the Collegiate Reading and Learning Program. Four years later, I assumed the mantle of Director of the Writing Center, which turned into the Director of Learning Services job, a Master of Fine Arts in Creative Writing, my editorship of *The Learning Assistance Review*, and my work with *Bluewater/StormFront Comics*. Every now and then, she'd stop me in a hallway after a meeting just to catch up. I enjoyed those chats, and I will always hold her responsible for putting me on the right road when I was lost.

Goodbye, Dr. Jane. I'll never be able to thank you enough for what you did for me, I only hope I can repay your kindness by paying it forward.

Mike Frizell
Director, Student Learning Services

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ARTS AND LETTERS

SAMANTHA AUSTIN

WHAT I KNOW ABOUT THE VIOLIN

ABSTRACT

“What I Know about the Violin” is a work of short fiction that explores parenthood, marriage, and the modern family dynamic through the literary vehicle of music. The story centers on a husband and father struggling to fill both these roles and come to a place of inner peace. However, his own feelings of inadequacy are his greatest obstacle, and they affect not just him, but also his wife and his young daughter. At its core, “What I Know about the Violin” is a glimpse into the quiet but powerful forces that haunt individuals, and how those forces can span generations.

The mantle in our little living room was a shrine of the idyllic. All along the old varnished wood sat framed pictures of a loving family of three, but the focus wasn't on us, the parents; it was Evie who stole the spotlight in each picture. Small and delicate, with gentle waves of blonde hair and eyes green and vibrant with hope, she was the image of Emma when I met her: an Emma who still smiled, still laughed, and meant it. And she was Emma's pride and joy. When she invited our friends over to our house, she would smile and kiss my cheek and hold my arm, and she would pretend that this house, small though it was, contained a contented family. I couldn't say I minded playing along; at least I got to pretend she liked me. But I wasn't the main attraction for these gatherings, and neither was Emma. When we had friends over, she never mentioned her disgust at the discarded sunflower seed shells she found around the house, or her contempt for my tendency to have a beer at breakfast. For these brief events, these lower-middle class soirees, she spoke primarily of Evie.

The other day, we were putting on the show for the new neighbors. As I stood in the kitchen and feigned interest in Rob McConnell's kid while Emma bragged to his wife about ours, I could see them standing in by the mantle, in front of the most recent picture we had taken as a family. Like all the others, it featured Evie, posing with a shining new violin. “She just started playing,” Emma said proudly as she beheld the photograph. “Her teacher says she's the best in her class.”

The grating ring of an inexperienced bow on strings resonated throughout our little house. Every day for the last three weeks, I had walked through the

front door of my house after work and into what sounded something like the inside of a wood chipper. It didn't matter if I was in the bedroom or the basement or the backyard; when I left in the mornings and came back in the evenings, the screech of the violin pervaded every wall. Invariably, the hairs on the back of my neck would stand up, and yet somehow my wife always seemed unaffected.

But that was Emma; she was always good at bullshitting. The warmth and affection she exuded when we were out in the world seemed genuine enough—and toward Evie, it was. But when we were at home alone and she couldn't escape me, she allowed her distaste to show. And in the last three weeks, I began to understand. I felt the same way about the sound of that violin. As I took my seat at the kitchen table, it accompanied me from upstairs like a dysfunctional minstrel.

“Hey, you should save those,” I joked as I watched Emma toss an empty egg carton in the trash. “I hear they're really good for sound-proofing.”

In response, she rolled her eyes and jammed the garbage further down into the can. “Don't be an ass. She's learning.”

“It's not like she can hear me over that noise.”

“Shane.”

“Come on. I've been listening to that for weeks. If I can't make jokes, I'll go crazy.”

Emma sighed, defeated. “Can't you just be supportive of your daughter?”

“Hey, if she were *my* kid, she'd be playing...”

Emma whirled and shot me a look that iced the facetious smile right off my face, and then she slid me a plate with eggs—over-easy when she knew I liked them over-hard. After that, she marched silently to the cabinet to make a bowl of cereal, her head held high and her jaw solemnly set.

Vainly, I tried, “Em, I didn't mean it like that. It was a joke.”

“Just go tell Evie her breakfast is almost ready,” she said with her back to me.

When I had dropped Evie off at her grandmother's house last month, she could barely contain her excitement about joining the soccer team. When I'd picked her up at the end of the day, soccer was a nearly forgotten memory; she wanted to be a violin player. I told her she needed to think about commitment, at which point Emma's mother had pulled me aside and told me about the dangers of “stifling” my child. Apparently I still needed guidance until I earned my fatherhood merit badge.

I'd raised her for ten of her eleven years of life; I'd willingly accepted the responsibility of parenthood when I was barely twenty-four—practically a kid myself. I'd changed the diapers and cleaned up the vomit and passed all

the fatherly rites of passage. I even spent a year on the god damned PTA. But around every corner, there waited a new test of my paternal capability, and this time, it was the violin.

It seemed simple enough for them. For Evie, a new violin meant an exciting new hobby she could drop when the next thing came along. For Emma, a new violin meant a new accomplishment to pin on her kid when she bragged to her girlfriends. For me, it meant three months of budgeting, because god forbid I get a fifth grader a cheap violin.

Of course, I did what was expected of me. I sacrificed the monthly bar nights. I took extra hours at work. I put off fixing the car door, which wouldn't open, which meant I had to get in through the passenger's side and crawl across to the driver's seat every time I had to go somewhere. I spent twenty extra minutes in that car to get to a middle-of-nowhere music shop, where some blowhard in a piano key necktie conned me out of my paycheck.

At the very least, I'd managed to save a couple bucks—finding a broken one and paying to have it fixed up proved to be cheaper than buying new—but Emma didn't have to know that. Besides, it was still no small sum. I bought the case. I bought the rosin. I bought the extra strings, the tuner, the books, the bow, and finally the hunk of wood itself. And then I crawled into my car through the passenger's seat and drove the dingy thing home.

But when I watched Evie look upon her new gift and I saw her smile, her eyes crinkling just like her mother's used to when she loved me, all the hassle suddenly felt worth it.

The hassle quickly stopped feeling worth it when she started playing. I don't know a lot about the violin, but I know that it sounds awful when you don't know how to play it. With the piano or something, you can get away with being bad, because even a wrong note doesn't sound that bad. With the violin, there's no room for interpretation; you're either really good or really awful. And by virtue of only owning a violin for three weeks, Evie was breaking records in the realm of awful. When I came home from work that day, she was still playing awfully and Emma was still giving me the cold shoulder.

"I swear she's playing the exact same thing she was playing this morning," I said as I took off my coat, as though I expected my wife to react positively to anything that came out of my mouth. As I should have expected, I instead received an icy glare.

"Her teacher says it's called the Suzuki method. She learns by listening and copying."

"Maybe she should find a new method. I don't think this one's working."

Emma didn't laugh. She tried to act like I wasn't there.

"Emma," I tried again. "Come on. Is this still about this morning?"

At this point, Emma softened a little and looked away. "Don't act like it's nothing. I've got every reason to be upset."

"Honey, I said I was sorry. It just came out."

She frowned. "Firstly, you didn't say sorry." I furrowed my brow, trying to recount the conversation in my mind while she continued. "And anyway, it's an awfully convenient time for it to 'just come out.'"

She sat down on the couch, and I took my place on the opposite cushion, my eyes fixed on her bare toes curling in the shag carpet. Reaching down, she picked up the tiny, splintered pieces of a broken sunflower seed shell.

"She's getting older, Shane," she said. "You knew we'd have to tell her someday. And I think we should do it soon."

I sat back and stared at the TV even though nothing was on. "Yeah. You've made that very clear."

Emma glowered. "Yes. And you've made it very clear that you don't like it. But that's not fair to Evie, and you know it."

"And what about me, Emma? What's fair to me?"

For a moment, Emma was silent. Then, she placed her hand over mine carefully, haltingly, like someone checking a stovetop to see if it was still hot. "Shane, listen to me. You're Evie's dad, and you always will be—"

"I don't need you to validate that."

"—but she still deserves to know about Nathan. This doesn't have to be a bad thing unless you make it a bad thing."

I drew my hand back and stood. "That's easy for you to say. You're not the one being alienated."

"You're insecure, I get it. But you're taking it out on Evie."

"I haven't said a thing to her," I said.

"What about the violin jokes?"

I scoffed and gave a dismissive wave of my hand, as if to bat away the sudden unease prickling in my chest. "That's completely irrelevant."

"Is it?"

I rolled my eyes and made my way to the kitchen, and behind me I heard Emma rise to follow. When I turned back around, she was standing in the archway, watching me, challenging me. I threw my hands up; the laugh that came out of me sounded strangely forced.

"Look, when I'm talking to Evie, I'll tell her how great she is. But when it's just us, I'm not going to pretend she doesn't suck."

"Really? She's a child, and you're going to say she sucks?"

She said it in a tone that clearly indicated that I was supposed to change my answer. Instead, I said nothing at all, twisting the cap off my beer and taking

a long pull from the bottle. After a while, I thought she would leave, but she simply stood there and stared, like I had just blasphemed.

Finally she said, so softly I almost didn't hear it over the screech of the violin, "At least she's trying."

On the far end of the mantle, protected by a tiny old frame, was a faded and slightly crumpled photo of mother and daughter. Clearly, it had been taken out and handled countless times, but the wear gave it a sense of antiquity amidst the other crisp, clean pictures. This was probably the first picture taken of Evie; Emma, in a hospital bed and still wearing the gown, cradled her newborn daughter in the same yellow wool blanket that sat at the foot of her bed. I couldn't look at that picture without thinking of the person who took it.

Nathan—Evie's real father—was apparently a real stand-up guy. They had married against his family's will, but he had more than enough to support them and a budding family. In the pictures, he was a pearly-toothed blond with a lean, darkened athlete's body. He had charm. He had money. He had class. And he had a beautiful daughter. I guess if I was being completely honest, the only thing I had going for me was that I still had a pulse.

"So you're saying I'm not trying, is what I'm hearing." The screech of the violin continued, even seemed to get louder. "I'm so sorry. I didn't realize that I wasn't good enough."

Emma balled her hands in her hair. "I didn't say that, Shane. You said that. You always do this."

"What? What do I always do?"

"You throw yourself into this...this *cycle*. You feel inadequate—"

"Inadequate," I scoffed as I made my way toward the fridge.

"You feel inadequate and so you act like you don't care, which just pisses me off, which makes you feel more inadequate. And then I'm the bad guy for getting mad. Tell me I'm wrong."

"You're wrong," I said and took a swig from my beer. "Or do you think there's a reason I should feel inadequate?"

"Oh, my god. This is not about you. This is about Evie. You are *not* a victim here."

"I just asked a simple question. You're the one who can't give a simple answer."

"I'm not playing this game," she said before she retreated to our room. The slamming of the door came and went, but the endless violin motif continued from behind Evie's closed door.

The last really good memory I could recall of the three of us was when Evie was maybe six or seven—a memory immortalized in a picture of the three of us, sitting on a blanket in a field of grass. Spring had finally warded off the cold weather for good, and I had taken us to the park. Emma had packed lunches earlier that day, and Evie had helped, and I watched Evie chase dandelion tufts while Emma sat with her head in my lap and read a book. We were quiet and content, separate but together.

Evie had found a brown speckled duckling with an injured foot. After some persistent begging on her part, I allowed her to bring it home, and together we looked up how to take care of a duck and what to feed it. Pretty soon, the little guy was walking like normal again, and Evie's favorite game was to waddle around the front yard while the duckling worked to keep up.

"I'm a mama ducky now," Evie announced once as she played. "See? Look how he follows me."

My chances of getting laid that night had dwindled from slim to none, which was pretty much par for the course and felt like a way of life more than a punishment. But I didn't realize the scope of the problem until Emma came out later with a suitcase, and a knot formed in my stomach. "You're leaving?"

"No. You're leaving." Emma opened up the suitcase and revealed my clothes and shoes. "I want you to take Evie to Grammy's this weekend. Spend some actual time with her. And then I want *you* to talk to her about Nathan. It should come from you."

"Me? You said *you* were going to tell her."

"She needs to hear it from you, Shane. You need to be the one to tell her that you're still her dad."

The fear that had settled in my gut was quickly replaced with resentment. "I'm not doing it. And your mother hates me."

"She does not, Shane, and you two might get along better if you didn't always assume the worst."

"It's always my fault, isn't it?"

Emma gritted her teeth and aggressively zipped the suitcase back up. "I'm not blaming you for anything. I'm just asking you to spend some time with your family."

"Which means that you don't think I'm spending *enough* time with them." I stood up from the couch. "Why don't you just say what you mean?"

Emma didn't respond. From Evie's room, the violin playing had stopped. For the first time in weeks, the house was silent. It occurred to me vaguely that upstairs, Evie might be able to hear us just as well as we could hear her.

“Come on, Em,” I said bitterly, maybe just because I couldn’t stand the quiet. “Tell me what you really think.”

This time, Emma was quick to react. She hoisted the suitcase off the ground and hauled it back to the bedroom. “I think you’d do better if you weren’t so scared of failing.”

I watched her go, baffled for a moment, before I followed her into the bedroom. “Are you serious?”

She kept her back turned to me, silent as she unpacked the suitcase onto the bed.

“After everything I do,” I continued, feeling my voice rise and my cheeks flush, “after all the work I put into taking care of this family, you’re really going to tell me what I need to do *better*? What, am I still just some shitty replacement dad to you? Am I ever going to be any good?”

Again, no response. She just kept silently folding.

“I’ll just try and be a carbon copy of Nathan from now on. Is that what you want?”

Nothing.

