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Journal of undergraduate research



THE COLLEGE
UNIVERSITY of ROCHESTER

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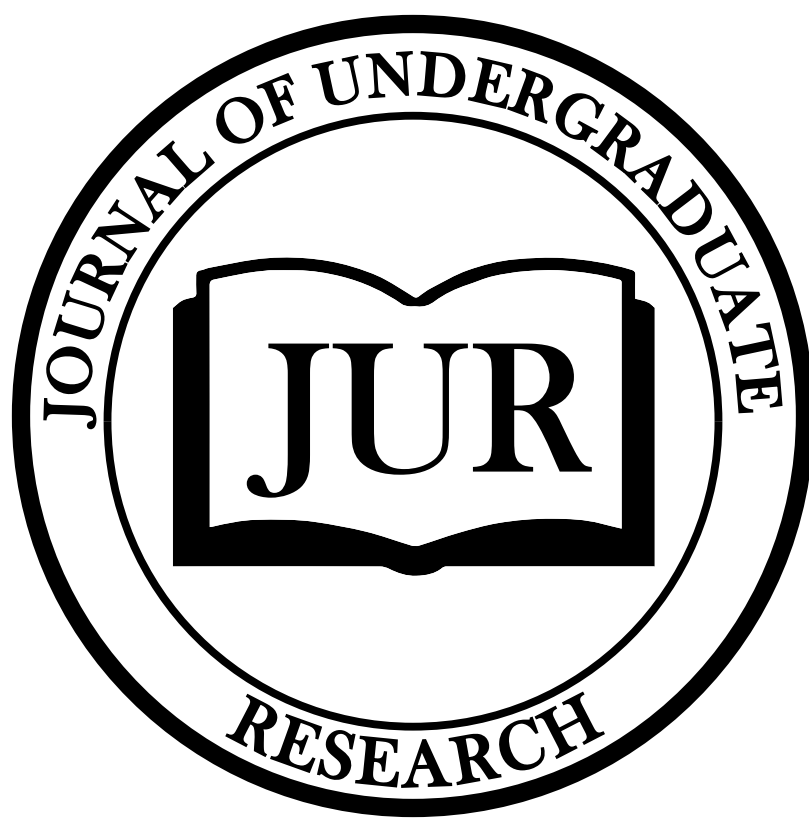
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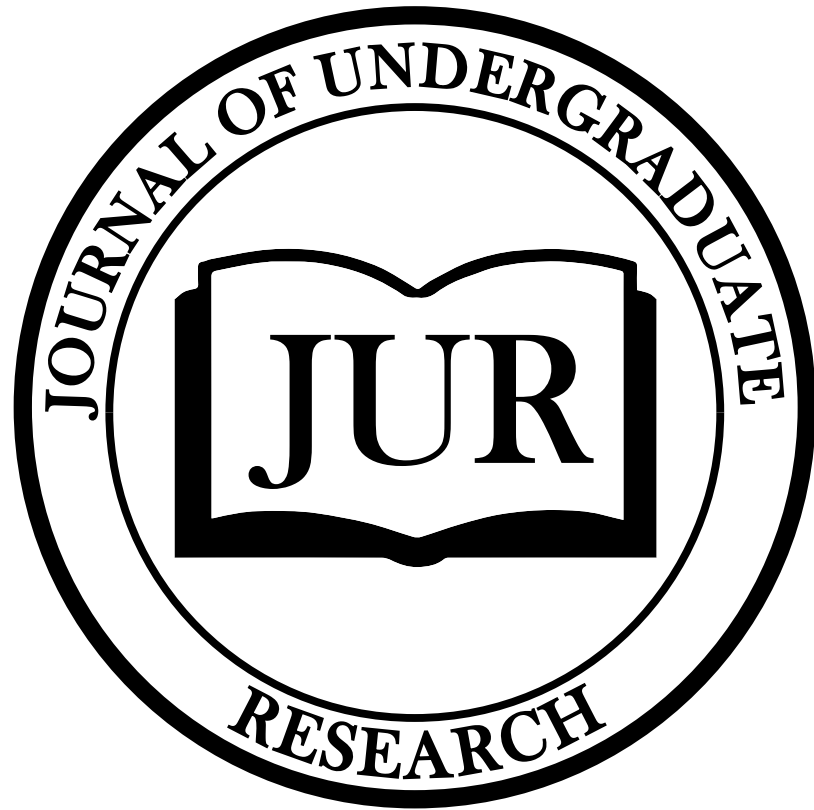
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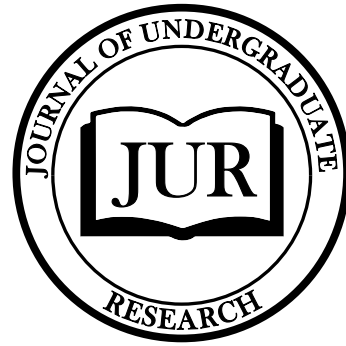
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Journal of Undergraduate Research