“Fine. Fine. I will go on the weekend trip. Just say something.”

Silence. More unpacking.

“I don’t have to take this, Emma! I’m a *good fucking father!*”

The resounding silence was pierced by the sound of a muffled child’s sob from upstairs. Finally, Emma turned around, shoulders tense, eyes red. She held her head up proudly, looked at me as she wiped the brimming tears away.

“Go check on Evie.”

I stared at her for a moment before I made my retreat, heading up the narrow staircase and knocking gently before I entered Evie’s room. “Sweetie?”

She sat in a ball on her bed, fair blonde hair splayed out over the purple polka-dotted quilt. At the foot of the bed was the violin in two pieces—the neck had snapped clean off. Now that I looked at it closely, I could tell that it had only been polished up on the surface to look pretty; with the rotted interior now visible, it was clear that it had been destined to fall apart. “Evie,” I said quietly, “what happened?”

She sat up and looked up at me tearfully, and I saw the face of her mother and the face of the man in the pictures, the man I didn’t know—a face both beautiful and mysterious, both pure and anguished. And as much as I could resent Emma for making me run the gauntlet of fatherhood, I knew I would keep jumping through the hoops, because my baby, my Evie, waited for me on the other side.

“It just broke,” she said through quivering lips before she burst into tears all over again. “I was just playing and it broke. I’m sorry, Dad...”

I sat down at the edge of her bed, and she immediately crawled into my lap and curled up miserably.

“Hey...” I murmured, stroking her hair. “It’s okay, dandelion. We’ll get it fixed. Maybe we’ll get you a new one.”

“I don’t want a new one,” she whimpered. “I don’t want to play anymore.”

“But you practiced so much. Your mom told me all about your Suzuki method.”

“It doesn’t matter. I’m never going to be any good.”

Those words struck me with a chill worse than anything I had felt when she was playing. That was only a mild, superficial grating; this was the deep, gut-wrenching dread of hearing my own dirge, my own words thrown back at me in the tiny, crystalline voice of my only child. In ten years, were these words all I had given her?

I picked up the pieces of the violin and sat back down on the bed, trying to think of a way to put it back together, but it was in vain; I had no clue what to do with the useless, splintered pieces of wood in my hands. I don’t know a lot about the violin, but I do know a broken one when I see it.

REYNA LAY

THE GOLDEN GIRL COLLECTION

ABSTRACT

For my Senior Collection class, FMD 570, we were given the task to create a fashion collection consisting of five outfits. As fashion designers, we were given the responsibility to facilitate both the technical aspects of the collection, including all stages of product development, consumer markets, choosing of the fabrics, notions, and the management of time; as well as the creative design aspect, including inspiration of the collection, fashion sketches and ideas, design concepts, pattern-making and construction, design element planning, and garment styling.

I wanted my garments to emphasize quality and to include couture finishes. During this process, I decided to focus on mixing the elegance of high fashion with the attitude and influence of the rock and punk era in the styling of the accessories, makeup, and hair. My intent from the beginning of the product development process was to create a fashion collection that would work well on any body shape and size. I believe I achieved this goal because my collection can be worn by a slim physique to create curves on the body, but it also has the ability to slim the silhouette on curvier frames. As far as the inspiration for the collection, I have many ways to be inspired before creating any piece in my fashion collections, but with my Golden Girl Collection, I was inspired by the fabrics themselves. I fell in love with the brocades, sequins, lace, and the other luxurious fabrics found in the collection, but most of all the golds: thus the name “Golden Girl.”

Once I found the fabrics, my collection evolved from there. I was able to take out my Prismacolor® markers and pencils and put the design ideas in my head to paper. Inspiration came easily, and my colored designs took only about four hours to complete. The pattern-making process began by drafting the basic bodice, skirt, slack, and jean blocks and by cutting a test garment prototype out of a basic, woven, undyed, cotton fabric, called a muslin, for our first drafts before cutting into the actual, high-quality fabric. After putting the muslin on the model, I designated where I wanted the sleeves and neckline to fall by drawing right on the muslin. I also drew where I wanted new seams to go and where I wanted pockets to sit on the jeans. I annotated how much I needed to take in or out of certain areas, like the bust and waist, in order to make the garment fit better on the model. After taking the muslin off the model, I ripped out the basted seams in areas that needed no change, cut new seams on the seam lines that I had created while it was draped, and transferred all the markings to my second set of pattern blocks. After the changes had been made, I began a second muslin. This process took about three to four separate fittings and pattern changes in order to gain a perfect garment for each model. The main changes that were made to the patterns included but were not lim-

ited to dart manipulations, decreasing bust cup size, creating separate front and back yokes, contouring both the tops and the dress to fit the contours of the upper torso closer than a basic block draft, adding princess seams, creating peplums, and modifying a jean foundation.

Sewing each garment proved to be a time-consuming task due to the meticulous attention I paid to each one. Because of all the separate pieces in the patterns I had made and the fabrics I decided to use, my garments required a stronger seam than usual to avoid fraying or raveling. I also had to go through the process of hammering down all the edges of the sequin fabric in order to avoid breaking the needle on my machine. I decided to opt for French seams in all of my garments except for the jeans, which had flat-felled seams. French seams are most often used to provide a clean, finished look in a garment, because they hide the edges of the fabric seam within another enclosed seam. The flat-felled seam on the Golden Girl skinny jean and the jean slacks were sewn without the use of a lap seam felling machine, which sews the seam with a top-stitched finish within seconds. Because I did not have the availability of this machine, I completed the more arduous seven-step process myself in order to gain a better understanding of this durable and sturdy seam. I found this to be a quite a learning experience, as I had to first do a few trial runs on the muslin before using this technique on the Golden Girl denim pieces. Furthermore, I chose to leave the edges of the sequin fabric in some pieces without a facing or seam finish to allow the lightness of the garment to show through. The required stitching for this was to sew one-fourth of an inch away from the edge to prevent raveling in the garment and to keep sequins from falling out. Lastly, I sewed all of the hems and the inside seams of the crop top by hand, using a blind stitch. This technique gave the pieces a beautiful, fashionable, and hidden finish that was well worth the time spent on each stitch. Designing and putting together this collection proved to be not only a learning experience but also an enjoyable one. I have become a more well-rounded designer with knowledge not only in design and couture finishes, but also in time management, marketing, and product development because of this project.



The Golden Girl Collection. The Golden Girl Collection features couture finishes and techniques throughout the garments.



Golden Girl Peplum Top. The Golden Girl Peplum Top features a separate front and back yoke from the bodice, a blind stitch hem, French seams, and finishes with a one-fourth inch stitch along the neckline and sleeve edge. The Golden Girl Skinny Jean features fake pockets on the front to avoid puckering yet still give the illusion of a five pocket jean, a working brass zipper on the outside of each ankle, and hand-sewn flat-felled seams on the inseam of the pants.



Golden Girl Crop Top. The Golden Girl Crop Top is fully lined with black silk fabric on the inside of the sequin fabric and self-faced on the brocade parts of the bodice. It also has a hidden side zipper and French seams on the shoulder and sides to connect the bodice front to back. Hand stitching is prominent on all the inside seams and finishes.



Asymmetrical Crop Top. The Asymmetrical Crop Top has French seams and a one-fourth inch stitch along the edge for the finish. The skirt features an invisible zipper on the side with an elastic waistband and hook-and-eye closure. The hem of the skirt is hand-sewn using a blind stitch.



Statement Jacket. The Statement Jacket is made in a puffy-flower, satin fabric with satin panels at the bottom of the sleeve to slim the arm and also along the neckline. The jacket has a printed black and cream lining along with contouring throughout each of the four panels of the front and back bodice to create a slim silhouette, despite the puffy fabric.



Golden Girl Wrap Top. The Golden Girl Wrap Top is made with a lace fabric with interchanging gold and black threads and knots at equal distances to create a spotted print on the fabric. It is lined both on the bodice front and back, as well as on the peplum. The edges of the sleeves are left as is for a clean, delicate finish, and they feature two separate button closures to allow a looser or tighter look around the waist. The inside features a tie to secure the right side of the peplum to the left. The straight-leg jeans feature a blind stitch hem, flat-felled seams on the inseam, a five-pocket design, and a higher waist to slim the waistline.



Golden Girl Low Back Dress. The Statement Jacket is paired with the Golden Girl Low Back Dress, which features a silk lining throughout and French seams in all the panels of the princess seam dress. It also has one-fourth inch stitching along the sequin fabric hem and a blind stitch hem along the silk lining.



The Golden Girl Collection.



Reyna Lay and the Golden Girl designs. Reyna showcases her Golden Girl hand-drawn designs on the left and second choice collection on the right after her collection critique by fashion industry professionals from New York and Los Angeles at Missouri State University. During this critique, she spoke about which fabrics, techniques, and finishes she would use in each collection and then gathered thoughts and advice from each industry professional in order to select the collection that would best suit her goals, which was the Golden Girl Collection.

TAYLOR PITTS

“SOME SORT OF DREAM GARGOYLE:” GOLDEN AGE, SYNTHETIC ART, AND DESTRUCTION OF CREATIVITY IN *WALDEN TWO*

ABSTRACT

This critical analysis examines the role of creativity within the utopian society constructed by B. F. Skinner in his novel, *Walden Two*. Through the character Frazier, a narrative embodiment of Skinner himself, Skinner illustrates the many ways in which his society is ideal, mentioning several times that members of *Walden Two* are devoid of the suffering that plagues human beings living in traditional, dysfunctional societies. While Skinner makes this argument, he includes passages throughout the novel dedicated to art; there are members of *Walden Two* creating paintings and composing concertos, and there is even a discussion about the possibility of a “Golden Age” in the community. Studies have been done on how human pain and suffering contribute to an individual’s ability to create an authentic piece of artwork that reflects his or her pain; however, no researchers have examined the issue of creative expression in regards to this particular novel. By examining scenes throughout the novel and pulling from research done on the link between human suffering and art, I conclude that the “art” presented in Skinner’s utopian society is not really art at all, but a synthesized art-like product only capable of being produced by the infinitely contented human, and that Skinner is aware of the inadequacy of art created in his utopia.

B.F. Skinner’s novel, *Walden Two*, explores the possibility of utopia based on the scientific and psychological innovations of human behavioral engineering. Upon discovering that one of his former teachers, Frazier, has established a separate community devoted to eliminating suffering and advancing the human species, Professor Burriss travels to the mysterious society *Walden Two* in order to satisfy his curiosity. He reconnects with Frazier, who exposes him to the various practices and ideologies of the society during his stay. The novel presents controversial ideas about the perfect human society and the methods utilized to achieve it, such as discarding the familial structure, developing a communal approach to raising children, and using behavioral conditioning to eradicate troublesome emotions. From child-rearing to politics, Skinner wakens questions sitting dormant in the minds of his readers about the community and meets them with what he would surely consider to be substantially satisfying answers. One issue in particular stands out as being terrifyingly neglected in the novel: creativity and its relation to human pain and suffering,

a topic that has not been touched on by researchers in relation to *Walden Two*. Skinner, through the charismatic leader Frazier, often expresses the complete lack of suffering in the utopian community. Because need and suffering are the main components of human creation (Scarry 307), the lack of these in *Walden Two* begs the question of why there is a place for creativity at all in Skinner’s narrative work. Throughout this essay, we will define creativity and its relation to human suffering, evaluate passages from the novel that demonstrate a lack of authentic creative expression in Skinner’s utopian society, and consider the possible ramifications of manipulating creativity to serve as a means of mass-producing authentic works of art and music. Ultimately, we will conclude that the perceived happiness of the *Walden Two* community renders creativity obsolete, thus destroying the possibility of producing authentic works of art and threatening both the humanity in creativity and the creative expression of the individual.

In order to understand why the world Skinner offers to his readers has no place for authentic creative expression, one must first become familiar with what creativity is and how it relates to human suffering. The theoretical concepts introduced in Elaine Scarry’s *The Body in Pain: The Making and Unmaking of the World* form the basis of the argument in this essay. The “Unmaking” section of Scarry’s work is devoted to the inexpressibility of pain and how this in turn becomes an act of self-betrayal to the sufferer. The idea of “Unmaking” Scarry refers to seems to be the act of inflicting pain upon one another and having pain inflicted upon us. She focuses on the image of the torturer and the one being tortured: “The physical pain is so incontestably real that it seems to confer its quality of ‘incontestable reality’ on that power that has brought it into being” (27). What Scarry means is that when we experience incomprehensible pain, we channel the reality of it into the thing inflicting said pain. We are always in a state of interpreting pain that cannot be expressed in words. It is this realization that leads to the second part of Scarry’s book, “Making,” in which Scarry describes how our inability to express pain through language leads us to the act of creating. Here she utilizes the image of a woman making a coat, who “has no interest in making a coat per se but in making someone warm...she is at work to remake human tissue to be free of the problem of being cold” (307). According to Scarry, our pain is made real through creation, manifested into the object created to eradicate said pain (290).

Scarry’s ideas, although related primarily to creating in order to alleviate the very basic human needs, can be extended further to help understand the basis of creation relating to the more psychological pain experienced by humans. As sentient beings, we are burdened with the ability to realize and reflect on the notion of our own mortality. Because of this ever-present perception and

the painful distress it causes, we are constantly attempting to communicate said distress through the physical manifestation of our pain: art. Moreover, as touched on in an article by Clay Routledge, associate professor of psychology at North Dakota State University, and Jacob Juhl, professor of social health and psychology at the University of Southampton, we seek human connect- edness in art as a way of finding meaning in the apparent meaninglessness of life (2). Because of this, it is only natural that we should feel vulnerable to one another when presenting pieces of artwork or performing on a stage.