Volume Fifteen
Issue One, Fall 2016

University of Rochester

The *Journal of Undergraduate Research (JUR)* is dedicated to providing the student body with intellectual perspectives from various academic disciplines. *JUR* serves as a forum for the presentation of original research, thereby encouraging the pursuit of significant scholarly endeavors.

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From the Editors

The nature of research is undeniably bold. To strike directly into what is unknown, refusing to bow to territories that are uncharted and free of human touch, allows for little faintness of heart. This is especially true for career researchers: academics and scientists who spend decades cultivating an understanding of their field so complete that the hidden pitfalls of misunderstanding, the unfinished sentences and misplaced punctuation, speak louder to them than the principles that have been codified with the utmost clarity. There is a world founded in uncertainty, of near blindness. Their own will and relentless curiosity are the only lamplights illuminating the territory surrounding them and guiding them towards remarkable discovery.

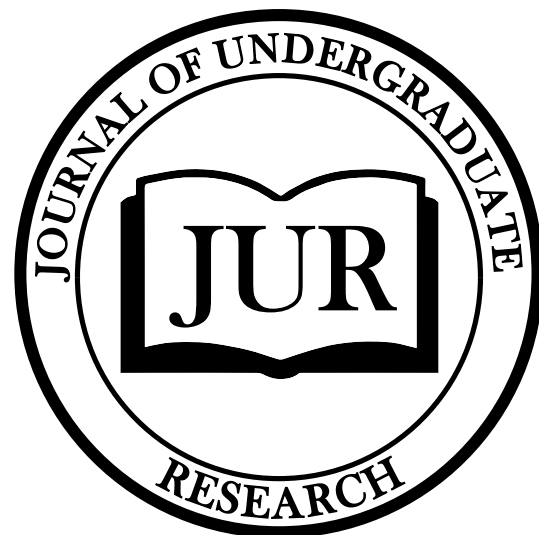
Though intimidating, the risk of dedicating one's life to an unwritten story of unknowable depth is accompanied by the implicit prospect of significant reward. To gain more insight, we sat down for an interview with Dr. Elaine Sia, a professor of Biology and a researcher at the University of Rochester. When asked what her most rewarding experiences in research have been, her immediate response did not cite successful projects or well-received publications. Instead, she described a *type* of moment that felt nearly cinematic in its crisp affection: quiet hours in the lab, looking at a fresh gel or poring over a new set of data that holds some utterly novel information. In those moments, there can be a concentrated leap in clarity - a newfound structure in the terrain she is working so carefully to map.

We recognize that these moments of reward and accomplishment are realized through years of diligent effort, missteps, mis-categorizations, re-categorizations, and constant movement in the face of ambiguity. Part of our purpose as a publication is to congratulate and encourage these pivotal endeavors in the young researcher's early and most fundamental steps towards the unknown.

With this in mind, the Journal of Undergraduate Research is proud to present our Fall 2016 issue. These pages include fascinating explorations into the fields of Art History, Psychology, Education, and Biomedical Engineering, among others. We invite you to dive in, and we hope you enjoy the product of these students' dedication and hard work.

Sincerely,

Emily Gore and Kyle Smith





Journal of Undergraduate Research

University of Rochester | Volume 15, Issue 1 | Fall 2016

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About the Journal

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Professor Interview

Elaine Sia, Ph.D.

Professor of Biology



JUR: Could you tell us a little bit about your professional background and how you became involved in research?

SIA: I was an undergraduate at Michigan State University, and I didn't have a plan for myself. I knew what I liked, I knew what I was good at - I took a lot of biology classes because I was both interested and capable in the subject. Early on, I took a microbiology class with Dr. Wendy Champness, who was a relatively young faculty member in the department. I was fortunate enough to take the laboratory section that she herself taught, as most of those sections were led by teaching assistants. At the end of the semester she said to me: 'I think you have a knack for this, and I'm looking for undergraduates in my lab. Would you be interested in coming and working with me?' I was really fortunate because I didn't even know enough to look for those kinds of opportunities yet. She was just starting up her lab, so I got to help her build from the ground up -- even ordering supplies and setting them up. It was a really incredible experience. And of course, as a new faculty member, she was in the lab all the time and it was just the two of us when we started out. That one-on-one attention was one of the most fantastic first experiences in a lab that you could have.

After graduation, I was her technician for a year. I would start projects and when they got to a point where they were more interesting, she would put a graduate student on the project. Eventually I went into her office and said, 'Wendy, this is driving me crazy. I want my own project. I want to follow through with it.' And she said, 'You want to be a grad student.' So, I applied to graduate school, and I actually applied after the deadline because, you know, again, I was very naive about the whole process.

I ended up going to Columbia University Medical Center in their department of Microbiology and Immunology. I really thought I wanted to be a microbiologist - that's what Wendy did. In her lab, I was working in *Streptomyces*, studying pathways that synthesize secondary metabolites and sporulation genes...at its essence, genetics. And when I went to Columbia, I went into a lab studying broad host-range plasmids -- another genetics-based

project. In doing so, I discovered two things about myself: first, that it wasn't really microbiology that interested me per-se, but that I liked microbes because they grow really fast, and I am a very impatient person. Second, that I really liked genetic approaches. After working in a yeast lab after graduate school, I also learned that yeast is probably the most fantastic genetic system if you're interested in using classical genetic techniques. There's just no better model system to go into and ask the real, most fundamental questions about how cells function.

JUR: Your current research focuses on the mitochondrial subcellular genome that those without a background in biology may not understand - could you explain why mitochondrial DNA is so special, and how you became interested in your particular niche of genetics research?

SIA: Everybody knows a little bit about the nuclear genome, right? We have our chromosomes, and on a basic level that's relatively clear to most people. I think what maybe a lot of people are actually coming to know now is that mitochondria also contain DNA -- their own DNA. Eukaryotic cells have all of these membrane-bound subcellular compartments, one of which is the mitochondria, and of all of those in animal cells, mitochondria are so special because they contain DNA.

The history of mitochondria is interesting because most of us believe that it is an artifact of a symbiotic relationship between an organism that lived inside early eukaryotic cells, which of course had their own genomes -- some sort of proto-bacteria. Then, over time, it became so integrated into the functioning of the eukaryotic cells -- as it provided a source of energy to the cell -- that it was able to then lose a lot of its own DNA. Those lost sequences were then provided by the nuclear genome of the eukaryotic cell. What's left over is a very small number of genes. It's really an unusual situation when we have to maintain a genome within another compartment in the cell, with all of the proteins that requires: machinery that replicate the genome, maintain the genome, read the genome into RNA and then the RNA to protein...all in this separate compartment.

So that's kind of an oddity. It's even more interesting because the mitochondrial genome doesn't have this sort of elegant gene expression or gene regulatory factors that you see in the nucleus. For example, if you wanted to change the amount of protein you make, essentially what you do is you change the copy number of the gene – and more gene copies make more proteins. There are a lot of really quirky things about the way that mitochondrial DNA replicates and is maintained.

I became interested in mitochondrial DNA quite by chance. At the time, I was studying a special kind of repetitive DNA called microsatellites. I was interested in them because they're a really sensitive indicator of genome stability. When microsatellites start to become unstable, that indicates that the rest of the genome is, as well. The rest of the genome's mutation rate is at such a low level to start with, that it's hard to detect. But microsatellite instability can be huge, so it's more easily measurable. Specifically, we were studying the proteins that are important in maintaining microsatellite stability, and therefore, stability of the genome as a whole. My supervisor and I were at a meeting, talking with somebody who studies mitochondrial protein synthesis. He had developed a library of genetic tools that we thought we could apply to a different question. We asked whether we could measure microsatellite stability in mitochondrial DNA using his new genetic reporters, and we could. We learned some really interesting things about the ways in which the nuclear and the mitochondrial genome differ. In the process of writing that first paper, of course I had to do a lot of research and reading, and I became fascinated by how little we knew about how mitochondrial DNA is maintained. At this point, some 20 years later, it's still amazing how far behind we are in understanding mitochondrial DNA replication and repair, relative to the nuclear genome.