In *Walden Two*, there is a scene in which the main character, Burris, is viewing the community art gallery for the first time. Against Frazier's wishes, Burris strays from the group and examines several paintings that please him. It is insinuated that the works of art were made by members of the community, as Frazier comments on the "artistic activities of Walden Two" during their time in the gallery (Skinner 23). Engaged in the act of examining the paintings, Burris is caught off-guard when a group of men and women surround him in the gallery. What occurs next in the scene may seem a mere demonstration of shyness when taken out of the context of creative expression; Burris finds himself at a loss for words, possessed by "the archetypal theme of an old nightmare" in which he is "on the podium of a world-famous orchestra, tapping the stand and raising [his] baton in the air, trying wildly to remember what was to be played" (23). When viewing the paintings, Burris is vulnerable, seeing—as any human not having undergone extensive behavioral engineering will—the physical manifestation of his own pain reflected in the works of art. Author Jeffrey Smith states in an article about the communicative aspect of art that "part of what makes a work of art great is that people at all levels of background and knowledge can use that work as a springboard for personal reflection" (9). Art is only art in its most human sense when causing a reaction in another human being. If there is no self-reflection, then the art becomes something completely different from what art is intended to be. By being pulled out of this state of self-reflection by those described as being "of another world" (Skinner 23), Burris finds himself in a situation where he cannot communicate properly with the people who, though in the art gallery, are chattering and socializing rather than interpreting the art. These people are products of the behavioral conditioning system implemented throughout the Walden Two community, and they are therefore free from experiencing the distress normally felt by someone raised outside of a behavior-controlled environment due to the lack of suffering in the community.

Skinner's main argument for his community is the lack of suffering among its members, and Frazier illustrates this claim in one particular scene that demonstrates a nearly complete lack of the negative emotions that would

lead to human suffering. When introducing Mrs. Nash, a colleague who was brought to the community at the age of twelve, and her confusion related to the emotion of jealousy, Frazier points out that "it was a little late to undo her early training, but I think we were successful. She could probably recall the experience of jealousy, but it's not part of her present life" (92). But emotions, both good and bad, play a large part in experiencing an authentically human life. Frazier goes even further, claiming that "the meaner and more annoying—the emotions which breed unhappiness—are almost unknown here, like unhappiness itself" (92) and that "when a particular emotion is no longer a useful part of a behavioral repertoire, we proceed to eliminate it" (93). By training new members of the community to eradicate all negative or useless emotions and essentially brainwashing them to behave according to his emotional ideal, Frazier is attempting to suppress one of the most essential aspects of humanity: imperfection. It is precisely this component which allows us to attempt to express our innermost desires and regrets through a work of art. Without these emotions, the "art" created is nothing more than a synthetic art-like product only possible of being produced by the infinitely contented human, as it lacks the essential component of imperfection stemming from suffering.

In his book, *Explaining Creativity: The Science of Human Innovation*, Keith Sawyer emphasizes one of the main ideas presented in this essay: "Creativity is part of what makes us human" (12). Although other highly functioning animals possess some amount of advanced cognitive abilities, humans are the only ones capable of engaging in creativity. This stems from our ability to feel emotions with such intensity and to reflect on our own existence. While other animals take part in acts of creation, such as a beaver building a dam or a bird creating its nest, they do not possess the same cognitive levels as humans that would allow them to engage in the creative process. Sawyer explains that even "our nearest relatives, chimpanzees and other primates, are often quite intelligent but never reach these high levels of performance" (12). These acts coincide with Elaine Scarry's theory of creating to alleviate basic physical pain or need; however, they do not stem beyond that. Animals can feel intense pain, but they do not possess the ability to reflect on that pain. As humans, we engage in creativity by experiencing and realizing pain, creating to alleviate or express said pain, and experiencing self-reflection in the creation. Creativity is human in the most basic sense because we are aware of it, we strive for it, and we benefit from it emotionally. By suppressing the emotional qualities of the creative process, members of Walden Two are essentially attempting to eradicate their own humanness, and are therefore eliminating any possibility of producing human art in its authenticity.

Furthermore, it is essential to recognize the importance of conserving authentic human creative expression within the closed walls of a community. In his article, “Creativity as Cultural Participation,” Vlad Glaveanu offers a counter-argument to the idea that creativity is solely an act of the individual. He asserts that creativity is both individual and socio-cultural, because humans are socio-cultural beings. The consequence to this idea is that creative expression is also a form of cultural expression and “one of the most illustrative forms of cultural participation: engaging with cultural artefacts to produce new cultural artefacts, employing culture to generate culture” (48). This is undoubtedly true, and when a community as a whole deflects the natural connection to the emotions which humans feel and translate that into creative expression, art is in danger of becoming that which it is not. This is exactly what occurs in the community of Walden Two; art is rendered into a state of not-art when its human qualities are extracted from it. We encountered this idea earlier when discussing Burris’s difficulty in art gallery, where the work displayed failed to invoke self-reflection and transferral of pain, and we will encounter it again during our discussion of music later on.

When discussing the artist and his or her work within the Walden Two community, Frazier completely ignores the lack of emotional roundness essential for creating an authentic product and instead focuses on the social and economic aspects of living as an artist. He explains that a patronage of the arts is necessary to produce artists willing to create as opposed to those unable to work without the constant fear of unemployment. Not only is Frazier concerned with creating a culture in which no unpleasant emotions reside, but he is also determined to create a culture in which art is absolutely appreciated and respected. This may appear to be a positive element to bring to a community, but we must consider the following question: How are we able to appreciate anything, if the option to not appreciate it is taken away from us? Even further, Frazier asks of his reader, “Why shouldn’t our civilization produce art as abundantly as it produces science and technology?” (Skinner 80). By placing art in the same category as technology, we can already see the ways in which it has been stripped of its human element. This mass-production mindset is the very death of art; the only art capable of being produced in such a way is, as stated earlier, not art at all, but a ramification of art-expected. And what I mean by that is this: Art cannot be mass-produced and maintain its creative, original human qualities, just as we cannot be duplicated and maintain our individuality. Yet this is exactly the idea Skinner is pursuing.

Not only is creativity presented in the novel in the form of gallery artwork, but it is also demonstrated through music. There are two scenes that allow the reader a glimpse of music actually being performed; all other music-re-

lated sections of the novel are funneled through speeches given by Frazier. These speeches are still relevant, however, as Frazier is the leading force of the novel. When first questioned about the topic of music, he places its importance in the context of education, claiming, “If you live in Walden Two and like music...there’s an extensive library of records,” and that “If you want to perform, you can get instruction on almost any instrument from other members” (81, 82). However, Frazier is only concerned with the outcomes of his experiments—music in Walden Two being one of them. By exposing children in the community to music as infants, Frazier believes Walden Two will eventually produce more prodigies and geniuses than ever deemed possible. This psychological removal of music from its original purpose, human purging and healing, is one of the ways Skinner proves that there is no place for authentic art among the nearly emotionless members of Walden Two.

This removal, though clear to the close reader, is lost on Frazier. When swooning over the picturesque idea of creating a “Golden Age” in Walden Two, he attempts to claim that this method of healing is still in its rightful place: “What an environment! How could any scrap of musical ability fail to find its fullest possible expression!” (83). While his intentions seem innocent, Frazier’s choice of words is what signals otherwise to the reader. He specifies “musical ability” as the thing needing to be expressed, not the inspiration housed by the musician. How vastly the meaning of the sentence changes when we place the importance of expression in terms of music with the person desiring to express, rather than in the objective outcome of a skill learned. However, because this is not the case in the novel, one must argue that music in its authentically human sense is absent and has been replaced with a measurable outcome of behavioral conditioning. The Walden Two that Skinner presents has no need for the emotional sympathies that accompany an emotional and sympathetic human’s manifestation of need.

The scene in which Frazier serves as an accompanist to a group of child musicians is another example of the use of creativity to generate a veneer of authenticity in *Walden Two*. In the scene, Frazier is described as being “rather less skillful than his companions,” and is also said to include “some clever faking” of the piano score (201). This is an interesting moment in light of the lacked authenticity of art in the community, as Frazier is described as “faking” the music he is charged with producing. It could be assumed that Frazier opts to participate in the performance in order to help further the development of the “new genre” of music he mentions in an earlier section (83). Just as Frazier controls every aspect of the art found in Walden Two, he is seen here as having a direct hand in the performance of his own sought-after form of music. At the end of the performance, Frazier jumps out of his seat and thanks the children

for allowing him to play the part. Here he is merely concerned with his own performance and mentions no connection with the music whatsoever. When Burris compliments his playing, Frazier simply says, “There are fifty pianists in Walden Two who can play it better. And do, damn them” (202). There is a sense that he is attempting to suppress negative emotions associated with his own jealousy, as they are avoided in the community. The effort is wasted, however, as Frazier is clearly nettled at his less-than-virtuoso piano skills. This should theoretically lead Frazier to connect with the music he produces on a deeper level and concern himself with its healing qualities. Since no amount of evidence is given in the text on Frazier’s connection with the music, and our first-person narrator is likewise silent on the matter, we can only infer from the literature that the concern with music’s intended purpose is lost on the characters enveloped in the Walden Two lifestyle.

Furthermore, Frazier’s transferral of music creates dissonance in the minds of his companions. When attending a choral performance with Frazier, Burris is completely taken aback at the start of *Kyrie eleison*, a powerful choral piece by Mozart, and he “cowered as if [he] had received a physical blow” (85). He is distressed by his own lack of ability to condition his personal behaviors and desires regarding creativity. After Frazier’s discussion of a Golden Age in Walden Two, Burris explores the idea of going to his university’s library to read up on the notion of artistic creation and becomes revolted at his own “academic habits of thought” (85); directly before the opening chorus, he “was seized with a violent revulsion, almost a retching” (85). By examining the literature, we can determine that the discomfort Burris experiences in this scene stems directly from Frazier’s removal of music from the realm of the human condition. Because Frazier has taken art out of the context of human emotional experience and placed it in the purely measurable, scientific world of behavioral conditioning, he has allowed for the cognitive dissonance in Burris to take place during the performance. Although there is no explanation offered as to why he experiences such physical and emotional distress during the performance, the evidence provided would conclude that it is Burris’s unwillingness to accept Frazier’s Golden Age which leads to his discomfort. The eradication of self-expression from the artistic circle causes Burris to reflect on his own emotional ties to his “world of books” (85). This in turn leads to self-reflection during the performance, where Burris responds to the music offered with distress and physical disquietude. When describing the end of the performance, Burris illustrates just how troubling the entire affair had been: “I was...too unsure of myself to relax my grip and join in the applause” (85). One could argue that Burris’s reaction to the music need not be interpreted negatively—he may just have been awestruck by the performance. When

reading on, however, we find that Burris’s description of the choral director is far from positive: “Once, as he bowed, he looked...like some sort of dream gargoyle, and I imagined that if he could speak to me, it would be in a strange accent, and that his words would be: ‘You like it? Our Golden Age? Yes?’” (85). The usage of words like “gargoyle” and “strange” to depict the man leading the chorus indicate a sense of fear or unwillingness associated with the Golden Age referred to by both Frazier and the conductor.

It can be understood that this fear and unwillingness derives from Frazier’s transformation of authentic art into his desired synthetic representation of art. This is incredibly troubling for the reader thoroughly invested in the idea of utopian societies, especially the one presented by Skinner; if conditioned humans living in this supposedly perfect society create a mere shadow of authentic art, then what are we to conclude of them? Are we, if subject to Skinner’s model of perfection, to become mere shadows of humans? These troubling questions bring us back to the main question presented earlier: Why does Skinner include creative expression in his novel? Perhaps he is attempting to utilize creativity as a veil for the community, a means of blurring the lines he treads regarding other matters, such as politics and reproduction. By including elements of creative expression in his utopia, he wishes to convey to his readers that this perfect society is not only achievable, but ideal. But Skinner leaves many holes in the shroud for close readers to discover. He attempts to provide solid arguments for every possible question readers might ask, but he is unsuccessful in creating the illusion of a better world that retains both the possibility of societal perfection and human innovation.

As we have seen, the perceived happiness of the Walden Two community renders creativity obsolete. While the idea of producing an attractive piece of art or a composition that is pleasing to the ear survives, the more human quality of the act of creatively expressing oneself is lost on the members of the utopian society. The citizens of Walden Two, and Frazier especially, produce a synthetic form of art that stems directly from their lack of human emotions and connection with the self. By rendering art to a measurable, objective product, it no longer exists as a distinctly human creation, but rather as a replica stripped of its essential human qualities.

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COURTNEY PRICE

TO THINE OWN SELF BE TRUE: THE USE OF BINARY OPPOSITIONS IN INTERPRETING SHAKESPEARE'S *HAMLET*

ABSTRACT

This essay examines the use of binary juxtapositions within William Shakespeare's most famous tragedy, *Hamlet*, and how those binaries act as catalysts in the character Hamlet's transformation into an avenger. As Hamlet seeks to preserve his unique identity while being commanded to do something which goes against his conscience, he is presented with three sets of opposing concepts: sanity and madness, one's true self versus one's false, projected self, and play-acting in comparison to real action. Coming to understand each pair of oppositions drives Hamlet further from his original identity and closer to becoming capable of murdering his uncle. In light of the often-misused quote, "To thine own self be true," Shakespeare's *Hamlet* offers an example of how attempting to change one's true nature in order to please others often comes at a high cost, not only to oneself, but to others as well. Analyzing the playwright's use of the genre of English revenge drama gives the reader an unparalleled comprehension of the nature and loss of selfhood.

Every so often, Western civilization latches onto a particular phrase and makes it the mantra of that age. In recent years, the saying "Be true to yourself" has come to take on this role, appearing in various forms on clothing, in popular music, in books, and even in ethical debates. The source of the small but powerful phrase happens to be one of the most famous literary works of all time: *Hamlet* by William Shakespeare. However, in the original work, the meaning of the phrase does not have the same uplifting overtones as it does now. The actual words come from a character named Polonius who, while giving advice to his son, ends with one final exhortation: "This above all,—to thine own self be true; and it must follow, as the night the day, thou canst not then be false to any man" (1.3.77–9). In modern context, the phrase is used to build self-esteem and to encourage individuality. The play, *Hamlet*, however, presents a story in which characters agonize over the struggle to know themselves, and thus Polonius' words fall into question. What exactly does it mean to be true to oneself? Is it always a good thing, as contemporary culture would have one believe, or are there dangerous consequences of spending too much time in deep self-analysis? While there is no shortage of literature exploring this concern, William Shakespeare's *Hamlet* arises superior to others in its craft, complexity, and continuing relevance in discussions about the mystery of self-

hood. By implementing binary juxtapositions between concepts such as madness and sanity, acting and play-acting, and hiding versus revealing one's true self, Shakespeare both adheres to and breaks many of the standard conventions within the tradition of English revenge drama; doing so, he seems to offer the conclusion that adopting false characteristics in order to promote unnatural change can result in the loss of one's unique personal identity, and that the theatre is a crucible through which personhood is refined.

Many works of literature explore the concept of opposing ideas, and those oppositions help interpreters draw meaning from individual texts. In *Hamlet*, there are possibly hundreds of such binary oppositions, but focusing on a few of the most prevalent ones will suffice to demonstrate the vast philosophy buried in the famous drama. In addition, organizing those oppositions increases the opportunity to understand the text by viewing the progression of ideas. For example, one might organize the aforementioned binaries into two groups, with action, sanity, and the true self on the side of life, and with play-action, madness, and the hidden self on the side of death. If one considers the play as Hamlet's journey from life to death, then one may also understand it as a journey from real action to play-action, sanity to madness, and from the true self to the false or hidden self. As Hamlet's identity is increasingly threatened, his primary transition from life to death becomes catalyzed by his encounters with these other philosophical quandaries, introduced to him at different points in the play.

Before one begins to observe those scenes in which Hamlet's identity is progressively endangered, one must first establish the significance of the relationship between the Prince of Denmark's crisis and the genre of English revenge drama in order to perceive the ways in which Shakespeare's play both frustrates the elements of that genre, and how it seems to uphold them. Shakespeare's analysis of selfhood within *Hamlet* can best be grasped when comparing it to the standard for revenge dramas. According to Ronald Broude, typical English revenge dramas "center around a figure who conceives himself to have been seriously wronged, and who, overcoming obstacles both within and outside himself, contrives eventually to exact retribution, becoming in the process as depraved as those by whom he has been wronged" (38–39). Without a doubt, *Hamlet* follows this prescription, having many external and internal difficulties standard to the genre, but it breaks the mold by adding one particular impediment: Hamlet, the avenger in the story, already knows from his first encounter with his father's ghost that he will become depraved by taking revenge.

This contrasts with Aristotelian tragedies, on which the Renaissance playwrights often based their work, which prescribe a dramatic moment near the end of the play in which the protagonist realizes the full effect of his or

her erroneous choices, invoking both the necessary tragic elements: pity and fear. Thus, *Hamlet* contains a plot with obstacles that are not encountered in other tragedies, as Hamlet is fully aware of what repercussions may follow his revenge. This recognition causes the play to take a turn for the philosophical and ensures that the significance of the binary juxtapositions within the text are at the forefront of the reader's or viewer's mind. In doing so, both the character, Hamlet, and the viewers of the drama face the metaphysical acceptance that becoming an avenger comes at the cost of losing one's soul.

This process begins when the ghost commands Hamlet to avenge his father by killing his uncle, Claudius, as this runs against the nature of Hamlet's unique self. Hamlet's loyalty to both his father and his faith are fundamental parts of his character, but now those two loyalties have come into conflict. Following his interview of the ghost, he immediately exclaims, "O all you host of heaven! O earth! What else? And shall I couple hell?" (1.5.92–3). Here, "couple" indicates an intimate union, likened to sexual union, which with Hell symbolically suggests the idea of courting damnation. If he takes part in this revenge, Hamlet fears that he will be condemned to Hell for murder, and regicide at that. This illustrates Hamlet's complete and total understanding of his predicament, as well as his agony over the challenge to his sense of self. While duty and love of his father get the better part of Hamlet's emotions in the following lines, the reader can derive from these conflicting remarks that Hamlet is distressed about the polar implications of his actions. His father's ghost presents a cultural discord between familial duty and Christian morality. First, the ghost indicates a Christian world-view by claiming to be a purgatorial ghost (1.5.11–13), and yet he invokes Hamlet's familial bond as justification for revenge (22–6). Part of Hamlet desires to see his father avenged, but another part of him abhors murder and fears that it is a sin of the most heinous kind. The crisis begins in this moment, rather than at the end of the play, as Hamlet realizes the impossibility of reconciling the two paradigms.

After Hamlet's encounter with the ghost, he is implicitly offered several different ideas by the other characters in the play as to how he might resolve the battle within himself. These ideas, coincidentally, become the foundation for the binaries that guide Hamlet's transition into an avenger. Arguably, the most obvious duality present in *Hamlet* is that of madness and sanity. This concept enters the foreground of the play in the last scene of Act I as Hamlet tells his friends Horatio and Marcellus that he plans to "put an antic disposition on" (1.5.174–5), or, in other words, pretend to be mad so that he may slip under the radar of his uncle's political jealousy. Henceforth, one may presume that what Hamlet says and does is an act, but as the play progresses it becomes unclear whether Hamlet has maintained his sense of inner sanity, or whether he has

become as mad as he pretends to be. It is important to know whether or not this transition occurs because, if one recalls the organization of the binaries into life and death, sanity is on the side of life, and insanity is on the side of death. Anyone who knows the end of the play knows that Hamlet dies and completes the first transition; thus, it must be that he becomes insane and subsequently completes the second. However, examining how and why this occurs provides a clearer understanding of Shakespeare's philosophy on the nature of selfhood.

This argument over whether or not to maintain unique selfhood at all costs becomes the predominant concept of *Hamlet*. The action within the play is centered on the titular character's hesitancy to kill his uncle, Claudius, because he does not see himself as capable of murder, yet knows that this is what he is called upon by the ghost to do. Hamlet is not sure if it is possible to commit an act that is in disagreement with one's identity. If it is not possible, then he will need to change who he actually is before he can kill his uncle, losing his self and becoming someone else, an idea which rightly terrifies him. This scene is where the dilemma between sanity and madness begins to bother Hamlet. No sane person concerned with his or her integrity would willingly jeopardize that integrity in order to do something that he or she abhors. It is something only a mad person would do, but Hamlet has not lost his sanity yet, so there is no way at this point in the play for him to kill Claudius.

While Hamlet attempts to resolve his inner conflict, he unwittingly adds to his own predicament by maintaining a charade for the court, the very antic disposition he mentions to Horatio and Marcellus. What takes him some time to realize is that, by putting on this charade, he is already trying to do what he thinks is impossible: make the outward appearance different from the true nature within. Then in the closing of Act II, when Hamlet encounters a troupe of players acting out scenes from the story of Priam and Hecuba, the king and queen of ancient Troy, his belief in the true self is shaken. He exclaims, "Is it not monstrous that this player here, but in a fiction, in a dream of passion, could force his soul so to his own conceit...What's Hecuba to him, or he to her, that he should weep for her?" (2.2.489–98). In Hamlet's understanding, it should be impossible for these men to put on such a convincing show of grief and passion for a person whom they do not know. He calls them "monstrous," suggesting his horror of blatant falsehood in men and the frightening realization that it might be possible to disguise one's true nature. Hamlet, in the following lines, declares that he has far more reason than these players to feel strong emotions, having been commanded to avenge his father's murder, and yet he cannot muster up the courage to act upon the ghost's wishes with any of the passion which the actors display (2.2.498–510). He cannot wrap his

mind around their ability to be someone so completely other than who they are, which is, ironically, what Hamlet himself is attempting to do by putting on an antic disposition. In this way, he begins to wonder if the separation of the true and false selves is really possible, both in helping him avoid his uncle's suspicion and in giving him the will to avenge his father.

Confused and bewildered by his task and what it may demand from his soul, Hamlet, after witnessing the players, also explores what it means to play-act, to do things which he is not sincere in doing. Initially, he adopts his antic disposition to avert suspicion and to convey to his uncle that he is not a threat to his reign. However, by observing the actors and their mysterious ability to alter themselves, Hamlet is both intrigued and dismayed by their success, and this leads him to wonder if there is more to be gained from acting than he formerly thought. He is intrigued, because if they can become people they are not by simply acting like it, then likewise it may be possible for him to become an avenger by acting like one. Thus, play-acting becomes a method to achieve the separation between the true and hidden selves, rather than transitioning from one to the other. However, Hamlet still fears that if he attempts to "force his soul so to his own conceit" (2.2.489–98), he may actually lose himself in the process. In order to test his theory before adopting it wholeheartedly, Hamlet decides to try and use play-acting to draw out his uncle's guilt and at the same time to motivate himself to kill him. He has the players put on a show for the court called "The Murder of Gonzago," which he affectionately dubs "The Mousetrap," signifying its role in catching his uncle. The performance shows a great lord being murdered in the same fashion as Claudius' murder of old Hamlet, but with one significant twist: the murderer is the lord's nephew, not his brother, which Hamlet tells Claudius outright (3.2.268). This means that the person murdered on stage is likened to Claudius, with Hamlet as the murderer, instead of the scene revealing Claudius killing Hamlet's father.

Unwittingly, Hamlet has again created a problem for himself, and because he does not notice, it becomes part of his transition from life to death. By purposefully confusing the characters on stage, Hamlet also confuses his sense of self or sanity. When Claudius storms out of the room after the onstage murder (3.2.264), Hamlet claims that the scene has pricked the king's conscience, and so Claudius leaves because he cannot bear to see the end. However, by making this assertion, Hamlet is forgetting he told his uncle that the relationship between the characters is nephew and uncle, not brother and brother. It may be that Claudius is only outraged because the implication of such a message is that Hamlet intends to kill him, or would like to, and has nothing to do with having committed his own atrocity. What is for certain is that Hamlet sees only what he wants to see, and may finally be losing some sense of his sanity.

Though his goals were only to experiment with the power of pretending, it seems he may have, based on his own hasty conclusion, managed to convince himself that he wants to see Claudius pay for his sins more than he cares about his own soul.

This scene marks the most significant moment in Hamlet's transformation into an avenger. What had previously been lacking was any desire within Hamlet to actually commit the murder, but here one may observe that Hamlet decides to take the ghost's words as gospel. When he is left alone with Horatio, he remarks, "I'll take the ghost's word for a thousand pound" (3.2.280–1). This statement implies that he now fully accepts the ghost's words as true and his motives as pure. Gone is his fear that "the spirit I have seen may be a devil... and perhaps...abuses me to damn me" (2.2.537–42). If the ghost has commanded revenge, then revenge is what Hamlet will seek. In addition, Hamlet has observed what he thinks is sure proof of Claudius' guilt, and he now finds within himself a desire to see justice done. It is important to point out that this sudden change is built upon a scene of play-acting. Here, from Hamlet's perspective, the actors who are merely pretending to perform certain actions on stage succeed in evoking a moment of truth, where Claudius' true self is revealed despite his attempts to disguise it. As it happens, Claudius is indeed feeling convicted, and he runs away to pray for his soul. However, the revealing of his true self has only happened because the players have hidden theirs. His real sanity has only shown itself in the face of Hamlet's pretend madness.

Hamlet's new desire to see his uncle brought to justice also reveals something about the power of theatrical performance, which Shakespeare no doubt included as a commentary on his own profession. Before "The Murder of Gonzago," Hamlet is not brave enough to kill Claudius, but suddenly, after the play and his uncle's reaction, he has changed his mind. What brought about this change of heart? If one holds that the stage murder is still representative of Claudius killing old Hamlet, then perhaps Hamlet is so moved by such a convincing show of his father's death and his uncle's cruelty, he finally accepts his task as a salute to familial love. Another interpretation, if one holds that Hamlet intends for the stage murderer to represent himself, is to say that the actors are so immersed in their roles that Hamlet can finally imagine himself killing his uncle. This interpretation would best follow the idea that play-action brings about real action. Hamlet has pretended, up to this point, to be capable of the murder and has tried to show the audience that he is making progress towards the deed. However, suddenly he has changed. He has decided to go against his unique self, but the desires of his unique self seem to have altered. One must ask then if Hamlet has actually made the transition from sanity to madness because he has finally lost sense of his old, original self by

accepting the murder. If so, what Shakespeare effectively demonstrates is the power of theatrical acting as a catalyst for Hamlet's transformation. Without the play-within-a-play, Hamlet might have spent three more acts trying to convince himself that it is good and right to kill his uncle when he senses in his heart it is not. Somehow, through the use of drama, Hamlet suddenly is able to accept his fate and choose it of his own volition, even knowing that it will at least result in his death, if not his damnation.