I always say that the reason I really care about this is because we need our mitochondria and our mitochondria need their DNA. In order to produce energy for the cell, you need those handful of proteins. Without them, your cells don't make energy, and even if some of your mitochondrial genome is defective, you will have a mitochondrial disease. If they're all defective, it's simply not consistent with life. Although it's this tiny quirky genome, it's really important to overall health in multicellular animals like us. In yeast, it tells the cells what carbon source they can grow in, essentially. So, we can grow yeast without mitochondrial DNA and they survive, but we have to give them fermentable sugars so that they don't need to employ their electron transport chain, which is encoded for by the mitochondrial genome. This makes yeast a particularly excellent model for these kinds of studies. And they grow fast, so if you're really into instant gratification in science, again, it's the perfect system.

JUR: What have been some of the most rewarding aspects of your work in research?

SIA: My favorite moments in research are when you look at that piece of film, or you look at that gel, or you look at that plate and for that moment, you're the only one in the whole world who knows this thing. Right?

On another level, I like to do logic puzzles for fun. I grew up with those variety puzzle books and I used to solve those puzzles for fun. I really feel like that's what the job is, especially as a geneticist, and oh, do geneticists love to be clever! We think of some inventive way to get an answer that we often have to deduce from the results. But what's also special is that we can make very clear predictions about what we expect to see. When that film comes out of the processor and you see exactly what you predicted you would, it's fabulous. It keeps you going through all of the difficult times. For me, in terms of doing research, I still get a kick out of that every time. I still work at the bench in my lab. A lot of people don't by the time they're at this stage in their career, but I think if I couldn't have my hands on at least some little experiment, pretty much all the time, that I would really feel the loss of that. I like to be connected to the work, and not just have people show me the data. Although, that's almost as good.

JUR: To zoom out just a bit, for those who may not understand the intricacies of gene replication, repair, and maintenance, could you explain the ramifications that your research may have on more visible things, like disease and medicine?

SIA: My work is, at its core, basic research. I'm trying to understand how cells do what they do. But of course, it's important for human health that this process works properly. There's a lot of evidence that deterioration of the mitochondrial genome is correlated with age, and the accumulation of specific kinds of mutations. For example, a loss of big chunks of the mitochondrial genome, which of course would make them defective, is associated with some of the deterioration of tissues that you see in aging. Specifically, if I touch on some other research, if you have a mouse that generates deletions in mitochondrial DNA at a higher frequency, the same kind that we see in yeast, those mice have progeria – a precocious aging phenotype. That affects nearly all the tissues that have been studied in that line of work. One of the most significant tissues is the heart, and if you think about it, you could imagine why that would be true. The heart is, after all, a big muscle – and muscles require an extremely large amount of energy to do their work. A lot of cardiomyopathies, for example, show defects in mitochondrial DNA. Those things occur with mitochondrial disorders that people are born with, as well as from an accumulation of mutations over time.

In several particularly gratifying studies this year, a lot of the proteins that we found to be very important in yeast are also important in maintaining mitochondrial DNA in mammalian cells. The work is much, much harder in multicellular eukaryotes because they're so dependent on energy for survival. So, using our system, we can tell people where to look in mice and in human cells, for example. We can act as a spotlight.

JUR: Based upon your early experiences, how would you suggest an undergraduate get involved in research?

SIA: Very few people are like my previous mentor, who are willing to go out of their way to identify and nurture the research career of someone who has no idea what research is about. In reality,

you're going to have to do some work to find a research lab that's right for you. I think students are really lucky here at the University of Rochester, especially if they're interested in biomedicine and biomedical research, because we have all of the great faculty at the medical center, as well as those here on the River Campus. I think the best thing to do is to spend a lot of time thinking about the kind of research that you're interested in, with the caveat being that you might get into a lab and discover that you hate it. In graduate school, I did a rotation in a lab that worked with mice, and I discovered that really wasn't for me. While I don't have an ethical issue with animals in research, I can see the necessity of it and so on. I just can't do it. I think you have to keep an open mind – it's not just the project, it's also really what you're doing at the bench on a daily basis. Can you enjoy the work that you're doing day-to-day, or do you dread going in because it's the day you have to work with mice, or stand in a cold room with a column? It's about both of those things. You start with a curiosity about many aspects of science and you look for research that interests you intellectually, and then you have to contact individual people and offer your time to meet with them to ask them if they're interested in having someone do research.

At the University of Rochester, the independent study program provides a great opportunity because you have time in your schedule that you've cleared by taking it as a course, and you have to come up with, with the help of your mentor, an independent project that you will be working on that's very much yours. The earlier you feel like you own that project, the more invested you become in the outcome of the experiments and the research.