Now that Hamlet has altered his unique self, he has completed the transformations necessary to kill his uncle. He has made the journey from sanity to madness because he has lost touch with his original self; he has changed from his hidden, inner self into the outer persona, becoming his own antic disposition. Now all that remains is the physical transition from life to death, which Hamlet has known to be inevitable since the beginning of the play. Just before he goes to the fateful duel with Laertes that will end in his death, Hamlet explains to Horatio, "There is special providence in the fall of a sparrow. If it be not now, 'tis to come; if it be not to come, it will be now; if it be not now, yet it will come. The readiness is all" (5.2.197–200). As Hamlet had discovered in his "To be, or not to be" speech in Act 3, fear of what comes after death is often the only thing that keeps men from wanting to die, and fear of death is also what keeps men from wanting to live, hence "enterprises of great pitch and moment with this regard their currents turn awry" (3.1.86–7). Fear of punishment in the afterlife is what had thus far kept Hamlet from following the ghost's orders. The play helped him overcome this fear by giving Hamlet the thirst for revenge which he had previously lacked, and all that was left was to seek the right moment to bring Claudius to justice. This comes at the cost not only of Hamlet's life, but also that of Laertes and Hamlet's mother, who all seem to pay the price for the murder of Claudius. Putting instructions for the passing of the crown into the hands of Horatio, Hamlet dies with the request that his story be told to others.

The binaries presented in *Hamlet* can be aligned into two opposing groups, with pretend-action, sanity, and the true self on the side of life, and with action, madness, and the hidden self on the side of death. Where most tragic heroes make that journey from life to death at the moment of their tragic recognition, Hamlet begins to do so at the beginning of the play, and he falls deeper into death as the play progresses. Though he is not physically dead until the end, Hamlet becomes living dead in one sense because he acquires an understanding of death prior to actually experiencing it. In his attempts to understand how to preserve his self, he unintentionally loses it, and quickly falls into the cold acceptance of death that enables him to avenge his father.

If Shakespeare meant for his audiences to regard this progression from life to death as undesirable, then it would seem to imply that he would rather that people cling to their unique identities, not relinquishing those things that make them different in order to please family, duty, or social position. No other English revenge drama does such an extraordinary job of presenting the conflicting paradigms that shape revenge, nor do many works endeavor to discover exactly how people lose their identities when attempting to please others. In his masterful telling of the fall of the prince of Denmark, Shakespeare turns the tables on his audience, presenting them with the same question that faces modern society, asking whether to be or not to be true to oneself. That, it seems, is the real question.

NINA ROSENBERG

RECORD COLLECTION

ABSTRACT

Growing up as an only child, I always wanted to be just like my parents. As a teenager, I came to realize that I did not know very much about their personalities as youth. In a strange way it worried me that, if I were different from them, I would not be properly representing the family. I began to find answers when my father gave me his record collection. My poem “Record Collection” attempts to embody these questions and worries through the description of listening to my father’s albums.

Thumbing through
my father’s worn records
in the splintered apple crate,
I search for a familiar sound.

Selecting a record, I watch the stylus
gently scratch the grooves
crafted when his face was as line-free as my own.
Beats and measures skip
over lost seconds and minutes.

When asked if his younger self was like me,
he never quite knows the answer.
“People can talk about who they were,
but it isn’t the same as seeing.”
By Hendrix’s first guitar solo, I understand.
Although I cannot fully grasp the lifestyle of this generation,
I, too, wish to subscribe.
The search was over by the last song.

Placing the vinyl back in its sleeve,
light bounces off the onyx mirror
to reveal my reflection.

WINTER’S ASH

ABSTRACT

I went through a very short phase in my life where I believed smoking made a person sophisticated and charming; that is, until I tried it for myself. Never have I learned a lesson in a more humiliating way. The sarcastic narration toward the end of this poem was a therapeutic way for me to come to terms with my old self while keeping it light-hearted. “Winter’s Ash” is the true story of my first cigarette and the embarrassing epiphany that followed.

The warm ash
blew in the winter wind
of the parking garage
as I flicked my cigarette,
the first of many.

AMERICAN SPIRIT
the pack spoke
to my Cherokee heritage.

After a drawn inhale
I would join the ranks
of the sophisticates beside me.

With a short puff,
the grizzly smoke
lifted a pneumonic cough.

It was no longer air.
An acidic fluid
of late morning’s breakfast
yellowed the parking spot.

In the tunnel, one colleague said,
“You should’ve given her menthols.”

MICHAEL YATES

THE POET

ABSTRACT

the poet is a portrait of a strong woman of color. Her gaze is powerful. She embodies courage through turmoil, fearlessness, and independence. I believe these women, like my mother, are not appropriately appreciated in today's society. This portrait was an attempt to make her statuesque, to raise the status of the women who fight for their families and sacrifice everything to make a better life for them. I chose to use this model because she embodied the defiance and fearlessness that I see in the immigrant community. The title of the piece is the poet because the model participates in poetry slams, adding to the brave and fearless attitude of the drawing.



TITO

ABSTRACT

Exploring further the complexity of immigrant lifestyles, this portrait is of a man from the Philippines living in Los Angeles. Like many immigrants, this man was extremely resourceful. He maintained an optimistic and cheerful attitude despite being vulnerable to deportation at any time. I used recycled craft paper as a canvas to represent his resourcefulness and used bright, radiating colors to symbolize his optimistic aura.



HUMANITIES AND PUBLIC AFFAIRS

KATELYN DENAP

REMEMBERING THE COLONIAL TAIWANESE: REDEFINING AGGRESSORS AND VICTIMS

ABSTRACT

This paper examines the role of Taiwan and its people during the Asian-Pacific War (mid-1930s–1945). A majority of historical and political research on the Asian-Pacific War often excludes Taiwan, and there are many potential reasons for this omission. First, Taiwan's status as a Japanese colony during the war resulted in the island being lumped into the greater Japanese empire. Secondly, Taiwan is associated with the aggressors of this war because the Taiwanese people were forced to fight on the side of the Japanese. Finally, the politics resulting from the Chinese Civil War and the fast withdrawal of Japanese colonial administrators left the Taiwanese soldiers without a government to acknowledge their role in the war. An analysis of Taiwan's role in Japan's attempt to establish a new world order makes clear the need for scholars to redefine what it means to be both an aggressor and a victim. The Taiwanese have long been forgotten, and the failure of the global community to label them as victims has left these war-era citizens without an audience to acknowledge and address their suffering.

INTRODUCTION

Academic research on the Asian-Pacific War focuses on the plight of victims of Japanese aggression. Unfortunately, the classification of aggressors and victims has caused certain victims to be overlooked, Taiwan in particular. As noted by Anne Sokolsky, a specialist in Chinese, Japanese, and Taiwanese literature, "Taiwanese history has been about foreign domination."¹ This was certainly the case during the Asian-Pacific War. Historical accounts have failed to acknowledge the victimization of Taiwan under foreign domination and have instead focused on the economic miracle the island became. Academics studying Taiwan often emphasize its strategic importance, the resources it has to offer, and its international economic and political significance. Such academics purport "humans are not the only factor determining a landscape," which may be true of modern times, but it is apparent that the human element of colonial Taiwan during the Asian-Pacific War has been long forgotten.² In a world influenced by the oppression of the past and haunted by the oppression

that continues to exist, it is crucial that research shed light on cruelty that has been left in the dark of the past. It is only through an understanding of such cruelty that future generations will be able to overcome and prevent such evils, bringing the world closer to peace.

Colonial status in the empire of Japan at the time of the Asian-Pacific War has led to the disappearance of Taiwan among literature of that era and today. Few sources on the Asian-Pacific War do more than mention Taiwan. Rather, Taiwan is subsumed by the umbrella phrase that is the "Japanese Empire."³ Consider the complete overlook of Taiwan in the following books related to the Asian-Pacific War. John Dower's popular *War without Mercy: Pacific War* has been referred to as one of the few credible sources of historiography on the war because of its attention paid to American and Japanese perceptions during the war. However, can a book that leaves out the perceptions of a whole group such as the Taiwanese be considered a credible and complete representation of history? The obvious answer is no. The same can be said for John T. Mason's *The Pacific War Remembered: An Oral History Collection*. While Mason admits that his study was not meant to be, nor should it be considered as, representative of all those involved in the war, it is the content of the interviews he presents that illustrate Taiwan's exclusion from the history and memories of this period. None of the individuals interviewed by Mason made a single reference to Taiwan or its people. Even those who had been involved in the war failed to distinguish the Taiwanese from the Japanese. James B. Wood also overlooked the Taiwanese in his work *Japanese Military Strategy in the Pacific War: Was Defeat Inevitable?* As will be discussed in greater detail, Taiwan was an integral part of Japan's strategy from the very beginning of the war; for Wood to have left Taiwan out of his research shows his work to be an incomplete assessment of the subject. More importantly, Wood's work and the others discussed above highlight the fact that Taiwan and its people were forgotten and remembered only as Japanese, if considered at all.

By losing their name, the Taiwanese seem to have had an insignificant status in Asia during their time as a colony of Japan, especially during the Asian-Pacific War, but in reality the opposite was true. The island of Taiwan was small yet full of opportunity, which Japan seized. As a colony of Japan, Taiwan played a crucial role in Japan's expansionist efforts into Southeast Asia. Not only was Taiwan a source of agricultural staples and labor, as Japan's first colony, the island served as a model for Japan's other colonial efforts.⁴ Japan needed the Taiwanese to be supportive of their plans in order to carry them out

1 Anne Sokolsky, "Yang Qianhe and Huang Fengzi: Two Voices of Colonial Taiwan," *Japan Studies Association Journal* 8 (January 2010): 242.

2 Richard Louis Edmonds, "Aspects of Taiwanese Landscape in the 20th Century," *China Quarterly* 165 (March 2001): 1.

3 A.J. Grajdanzev, "Japan's Co-Prosperity Sphere," (1943), in *Japan and Southeast Asia*, ed. Wolf Mendl (London: Routledge 2001), 231.

4 Inazo Nitobe, "Japan as a Colonizer," *Journal of Race Development* 2, no. 4 (April 1912): 347.

effectively. This led to the establishment of Japanese schools on the island in order to draw the Taiwanese into the Japanese imperial order. Education was a way to assimilate the Taiwanese into Japanese culture as imperial subjects, and it appeared to work. The more time a student spent in the Japanese administered schools, the more inclined they were to accept Japanese teachings.⁵ But the acceptance of teachings does not result in an individual accepting a new nationality. There is a misconception that the Taiwanese took on a Japanese identity during the period in which they existed as a colony of Japan. In reality, the people of Taiwan never saw themselves as Japanese, but rather as colonial subjects; assimilation was never complete as noted in diaries kept by the Taiwanese. The Taiwanese did what was asked, but only wholly accepted changes that fit their practical needs.⁶

Though they did not adopt Japanese identities, the Taiwanese did experience an identity change; they became victims. During the war, Japan forced Taiwanese men to serve as soldiers and deceitfully recruited women to serve as comfort women, who were in reality sex slaves for the Japanese military. Their experiences and the suffering these men and women endured prove that the Taiwanese were indeed victims who deserve to be acknowledged. In the words of Dr. Melissa Brown of Stanford University, the history of “colonial era Taiwan [shows] that individuals’ authentic identities do change, however, based on the dynamics of social experience.”⁷ This being true, the victims of the Asian-Pacific War, despite their nationality, share a common identity based on their experiences. Unfortunately for the Taiwanese victims, they have never been acknowledged as true victims, and therefore have never been able to share their experiences with the international community. Understanding their role as a colony of Japan will create a context for how the Taiwanese were drawn into the Asian-Pacific War under the Japanese, while studying their experiences will prove that they deserve a voice among the victims of Japanese aggression. Ultimately, the research presented will confront the inadequate categorization of victims and aggressors.

TAIWAN AS A COLONY OF JAPAN

Taiwan was ceded to Japan following the First Sino-Japanese War and existed as a colony from 1895 to 1945. Despite fifty years of Japanese influence, “Japan’s colonial history in Taiwan has yet to be adequately acknowledged and under-

stood.”⁸ Colonizing Taiwan was an intensive process for Japan. It involved developing and restructuring agricultural, economic, political, and social processes in order to acculturate the island and its people.

Japan successfully implemented an education system that instilled Japanese values in the youth. Schools were used to “prepare the Taiwanese for their place in the new order of which Taiwan was becoming a part.”⁹ In order to progress with the empire of Japan, Taiwan needed to be reorganized. Reforms were put in place to turn what the Japanese colonial administrators saw as a backwards society into a model colony.¹⁰ Education resulted in modernization and aimed for assimilation. The Taiwanese were integrated into Japan’s empire and later the military according to need, but a close eye was kept on them as the Japanese never felt that their education system had been wholly successful at creating a loyal Japanese-centered mindset among the Taiwanese men and women.¹¹ Japanese administrators understood that the Taiwanese resented the compulsory Japanese education that had undone their way of life and culture. While it introduced Japanese ideals to the people, the education system did not cause the Taiwanese to fully adopt a Japanese identity.¹² The people merely adapted to the policies of their new leaders.

The changes made by the Japanese within Taiwan were not entirely injurious. Japanese administrators considered the island of Taiwan “to be of supreme importance to [Japan’s] economic expansion,” while Japan served as the key to Taiwan’s economic development.¹³ Taiwan did improve greatly in terms of its economic stance and agricultural output due to Japanese colonial programs. Japan can be credited for building Taiwan many hospitals and schools, and for transportation developments by constructing new bridges and roadways.¹⁴ For these reasons, many people believe Taiwan received preferential treatment during the war. But people fail to see past the shiny exterior of Japanese rule to understand how the Taiwanese were used as tools by the colonial administrators.

8 Andrew F. Jones, “Reviewed Work: *Becoming ‘Japanese’: Colonial Taiwan and the Politics of Identity Formation* by Leo T. S. Ching,” *Journal of Japanese Studies* 28, no. 2 (Summer 2002): 420.