In terms of research, I always say that you have to be a real optimist. A lot of it doesn't work, or doesn't give you the result you expected. I always say that when I have someone in the lab, within the first three or four weeks I can tell whether they're probably going to make it in research or not. That has a lot to do with the time between the failed experiment, where you feel very disappointed, and when you have planned the next iteration and you're absolutely certain this one's going to work. You have to be able to get that forward-looking optimistic view of the next experiment quickly. I'm mentioning this not because I'm saying that most of the experiments don't work, but instead, that you could execute them perfectly but they just don't tell you what you need to know. And so, you have to rethink your strategy. I think that's the main thing – you have to be a little stubborn, to be willing to kind of bang your head up against the problem until you can solve it, and sometimes that can take a really long time.

JUR: You've just touched a little bit on the next question that I was about to ask, which is: what are some important personal qualities in a researcher?

SIA: One of the things that I always say is that you don't have to be a genius. Everybody thinks that the smartest people make it, but I think persistence is the biggest quality that will determine how successful you will be. You have to be a fairly voracious reader. The more you read, in terms of scientific literature, the better your work will be: more techniques, more ideas, you'll know solidly what's been done and how your project fits into that

framework. Going to seminars is the same thing. Just exposing yourself to a lot of ideas and discussion by other scientists... I think that's really the key.

The other characteristic I would say is open-mindedness. We all become very attached to our models, our way of thinking about how things work. You have to be open to results and observations that don't support those models, and be willing and ready to search for why that might be. I think it's a danger to become too attached to a single mode of thinking. You try to fit your data into that framework, rather than building the framework around the data, and rebuilding it every time you have to. I think that's really important – to be willing to let go of some pre-conceived notions and think about things in different ways.

I think about this a lot with the discovery of the polymerase chain reaction (PCR), for example. Because there's not one person that you can explain that to that doesn't think, well, obviously that works. Well, it's only obvious once someone thinks of it first. That took a real flexibility of mind to understand that there's this thing that exists, this thermo-stable polymerase, and then that it can be used to synthesize any piece of DNA you may want. Once it's explained to you, it just seems so clear: 'Why didn't anybody think of it before? Why didn't everybody think of this?' That's the thing that really leads to real technical advances and insights: somebody who plays around with a variety of truths in their mind and can figure out how to use that information in new and different ways.

If somebody asked me, well how many hours a day do you work? Does that count the time I'm driving home when I'm trying to solve a problem I ran into that day? To some extent the beauty of what happens, where the magic happens, is in your head. I think science is a creative process, even though many people picture scientists as all too serious in our white lab coats and goggles. You think and then you implement it at the bench, but that creative process, I think, is much like art.

JUR: Do you have any words of advice for undergraduates in general?

SIA: I've been an advisor of freshman for ten years, maybe. The piece of advice I would give is that this college experience is a really unique opportunity to explore new areas and interests, with experts who would love nothing more than to talk about their fields. I think that I didn't take advantage of those opportunities as an undergraduate -- to learn things that were interesting just for the sake of learning. You're here at this wonderful institution with experts in art, and film, and language, and culture, and science. People often get so focused on where they want to go, and completing requirements and so on, and I think there's room in your schedule to take things just because you think they might be fun to learn about. I would recommend that. And even more generally, I would just say to stay curious. Think about the kinds of ways you looked at the world when you were five or six or seven years old.

I have an eight-year-old nephew and he looks at the world with such massive curiosity. It's really an awe at everything that he sees.

Children are natural scientists. And I think that we have to be careful not to lose that in the process of studying for that test or whatever it might be that is the next goal. If you're exploring your interests, multiple majors, minors, etc. that's great, but if it hinders you from going in new directions, be careful – studying abroad, for example, is probably more important than that additional minor you're trying to complete. If you have to make that choice, see the world. That's what I would recommend. That's what I would do if I were to do it over again.