9 Tsurumi, “Education and Assimilation,” 625.

10 Barak Kushner, “Nationality and Nostalgia: The Manipulation of Memory in Japan, Taiwan, and China since 1990,” *International History Review* 29, no. 4 (December 2007): 811.

11 Chen Yingzhen, “Imperial Army Betrayed,” in *Perilous Memories: The Asia-Pacific War(s)*, ed. T. Fujitani et al. (Durham, North Carolina: Duke University Press), 184.

12 *Ibid.*, 183.

13 Tadao Yanaihara, “Japan’s Advance Southward: A Necessity,” (1936), in *Japan and Southeast Asia*, ed. Wolf Mendl (London: Routledge, 2001), 248.

14 Mark Landler, “Cartoon of Wartime ‘Comfort Women’ Irks Taiwan,” *The New York Times*, March 2, 2001, <http://www.nytimes.com/2001/03/02/world/cartoon-of-wartime-comfort-women-irks-taiwan.html>.

5 E. Patricia Tsurumi, “Education and Assimilation in Taiwan under Japanese Rule, 1895-1945,” *Modern Asian Studies* 13, no. 4 (1979): 641.

6 Hui-yu Caroline Ts’ai, “Diaries and Everyday Life in Colonial Taiwan,” *Japan Review* 25 (2013): 161.

7 Melissa J. Brown, “Changing Authentic Identities: Evidence from Taiwan and China,” *Journal of the Royal Anthropological Institute* 16, no. 3 (September 2010): 459.

The Taiwanese were treated as second-class citizens compared to their colonial oppressors. Being a Japanese colony did not come with the benefits of being Japanese within the colony. For the Japanese men and women who relocated to Taiwan, elevated status and prestigious positions within the government, which were otherwise denied to the native Taiwanese, were a guarantee. Improved infrastructure and modernization did not make up for the lowered status at which the Taiwanese were automatically placed as colonial subjects. Diaries kept by the Taiwanese during the colonial era have been studied, and collectively they make clear that there existed “feelings of frustration and anxiety in everyday life.”¹⁵ As the war continued, the struggles experienced by the Taiwanese people only worsened. A policy document written in 1941, shared by the Japanese Army and Navy, explained that any circumstantial shift that occurred during the war would result in a re-evaluation of Japan’s strategy.¹⁶ Unfortunately for the men and women of Taiwan, that policy re-evaluation drew them into the conflict that Japan would create in Southeast Asia. No longer would Taiwan be only a colony of Japan; it would become a base for the storage and shipment of military supplies and later would supply the Japanese military with Taiwan’s most precious resource: its people.

TAIWAN’S ROLE IN JAPAN’S SOUTHERN ADVANCE

While Japan may not have won over the hearts of the Taiwanese, they certainly gained a great deal of control over the minds of their colonial subjects. As other scholars have observed, to a certain extent the colonial administration “exhibited exceptional effectiveness in organizing popular compliance and allegiance” to the state of Japan.¹⁷ The Japanese were so successful because they disguised their motives. They told the Taiwanese that the changes being made and their subjugation to their Japanese superiors was for their future benefit. Little did the Taiwanese and other nations know, the hierarchy imposed by the Japanese over all of Asia was meant as a permanent organization. And further, “the treatment of the colonial populations of Korea and Taiwan foreshadowed conditions in the Greater East Asia Co-Prosperity Sphere.”¹⁸ Such conditions were not ideal for anyone but the Japanese. The campaign slogan “Asia for Asians” was introduced to shape positive perceptions of the construction of a Greater East Asia Co-Prosperity Sphere. As outlined in the Japanese military document that described the plan for establishing the Greater East Asia

Co-Prosperity Sphere, “it [was] necessary to make the nations and peoples of East Asia realize the historical significance of the establishment of the New Order in East Asia, and in the common consciousness of East Asiatic unity.”¹⁹ Ultimately, the significant goal of this plan was to encourage cultural and economic unity amongst the Asian nations that would lead to the realization of a unified Asian bloc. Japan believed that this cooperation would create a new international order in which the East had power over the West. By accomplishing this, the Japanese envisioned a self-sufficient Asia free of imperial influence.²⁰ Understanding the significance of such a feat would make the Asian people more willing to follow the orders issued by Japan. Without such support and faith from their neighbors, Japan’s extensive plot for forming an Asian union that could compete in the international arena with Western powers would be guaranteed to fail from the onset. A union exists because of the belief its members have in the benefits it creates; if other Asian states, such as Taiwan, were not convinced of any benefit for themselves, Japan’s efforts to create the Co-Prosperity Sphere would have been fruitless.

Taiwan held an integral role in the realization of Japan’s Greater East Asian Co-Prosperity Sphere. In fact, the main reason Japan had taken so much interest in its colonial efforts in Taiwan was because they recognized the island as having strategic importance to their military and expansionist efforts. Taiwan was located at the center of key trade routes and gave Japan another place to store military supplies. Indeed, the Asia for Asians campaign was merely a “smokescreen” for the fact that Japan was “exploit[ing] the region for its own ends.”²¹ As stated earlier, Taiwan was the model and foundation for Japan’s additional colonial acquisitions, which were to be gained in Southeast Asia. As the war progressed, Taiwan became more than a model; it became an economic and military base for Japan’s southern advance.²² Japan became more enthralled in conflict than it had originally accounted for and found itself in need of additional military reinforcements. The solution was to draw their much needed support from the Taiwanese population. Japan shifted its focus in Taiwan from using the island “as a supply base for goods and fuel” to utilizing the people.²³ Men were used as soldiers, while the women were used as sex slaves in the comfort women system.

15 Ts’ai, “Diaries and Everyday Life,” 147.

16 “Outline of Policy Toward the South (Army, Navy Draft Policy, 17 April 1941),” in *Japan and Southeast Asia*, ed. Wolf Mendl (London: Routledge, 2001), 247.

17 Yun-han Chu and Jih-wen Lin, “Political Development in 20th-Century Taiwan: State-Building, Regime Transformation and the Construction of National Identity,” *China Quarterly* 165 (March 2001): 102.

18 Saburo Ienaga, *Pacific War, 1931-1945*, trans. Frank Baldwin (New York: Random House Inc., 1978), 156.

19 “Draft of Basic Plan for Establishment of Greater East Asia Co-Prosperity Sphere,” in *Japan and Southeast Asia*, ed. Wolf Mendl (London: Routledge, 2001), 224.

20 Ienaga, *Pacific War, 1931-1945*, 153.

21 Kushner, “Nationality and Nostalgia,” 796.

22 Christopher Howe, “Taiwan in the 20th Century: Model or Victim? Development Problems in a Small Asian Economy,” *China Quarterly* 165 (March 2001): 42.

23 Gotō Ken’ichi, “Japan’s Southward Advance and Colonial Taiwan,” *European Journal of East Asian Studies* 3, no. 1 (March 2004): 32.

TAIWANESE SOLDIERS

An expert analyst and researcher in the field of Asian studies, A.J. Grajdanzev, wrote that as the Asian-Pacific War came to a close, the Japanese were simply too limited in terms of the number of people they could dedicate to the administration of their captured territories.²⁴ With a lack of administrative staff, the Japanese had to devote military personnel to such positions. To fill the place of the military men who had been reassigned, Japan looked to their colony Taiwan.

Having been treated as second-class citizens for so long and denied involvement in government and military functions, the Taiwanese men were caught off-guard by the sudden need for their service. But as expressed in Japan's Basic Plan for forming the Greater East Asian Co-Prosperity Sphere, in regards to the various states of Asia and Japan's colonial entities in particular, there was to be no "formal view of equality but a view of order based on righteous classification," with the "idea of service" existing as a crucial aspect of Japanese governance.²⁵ For many Taiwanese men, the thought of serving their colonial rulers was not appealing, but they never suspected they would be sent into areas of conflict or utilized militarily. Initially, the Taiwanese recruits were "assigned to perform nonmilitary functions."²⁶ Unfortunately, changing circumstances and more hostile environments sent the Taiwanese to more dangerous places where the conflict was more intense, and they were then forced to take on the role of soldiers.

Unfortunately, the status of the Taiwanese men did not change with their status in the Japanese military. They were continually disrespected and treated as lesser beings. In an analysis of their identity, it was observed, "Even as they were expected to labour and die in service of Japan, Taiwanese experienced daily reminders of being second-class to Japanese."²⁷ Often these men were kept at the beck and call of their Japanese superiors and forced to do tasks similar to those of a work horse; they were engaged in extremely demanding physical labor such as hauling supplies and building camps, and, when needed, they were thrown into battle.²⁸ Others were able to serve as nurses and paramedics, but again this was contingent upon them not being needed to reinforce the Japanese soldiers in battle. This did not help foster better relations in the colony, and it certainly did not help relations among the soldiers in their respective camps. The Japanese treated the Taiwanese soldiers as if

their lives were meaningless; if a Taiwanese soldier was lost in battle, they saw it as the preservation of the life of one Japanese soldier. The Taiwanese soldiers who had been forced into this arrangement began to resent the Japanese, and some even organized anti-Japanese forces such as the Taiwanese Anti-Japanese Army in Mainland China.²⁹ Much of the progress Japan had made in winning over the Taiwanese was reversed as the Taiwanese were sent into harsh conditions to die for a cause they did not support.

While the limited recognition of Taiwanese soldiers suggests there were not many involved during the war, the data suggests otherwise. Government reports show 207,183 soldiers were sent to different countries across Southeast Asia, with over 30,000 of those men dying.³⁰ How could these men be given the same label of aggressor that was given to the Japanese? Their service was involuntary. They were sent to areas with little resources to survive and were subjected to conditions entirely unlike what they were accustomed to. Because of this, many developed diseases, dying from infections if not from combat. Those who were lucky enough to return home were never recognized for what they had endured for the nation of Japan, and were forced into silence. Everything they experienced and the extent of their poor treatment is still unknown, but efforts have been and are being made by historians at Academia Sinica in the Institute of Taiwan History, Hui-yu Caroline Ts'ai, and even at some local-level governments in Taiwan to track down these men and their stories in order to give them the acknowledgment they never received.³¹

TAIWANESE COMFORT WOMEN

Another group of Taiwanese who were victimized by the Japanese were the comfort women. These young women were forced to serve as sex slaves for countless Japanese soldiers. They were also forgotten following the end of the war. Around the 1990s, there was a movement across Asia to shed light on these women and the horrors of the Japanese sex slave system they had been held captive in throughout the war. Unlike the documentation of Taiwanese soldiers who were used by the Japanese, there exists no formal documentation on the number of women who served the Japanese soldiers during the war. Collecting such data has been hindered by the fact that many women were abandoned in the brothels across the Asian-Pacific Theater following Japan's acceptance of defeat. While some women were returned to Taiwan by the Allied forces, others never made it home, and it is unknown what became of their lives. Some reports suggest there were "an estimated 1,000 Taiwanese

24 Grajdanzev, "Japan's Co-Prosperity Sphere," 236.

25 "Draft of Basic Plan," 224.

26 Shi-chi Mike Lan, "(Re-)Writing History of the Second World War: Forgetting and Remembering the Taiwanese-Native Japanese Soldiers in Postwar Taiwan," positions 21, no. 4 (Fall 2013): 803.

27 Brown, "Changing Authentic Identities," 475.

28 Lan, "(Re-)Writing History," 803.

29 Yingzhen, "Imperial Army Betrayed," 187.

30 Ken'ichi, "Japan's Southward Advance," 43.

31 Lan, "(Re-)Writing History," 815.

women” in comfort stations across the Asian-Pacific Theater.³² But it is likely that there were many more who perished on ships that sank before arriving at their final destination, or who died during their time in the army brothels.

The Taiwanese women, much like the comfort women taken from other Asian states by the Japanese during the course of the Asian-Pacific War, were deceptively recruited into the system. The common story is that they were asked to work as nurses for the military.³³ Little did these young women know, their good intentions would land them in a torturous system of slavery. Their bodies were brutalized daily as they sustained, on average, more than twenty rapes a day by Japanese soldiers. Once part of the comfort women system, the ladies were dehumanized entirely. The soldiers did not refer to the women by their names. Accounts told by multiple women make clear that they were simply numbers to the men that entered the brothels.³⁴ While the entirety of what the women lived through, or did not live through, is beyond the scope of this research, simply understanding how these women were deceived and held hostage while being sexually abused is enough to prove that they too are victims of Japanese aggression.

Unfortunately, there are still people who do not see these women as victims, and instead as willing participants. Perhaps the most controversial views surrounding the Taiwanese comfort women stem from the remarks of Japanese writer Kobayashi Yoshinori: “Taiwanese comfort women had been well served by the Japanese military during the war.”³⁵ The notion that the Taiwanese women somehow benefitted from the so-called comfort women system was accompanied by many others and led to book burnings and protests in Taiwan.³⁶ The angered response to Yoshinori’s comment from the Taiwanese was a sign of change. Society is becoming more accepting and forgiving to victims, especially victims of sex crimes. But acknowledgement from the greater society in Taiwan does not imply that the Taiwanese government is fully ready to address such a controversial and sensitive topic in the current political atmosphere in Asia.

Unfortunately, the concern from the public has come too late, and there remain many others who were raised in a culture of ignorance and who still refuse to recognize these women as victims. Some Taiwanese elite continue to claim, “...no women were forced to serve Japanese troops.”³⁷ Hopefully, such views will be eliminated as more women come forward with their stories.