SUGGESTED READING:

Members of the RAD52 Epistasis Group Contribute to Mitochondrial Homologous Recombination and Double-Strand Break Repair in *Saccharomyces cerevisiae*. Stein A, Kalifa L, Sia EA. PLoS Genet. (2015)

Mitochondrial genome maintenance: roles for nuclear nonhomologous end-joining proteins in *Saccharomyces cerevisiae*. Kalifa L et al. Genetics. (2012)

Recent Advances in Mitochondrial Disease. Craven L et al. Annu Rev Genomics Hum Genet. (2017)

The Rise of Mitochondria in Medicine. Picard M et al. (2016)

Dansaekhwa and Its Increasing Value

Ruoyu Li

Department of Art History, University of Rochester

Dansaekhwa, often referred to as monochrome painting, is one of the most important artistic movements in contemporary Korean art. This art form has only recently become appreciated in the Western market, with its value increasing explosively. However, all of this movement's influential artists and art pieces being auctioned on the market today trace back to one time period, more than half a century ago. These Korean monochrome paintings are receiving much more attention now than they were decades ago. This raises the question: what could be the reason for this sudden appreciation for Dansaekhwa in the Western market?

Exploring the history of Dansaekhwa and how it fits into the various steps of the "value cycle" can provide insight into the institution that has driven the increase in value of this art form.

First, it is important to examine the birth of the Korean monochrome painting.

THE BIRTH OF DANSAEKHWA

Shortly after the second World War, South Korea was invaded by the North, resulting in a civil war. The two consecutive wars generated a sense of emptiness in people's minds, as they watched their country split in two. Most monochrome painters grew up during this time period, including those who later became renowned masters: Lee Ufanwas, born in 1936, and Park Seo-Bo, born in 1931. As the inhabitants started to rebuild their homeland after emerging from Japanese colonization, they began thinking about their own national identities as Koreans. In recovery, a strong sense of nationalism rose in South Korean society under the presidency of Park Chung-hee. In fact, "nationalism was a prominent factor in their nation-building as it helped them recover from the trauma of colonization and war" (Seow). In this social atmosphere, artists undertook various experiments in art making, including ones conducted using traditional paint brushes and hanji, the traditional Korean paper. Additionally, "the prevalence of white or off-white tones in many of these works can be related to uniquely Korean responses to Taoist Buddhist and Neo-Confucian concepts that reveal themselves in traditional Korean Buddhist painting and the white porcelain of the Joseon dynasty" (Harland 273). According to Yoon Jin-Sup, a curator

of early Dansaekhwa exhibitions, the idea of white "existed as a cultural base to form part of a collective identity, which was revealed through Dansaekhwa" (Harland 273).

Other factors that contributed to the birth of Dansaekhwa were the minimalism and abstract expressionism movements in the West. Western influences were introduced by Korean artists who were educated in the West, as Korea had clear military and political alliances with the United States. However, the chances of pursuing a Western education were still limited to most, "with the exception of Quac In-sik and Lee Ufan, who studied in Japan, Park Seo-Bo, who spent a year at the Sorbonne in 1961, and Kim Gui-Line, who studied in France" (Harland 271).

After the Civil War, Korea also saw the establishment of art departments at Seoul National University, Hongik University, and other institutions. Through government funding, national universities helped art students track international art trends, and students from the two aforementioned universities "would dominate the Korean art world for decades" (Kee 7).

These three historical trends had a magical chemistry in South Korea, as a generation of artists put their efforts into the art of Dansaekhwa to express their feelings of national pride. "Korean monochrome painting mirrors the crisis experienced by Korean society as a whole in the period after the Korean War; it was a society social and political control, and the equally powerful drives to sanction and encourage rapid economic development and guarantee the nation's protection by the United States, coexisted uncomfortably" (Harland 269). Dansaekhwa paintings gradually gained attention from Korean society, and then internationally. Their value began to increase with the logic of the "value cycle."

VALUE CYCLE

The role of the "value cycle" in raising values for art pieces is well known, and the value increase of Dansaekhwa is consistent with this idea.

The cycle begins with a successful exhibition; this could be any exhibition as long as it gets good critiques. Subsequent exhibitions are held to mutually benefit both artists, who get promoted, and galleries, which attract more visitors. These exhibitions, held by either by galleries or museums, add certain prestige and value to

the art they showcase. The next step of the cycle is pushed by the auction houses: as a means to earn a profit, auction houses hold shows and exhibitions for a particular art form and distribute catalogs to persuade buyers to purchase. This step is crucial for art pieces to gain valuable attention, as auction houses provide access to wealthy patrons, who are willing to invest in art. Finally, prominent art collectors themselves can add credibility and value to a particular type of art due to their major presence in the market.

The process of value increase on Dansaekhwa can be divided into two stages: the value cycle within Asia, and the introduction of Dansaekhwa to the US market in 2014.