32 Landler, “Cartoon of Wartime ‘Comfort Women.’”

33 Margaret Mitsutani, “Fifty Years of Silence: Three Taiwanese Women,” *Manoa* 13, no. 1 (Summer 2001): 177.

34 *Ibid.*, 178.

35 Jones, “Becoming ‘Japanese,’” 420.

36 Landler, “Cartoon of Wartime ‘Comfort Women.’”

37 *Ibid.*

Already, those who have stepped forward in search of apologies from the Japanese government have explained why they had originally agreed to work for the Japanese as nurses. As young women who had grown up in the Japanese education system, and who recognized their status as colonial subjects, they felt they had to do what was asked of them.³⁸ Again, Japan had secured the allegiance of the Taiwanese, but they corrupted their relationship with the young men and women they victimized in order to achieve their expansionist goals.

WHY THE TAIWANESE EXPERIENCE HAS FAILED TO DRAW HISTORICAL ATTENTION

Neither the Taiwanese soldiers nor the Taiwanese comfort women have been properly acknowledged by the Japanese government, the Taiwanese government, the international community, or historians of the Asian-Pacific War. With such limited study devoted to these victims, there exists “continuing volatility...over the historical memory of Japanese imperialism.”³⁹ Japan chooses to avoid the surviving Taiwanese veterans and comfort women entirely. The Chinese do not recognize that the Taiwanese were involved in the conflict at all, which stems from political motives and from the sense that the Taiwanese were aggressors along with their colonial leaders.

Taiwan’s identity has always been influenced by others, and this holds true in determining its role in the Asian-Pacific War. Instead of allowing the Taiwanese survivors to speak for themselves and share their stories, others have taken it upon themselves to determine the status of the Taiwanese or to completely disregard them. As Barak Kushner observed, “Taiwan’s national identity is no longer a domestic matter;” instead, “its history is played out in opposition to China’s and in the shadow of Japan’s.”⁴⁰

The reason for a lack of recognition within their home state of Taiwan is complicated. Following the end of the war, Taiwan ceased to be a colony of Japan and was returned to China. But politics in the Mainland ended up affecting Taiwan’s role within greater China. The civil war in China led to the ruling Nationalists retreating to Taiwan and to the Communist takeover of the government on the Mainland. Suddenly, the Taiwanese were living among people they had been forced to fight, or whom they felt they betrayed by having to support the Japanese military and their hostile militancy in China and Manchuria. In order to move forward and build a stronger state, the Nationalist party, under the leadership of Chiang Kai-shek, needed to unite the people in support of regaining control of greater China. The role the Taiwanese

38 Mitsutani, “Fifty Years of Silence,” 176.

39 Kushner, “Nationality and Nostalgia,” 794.

40 *Ibid.*, 810.

had played during the Asian-Pacific War was a barrier to improving relations among the people.⁴¹ Instead of facilitating discourse between veterans, the new government in Taiwan purposefully shifted their attention away from the Taiwanese soldiers and women, focusing on the soldiers who had fought in the Mainland. By concentrating only on the citizens who had been in Taiwan throughout the Chinese Civil War, they felt this would support their claims of being the leaders of China; the soldiers and politicians from the Mainland were among the only remains of the old Nationalist regime that could uphold the claim that the Mainland should be governed by the administration in Taiwan. Focusing on soldiers who had fought against the Japanese and the atrocities that had been experienced in China was a way to claim a connection and legitimacy in the Mainland. For this reason, historiography on the war and its victims has been dominated by the experiences of the Chinese. While the decision to ignore the Taiwanese veterans may have been a political one, it was personally damaging to those who survived Japanese victimization and never had a chance to speak about or work through their experiences. As many are beginning to realize, “it is necessary to recognize veterans’ desire to be heard.”⁴²

Welfare was also a way of determining who the victims were and who deserved to be recognized. While the Chinese veterans were showered in praise for their service and were handed government money in the form of veterans’ benefits, the Taiwanese soldiers and comfort women were left to care for themselves.⁴³ Not receiving benefits for their service reiterated the fact that that few saw them as victims, and made the Taiwanese question their identity among the Chinese community. Their personal memories were those of victims, but society and its governmental institutions reminded them of their connection to the aggressors.

CONCLUSION: CATEGORIZING AGGRESSORS AND VICTIMS

It has been 70 years since the end of the Asian-Pacific War, yet the international community is still struggling to recognize the victims and hold the aggressors accountable. Unfortunately, efforts in achieving each of these have fallen short. Japan has not yet officially accepted responsibility for the atrocities committed against the Taiwanese during the Asian-Pacific War, including the countless lives that were lost. The comfort women have begun pushing for recognition, but despite countless evidence that comfort stations existed, the Japanese government has also failed to deliver the formal apology these women

deserve. It is even more unlikely that Taiwanese comfort women or veterans will receive an apology for their suffering because their own government fails to recognize the fact that they were victimized.

Based on the experiences of these men and women, it is clear that governments have the ability to influence individual identities by framing social norms.⁴⁴ The Chinese government that took over Taiwan, following the removal of Japanese colonial authorities, had the ability to categorize the Taiwanese veterans and comfort women as victims, but they established social systems that either implied they were aggressors or ignored their involvement in the war entirely. Japan has also chosen to ignore their responsibility for the loss of Taiwanese life and only chooses to point out the success of the economic programs they instituted in the colony. Failing to recognize their victimization does not make these Taiwanese men and women feel any less victimized.

Shi-chi Lan presented the views of the Taiwanese veterans well by explaining that they see Japan as “the victimizer, not the victim, who has failed to take up its responsibilities to the Taiwanese after the war.”⁴⁵ The Taiwanese have a valid point. Japan used Taiwan and its people to support its own expansionist efforts. They were not concerned with the well-being of those they forced into labor, war, or systems of sexual slavery. While Taiwan was a major stepping stone for Japan in its southern advance, the island and those who served under the Japanese during the war are a mere pebble in the historical accounts of the Asian-Pacific War.⁴⁶

Unfortunately, there are many different factors that have caused the inaccurate categorization of the Taiwanese as aggressors. And if not seen as aggressors, their role in the war is not acknowledged at all. One cause of this is the island’s status as a colony of a Japan during the war. Another is that the government of Japan never compensated the veterans for their service, nor has the Japanese government apologized for what they forced the Taiwanese to do during the war. Finally, while a few teams of historians and certain local-level governments within Taiwan have made efforts to document the experiences of the Taiwanese soldiers, the central governments in China and Taiwan have never formally recognized these individuals due to politics involved in the Chinese Civil War. While it is certain that the experiences of other formally recognized victims of the war varied from those of the Taiwanese, Dr. Melissa Brown suggests, “the same forces may shape them.”⁴⁷ Such forces include fear, discrimination, and suffering. There may be variations of such feelings,

41 Lan, “(Re-)Writing History,” 802.

42 Aaron William Moore, “The Problem of Changing Language Communities: Veterans and Memory Writing in China, Taiwan, and Japan,” *Modern Asian Studies* 45, no. 2 (March 2011): 417.

43 Lan, “(Re-)Writing History,” 806.

44 Brown, “Changing Authentic Identities,” 459.

45 Lan, “(Re-)Writing History,” 829.

46 Ken’ichi, “Japan’s Southward Advance,” 16.

47 Brown, “Changing Authentic Identities,” 463.

but they can each affect people in similar ways. These common forces qualify people as victims. Recognizing this could allow the victims of Japanese aggression during the Asian-Pacific War to finally come together in support of one another and engage in a productive dialogue. Doing so would shed light on the experiences of many more people and would allow the experiences of those who have been silenced to finally be heard.

The appropriate categorization of victims and aggressors goes beyond the victims in Taiwan. This is something that impacts the international community and will continue to do so. To learn from mistakes is advice frequently espoused from older generations, and it is arguably one of the best pieces of advice one could give. While people focus on improving their lives, it is inevitable that they will recognize the past plays a major role in creating change. If the past is ignored, societies around the globe will remain stagnant as previous mistakes are made time and time again. It is only when past mistakes are accepted and corrected that we can move forward. To recognize the plight of victims and the responsibility of their aggressors is an essential part of learning from the past. It is only the aggressors who can explain the true motives behind the wrong that was done, and it is only the victims that can explain the scope of the damage done. Understanding both allows us to redirect our paths and avoid repeating the atrocities that flag our history. As time passes, one can hope that this redefining of victims and aggressors will become a priority and that justice will be achieved and lessons learned.

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NATURAL AND APPLIED SCIENCES

JAMES FISCHER

PURE CARBON NANOTUBE TOXICITY TO MOTH SPECIES *PLUTELLA XYLOSTELLA* AND CONSUMPTION OF CARBON NANOTUBE MATERIAL

ABSTRACT

Carbon nanotubes (CNTs) are a fairly new discovery, and, as such, little toxicology work has been performed on them. An accidental environmental release of CNTs could be potentially devastating to the structures of entire ecosystems, due to the differing effects CNTs have on different species of plant and animal life. If CNTs present a danger to the environment, then the way they are produced and handled must be carefully controlled. The overall purpose of our efforts is to evaluate the effects of CNTs on crop pest *Plutella xylostella* when delivered through both artificial food and through plant species *Arabidopsis thaliana*.

This preliminary study is meant to contribute to a growing body of research concerning the potential effects of CNTs and to encourage future research. Before the use of carbon nanotubes becomes widespread, their toxicity must be tested to determine handling and disposal practices. With a CNT solution of 0.135mg/ml, CNTs had no significant influence on the survival or consumption rates of *P. xylostella*, whether delivered through artificial food or through *A. thaliana* grown in carbon nanotubes, although there was a larger increase in the mass of CNT-treated larva versus control larva. No significant difference was detected, but due to the growth trend and pupation delay observed in CNT-treated larva, further research is required.

INTRODUCTION

Carbon nanotubes (CNTs) have caused a wave of excitement through a wide range of fields, from medical fields to construction. Carbon nanotubes are hollow, cylindrical structures with walls of allotropic carbon, with diameters of nanometer scale. CNTs have a host of useful properties, such as high mechanical strength and thermal conductivity (1). CNTs have been used in marketed products such as shoes, batteries, and sporting goods (2); CNTs may also be used in polymers and metals to increase their strength, photovoltaics, cancer cell targeted radiation absorbers, and as mechanical stabilizers (1). However, similarities between asbestos and carbon nanotubes have been drawn in recent studies, due to their similar fibrillar form (3). In assays testing the effect CNTs have on human cells, multi-walled carbon nanotubes (MWCNTs) and asbestos displayed similar toxicology; however, CNTs also displayed unique, harmful effects (4).

While the chances of a large-scale accidental release of carbon nanotubes into the environment are slim, the effect nanotubes would have on natural populations of plant and animal life must be considered. A release due to human error could potentially collapse food webs due to CNT-caused mortality of certain species. A release of CNTs could also affect crops and crop pests, potentially affecting human food sources. Carbon nanotubes have been shown to have a wide range of effects on various species of animals; however, the effect is dependent on the species of animal and the type and concentration of CNT. CNTs have been shown to induce a hatching delay in zebra fish *Danio rerio* embryos (5), significantly decrease mean survival and biomass in marine amphipods (6), block digestive function which induced mortality in fruit fly *Drosophila melanogaster* (7), and decrease cocoon production in earthworm species *Eisenia fetida* (8). In trout species *Oncorhynchus mykiss*, aquatic worm species *Lumbriculus variegatus*, and larva of Axolotl species *Ambystoma mexicanum*, CNTs were shown to have no toxic effects (9) (10) (11). A host of factors play roles in the toxicity of carbon nanotubes on wildlife. Impurities present in the CNTs (Ni and Co) can contribute to the toxic effects they may have. Mwangi et al. explained this effect using pure and impure CNTs with marine amphipods; pre-cleaning of the MWCNTs decreased mortality, but not entirely (6). Mwangi et al. also reviewed the combined toxic effects MWCNTs and pollutants (such as Nickel), indicating an increased toxicity of CNTs when nanotubes are able to contact dissolved metals present in aquatic areas such as small streams (6). The ability of the nanotubes to enter extrapulmonary portions of the organism also plays a large role in the toxicity of CNTs to a species; Reddy et al. determined that multi-walled carbon nanotubes translocate into the kidneys and liver of adult Wistar rats, with a significant amount of nanotubes building up within the liver of the organisms (12), playing a large role in the toxicity of the CNTs to the Wistar rat subjects. The toxicity of CNT to an organism is dose and species dependent; the LD50 (50% mortality) for freshwater aquatic flea *Daphnia magna* was 1.2mg/L, while 50% of *Danio rerio* only exhibited a hatching delay when exposed to a much higher dose of 120mg/L (13).

The research presented in this paper examines the effect of CNTs on diamondback moth species *Plutella xylostella* when delivered through both artificial food and the mustard species *Arabidopsis thaliana* grown in CNT-imbued agar. The growth of larva when consuming control- and CNT-grown plant material—and when feeding on artificial food with and without CNTs—was examined. Consumption rates of *P. xylostella* were also examined. The purpose of these assays was to determine the effects a release of pure carbon nanotubes may have on wild *P. xylostella* individuals from a toxicological perspective.

MATERIALS AND METHODS

Nanotubes

The carbon nanotubes were purchased in the form of CNTRENE™ C100LM, a product manufactured by Brewer Science Incorporated. CNTRENE™ is a solution of carbon nanotubes and deionized water, with a concentration of 0.135mg/ml and a pH of 6.5–7.5. The nanotubes were approximately 70% single-walled carbon nanotubes, 25% double-walled nanotubes, and 5% multi-walled nanotubes (a majority of which were three-walled). The length and diameters of the carbon nanotubes were 0.4–1.5µm (mean length of 872.01nm) and 0.7–3.0nm (mean height of 1.56nm) respectively. The nanotubes had a mean height to length ratio of 0.0025, and a mean curvature of 0.03. The total metal ion content of the Brewer CNTRENE™ solution was below 25ppb.