DANSAEKHWA IN THE ASIAN MARKET

The debut of Korean monochrome painting took place in the Tokyo Gallery, with a 1975 exhibition titled *Five Hinsek 'White': 5 Korean Artists*. "Th[is] exhibition has often been referred to as the original presentation of monochrome painting" (Tokyo Gallery), as it was a booming success at the time. As seen through its title, the exhibition placed a strong emphasis on the "white," which also may have referenced the "natural or earthy qualities" of these paintings, since not all the works are white in color (Kee 2). According to the gallery's owner and director, Yamamoto Takashi, Japan's objective when holding this exhibition was to "promote a traditional aesthetic as a deliberate counterpart to that of the West" (Kee 234). Therefore, it can be said that the initial appreciation of Dansaekhwa in Japan was based on the notion that Korean monochrome painting preserved distinctive Korean, and more broadly, Asian aesthetic.

Two years later, an exhibition titled *Korea: Facet of Contemporary Art* was showcased in response to the "positive reception" of the Tokyo Gallery showing (Kee 240). "Though [the Dansaekhwa works] shared exhibition space with sculptures and other kinds of paintings, large examples of Dansaekhwa appeared to dominate the space" (Kee 240). One critic mentioned that, "the entire space of the exhibition was an intense atmosphere of noncolors" (Kee 240). As seen in the image from Sotheby's, Dansaekhwa master Park Seo-Bo was present in the exhibition, and the two paintings in the background are signature works from Lee Ufan's "From Line" series.



(From Left) Park Seo-Bo and Kim Youngsun (Ambassador of the Republic of Korea to Japan) at *Korea: Facet of Contemporary Art*, Tokyo Central Museum of Art, Japan, 1977 (Courtesy Park Seobo Studio). Image from Sothebys.com

The Tokyo Gallery exhibition piqued interest from other galleries in the region, and even larger museums, including the Fukuoka Art Museum, which later held the "Asian Artists Exhibition Part I," featuring many Dansaekhwa artists (Kee 249). This accomplished the first step of the "value cycle," as Dansaekhwa began to receive a notable amount of attention, and its value started to increase.

According to Artnet, the first auction featuring Dansaekhwa works was held by Apollo Auctions, an auction house in Japan, in 1990. The event predominantly presented works the works of Lee Ufan, whose pieces soon increased in value even before Dansaekhwa came to the US market. As seen through the auction records, Lee's works were generally sold for several thousand dollars (Artnet Database), indicating that Japanese buyers were still hesitant when facing this new South Korean art form.

According to Artnet, the number of auctions held between 1990 and 2005 featuring Lee Ufan, Park Seo-Bo, and other Dansaekhwa masters was rather limited. This may be a result of the lack of exhibitions held by major galleries and museums following the exhibition in the Fukuoka Art Museum. However, things changed in 2006, when Christie's New York held an auction for Asian contemporary arts (Askart Database). Dansaekhwa artists, including Lee and Park, were featured in the auction, which allowed their work to be rediscovered and featured in upcoming exhibitions. The fact that Dansaekhwa was promoted and recognized by Western auction houses transmitted back to Asia and led to more attention. This Western recognition, however, was not long lasting, as Christie's and Sotheby's New York or London did not continue to hold auctions for Korean Monochrome painting pieces.

It can be deduced that Dansaekhwa's first "value cycle" began with the 1975 exhibition at Tokyo Galley, and concluded with Christie's 2006 auction. The Apollo Auction was not able to push the value of monochrome painting to the next step of the cycle, so it is not representational in this analysis. Furthermore, the Apollo Auction house mentioned on Artnet was not traceable on the Internet, suggesting that it may be a small auction house that possibly went out of business. On the contrary, the auction by Christie's was able to draw significant attention to Dansaekhwa and push it to the next step of the "value cycle," as more and more exhibitions were later conducted featuring this art form.

DANSAEKHWA IN THE WEST

The transitory presentation of Dansaekhwa in the US was not sufficient to be remembered or recognized by the Western market. In fact, the moment when Korean monochrome painting was truly introduced and accepted in the West occurred rather recently. The very first gallery that held an influential exhibition on Dansaekhwa in the US is "Blum & Poe, a blue-chip gallery in Los Angeles" (C. Lee). Titled *From All Sides: Tansaekhwa* (an alternative spelling) on *Abstraction*, the exhibition was "curated by Joan Kee, art history professor of the University of Michigan-Ann Arbor and author of 'Contemporary Korean Art: Tansaekhwa and the Urgency of Method'" (W. Lee). This show, in fact, was inspired by "Seoul-based Kukje Gallery's exhibition of major Dansaekhwa artists such as Lee U-fan, Ha Chong-hyun, Chung Chang-sup and Park Seo-bo, held to rediscover Korean modern art" (W. Lee).