Plutella xylostella

Second instar larva were purchased through Benzon Research Inc. and stored in wooden cages until preparation for each assay was complete. The larval housing was under a 12-hour artificial day-night cycle. For *Arabidopsis* assays, five *P. xylostella* larva were used in the assay dish, while 16 larva per dish were used for artificial food assays. The permit number, provided by the United States Department of Agriculture for the use of *P. xylostella*, was P26P-14-02726.

Arabidopsis thaliana Assays

Arabidopsis thaliana specimens were grown in agar from sterilized seeds (Col-0 strain). Growth agar was 0.1625g of MS salts dissolved in 50mL deionized water, 100mM KOH distilled up to 60.50mL, and combined with 0.6g of pure agar. This solution was then autoclaved for 20 minutes and placed in a water bath at 55 degrees centigrade. 13.85mL of Brewer Science Inc. CNTRENE™ was added, and the resulting mixture was sonicated for 2 minutes. The growth agar was completed with the addition of 60µL of fungicide and 6µL carbenicillin. The CNT concentration of the CNT agar was 24µg/mL. Leaves culled from control- and CNT-grown plants were used, and five larva were placed in four different (two control, two CNT) petri dishes. Mean starting mass of *A. thaliana* plant material per dish was 400 ± 4.40mg. Total larval mass per dish and mass of plant material per dish was collected over the period of 23.0 hours, but the larva remained sequestered for a total of 42.5 hours until pupation had completed. The adults produced after the pupation period were kept separate for each treatment and were later frozen for future isotope testing.

Artificial Food Assays

Artificial food was created using a dry mixture purchased from Southland Products Inc. and specifically formulated for *P. xylostella*. 40.5g of the powder mix was combined with 204.5mL deionized water and placed onto a boiling plate and brought to a boil. Using a magnetic mixing plate, 8.0mL of CNT mixture was added; the flask was covered to prevent inhalation of airborne nanotubes. The sides of the flask were washed with 10mLs of deionized water, and the mixture was poured into petri dishes acting as molds and placed into refrigerated storage. The hardened food mixture was then partitioned using a small corer. The CNT artificial food had a CNT concentration of 4.32mg/L. The mean starting mass of an artificial food disc was 357.9 ± 43.33mg. Sixteen of the artificial food discs were divided amongst four labeled petri dishes: two CNT dishes and two control dishes, with their respective food discs. Each disc was labeled with a number so individual masses could be taken at each time step. Sixteen *P. xylostella* larva were placed into each dish and allowed to consume the weighed discs for 28 hours. Larval growth and artificial food consumption were extrapolated from this assay.

RESULTS

Arabidopsis Assay

No significant difference (ANOVA: $p > 0.05$) was detected for the two treatments of the *A. thaliana* assay larval masses (Fig. 5 & Fig. 6). At the 23-hour mark of the assay, the mean individual larval weight of the control larva was 8.17% greater than the mean individual larval weight of the *P. xylostella* larva that had consumed *A. thaliana* grown in CNT solution. The affinity of *P. xylostella* for CNT-imbued material was tested for in conjunction with the toxicity assays. No significant difference (ANOVA: $p > 0.05$) was detected for the two treatments concerning the amount of *A. thaliana* material consumed (-Fig. 7 & Fig. 8). Control larva consumed 4.56% more *A. thaliana* than larva consuming *A. thaliana* grown in CNTRENE™ solution.

Artificial Food Assay

The mean weights of *P. xylostella* larva between the two treatments (control, and CNT imbued artificial food discs) did not differ significantly (ANOVA: $p < 0.05$) (Fig. 1 & Fig. 2). At 28 hours, the larva that had consumed the CNT artificial food had an individual larva weight 3.39% greater than the individual larval weight of the control larva. Likewise, no significant difference (ANOVA: $p > 0.05$) was observed within the artificial food consumption data

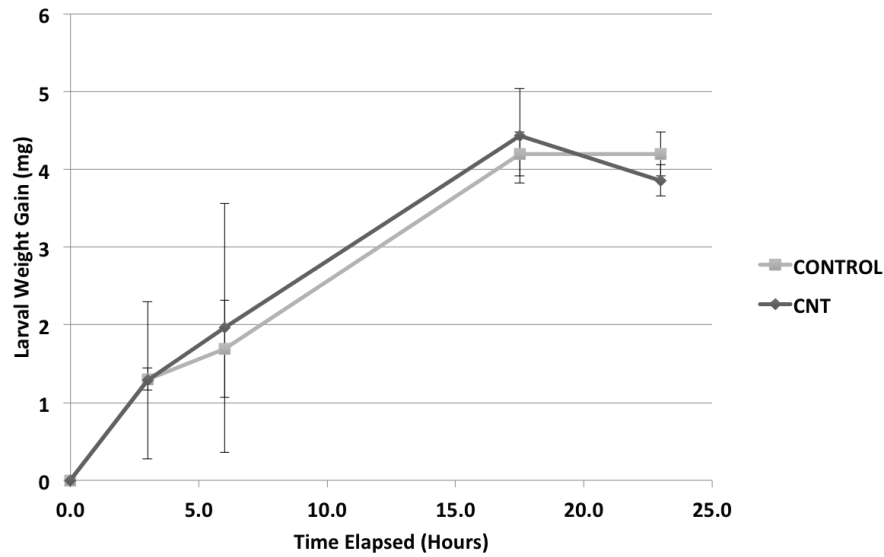


Figure 1: Arabidopsis assay; mean individual *P. xylostella* larval growth during consumption of *A. thaliana* grown without (control) and with (CNT) CNTs over the course of 23 hours. mean (\pm standard deviation) mass of individual *P. xylostella* larva after consumption of *A. thaliana* grown without CNTs (control) was 4.20 ± 1.90 mg and with CNTs (CNT) was 3.90 ± 1.80 mg, after 23 hours.

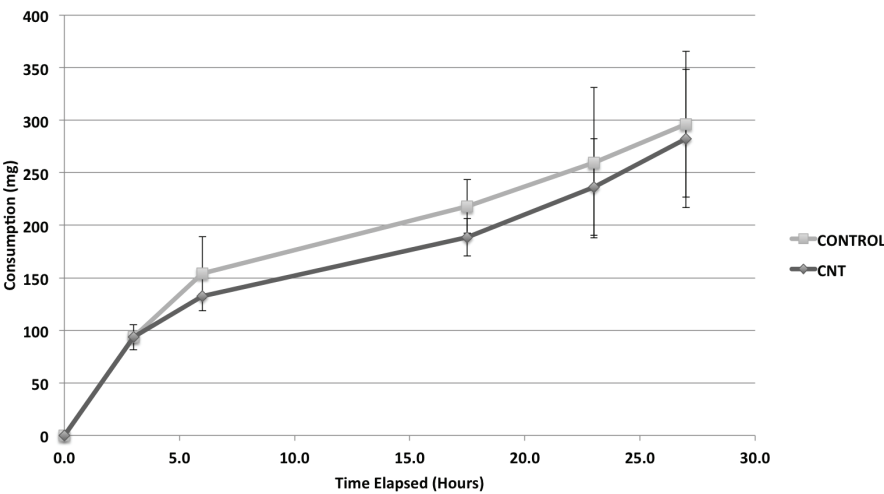


Figure 2: Arabidopsis assay; mean consumption by *P. xylostella* of *A. thaliana* grown without (control) and with (CNT) CNTs over the course of 23 hours. mean (\pm standard deviation) consumption by *P. xylostella* of *A. thaliana* grown without CNTs (control) was 296.0 ± 110.6 mg and with CNTs (CNT) was 282.5 ± 102.2 mg, after 23 hours.

(Fig. 3 and Fig. 4). Within the 28 hours post-isolation, the larva had consumed 4.49% more CNT artificial food, compared to the amount of control artificial food consumed.

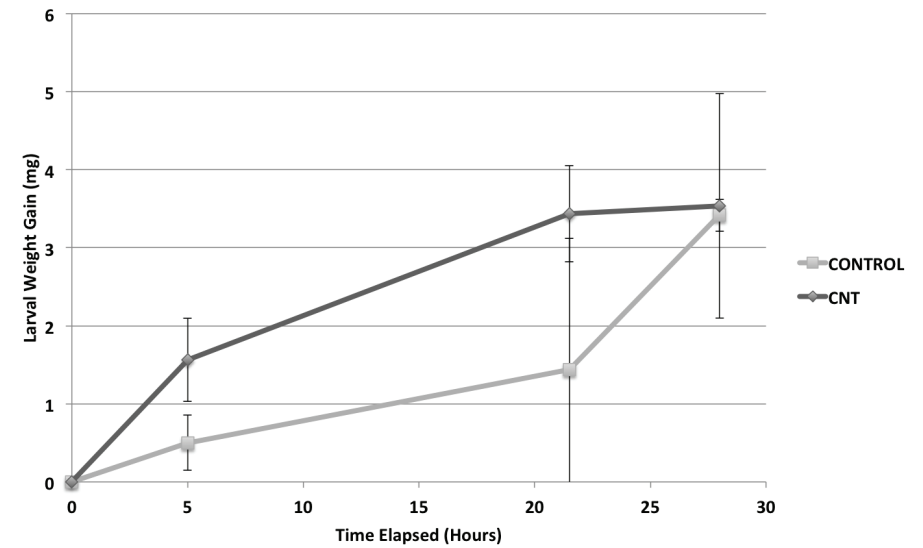


Figure 3: Artificial food assay; mean individual *P. xylostella* larval growth during consumption of artificial food without (control) and with (CNT) CNTs over the course of 28 hours. mean (\pm standard deviation) mass of individual *P. xylostella* larva after consumption of artificial food without CNTs (control) was 3.42 ± 1.51 mg and with CNTs (CNT) was 3.54 ± 1.69 mg, after 28 hours.

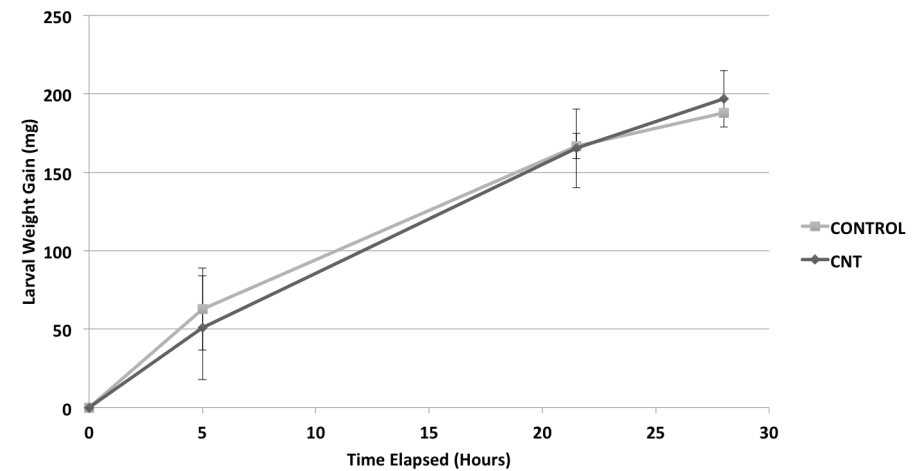


Figure 4: Artificial food; mean consumption by *P. xylostella* of artificial food without (control) and with (CNT) CNTs over the course of 28 hours. mean (\pm standard deviation) consumption by *P. xylostella* of artificial food without CNTs (control) was 187.9 ± 88.50 mg and with CNTs (CNT) was 196.8 ± 93.05 mg, after 28 hours.

DISCUSSION

In the present study, the used concentration of CNTs did not have a discernable effect on the consumption habits of *P. xylostella*, whether administered through artificial food or through *Arabidopsis thaliana*. The CNTRENE™ product also did not cause any significant difference in *P. xylostella* larval growth in the control or CNT treatments.

While no significant difference was detected in any of the assays, research into the effects of carbon nanotubes on *A. thaliana* and *P. xylostella* must continue. The results came as a surprise, countering the hypothesis that CNTs would have a harmful effect on *P. xylostella*, similar to induced mortality in *D. melanogaster* (7) or decreased survival and biomass in marine amphipods (6). Similar to results from research concerning aquatic worm species *L. variegatus* (10), CNTs displayed no harmful effect on *P. xylostella* larva. Rather than harming the insects, CNT material caused a slight increase in the mass of *P. xylostella* larva, which could be viewed as a positive, non-harmful effect.

The odd difference in trends of larval mass growth of control larva and CNT-treated larva mass growth in the artificial food assay (Fig. 2) is of interest, and study of this trend will be emphasized in later assays. This trend indicates an increase in larval mass, which would spell disaster for native plants and crop species in areas where *P. xylostella* acts as an invasive pest. Furthermore, it is unclear how an increase in larval mass would affect the mating and consumption habits of *P. xylostella*, and how that could affect the species that are consumed by or are rivals of *P. xylostella*. Future research will also focus on the penetration of the nanotubes into the organ system of *P. xylostella* using a Scanning Electron Microscope (SEM), and determining the amount of ¹³C within *A. thaliana* and *P. xylostella* via isotope testing in conjunction with UC Davis Stable Isotope Facility. Isotope and SEM results will indicate whether or not the nanotubes manifest in the body and organ systems of *P. xylostella*, which is vital information for the continuation of toxicity research.

During the assays, it was also observed that CNT-treated larva took longer to pupate than control larva, similar to the hatching delay observed in Mwangi et al. (6); this too will be further investigated in future assays.

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