This LA exhibition sparked the first step of Dansaekhwa's "value cycle" in the US. As Dansaekhwa already had recognizable popularity among Asian collectors, auction houses immediately responded to this budding trend and began conducting auctions. Thus, "Park Seo-Bo's *Ecriture* series, dating to the 1970s, sold at auction December 2014 for \$55,432. Another of Park's works of comparable size and date sold a year later in 2015 for \$838,633" (C. Lee).

Korean monochrome painting was introduced into the US as "Korean minimalism painting". This might have been a marketing strategy since Western buyers were not familiar with this particular type of art. Admittedly, Dansaekhwa seems to have a lot in common with minimalism paintings, including the diluted color, the repetition of pattern, and the elaboration of simplicity. However, there are key differences between the two art forms. According to Yoon, "the school is devoted to the process of repetition and specificity of material based on meditative nature, which is the opposite of the Western Minimalism and monochrome's rationality and logic" (Hegert). There is an undeniable conceptual difference between the minds of Dansaekhwa and minimalism artists when they paint their works. In addition, "the Minimalists were more concerned with the perception of the work of art in relation to the viewer, while Dansaekhwa centers on the artist's fundamental, physical, sometimes spiritual, approach to paint and canvas" (Hegert). Another notable difference is that most Dansaekhwa artists painted on hanji, a traditional Korean paper. This, as mentioned earlier, resulted from one of the original incentives of Korean monochrome painting: national identity. Painting on traditional paper gave the works a sense of distinction from paintings from other countries.

As much as Dansaekhwa should not have been linked with minimalism, it was, and in a successful way. This time, Western buyers and collectors showed more interest than they did in 2006, which can be seen from the increasing number of exhibitions featuring Dansaekhwa artists. In fact, the strategy of comparing monochromatic and minimalistic paintings was so successful that Blum & Poe held another exhibition, specifically dedicated to these two type of arts. "Dansaekhwa and Minimalism," which is the title of this show, closed on March 12, 2016, but with a second installment at Blum & Poe's New York outpost from April 14 - May 21 with a presentation of smaller-scale works" (Hegert). These exhibitions further drove up the price of Dansaekhwa and made this art form widely successful -- so successful, in fact, that major auction houses started to take these art pieces seriously. According to Artnet, Sotheby's held an auction of Asian contemporary art in 2006, in which one of Park Seo-Bo's works was sold for \$36,000 (Artnet Database). In contrast, Sotheby's included Park's work in another auction held in 2016. This was a contemporary art evening auction, and Park's painting was sold alongside the works of distinguished artists like Andy Warhol and Damien Hirst. As a result, the work by Park was sold for \$12,125,000 (Artnet Database).

This latest auction record is a reflection of how much value the art of Dansaekhwa has increased over the past two years. Evidently, this is a much shorter "value cycle" compared to that of the Asian market, which took approximately 30 years. This may be partly because the value of art pieces not only requires marketing strategies and exhibitions, but also a considerably long time to

convey its historical status. Being linked to the national identity of South Korea, the art of Dansaekhwa is now considered to be extremely valuable to the Korean people. Therefore, half a century after its birth, its value increased explosively. Another possible reason behind this shorter cycle is the help of the Internet; as information can now be transmitted faster than ever online, the public is more readily exposed to different kinds of art. Art websites like Artnet can easily display an image online and show people that a new type of art exists. Therefore, as Dansaekhwa auction prices continue to break records, more people are getting exposed to this art form, and Dansaekhwa may become even more famous in the near future.

As value continues to increase for the art of Dansaekhwa, the second stage of the "value cycle" is not over. Korean art today is hotter than ever, and as long as the country itself remains a huge player in the world economy, it is expected that we will see much more from Korea than just Dansaekhwa.

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Understanding the Historical Context for the Neoliberal Attack on Public Education in the United States

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Each week, I have the opportunity to work with students from the Rochester City School District. A number of the students that I work with live near or below the poverty line, and they all attend school in what is often described as a 'failing' school district. Every week I find myself asking the same question: what if these students had been born in Finland? Had they been, they would benefit from what is widely considered to be one of the best education systems in the world. I would like to argue that contrary to popular belief, this educational success is not the result of a magic bullet, but a product of the expansive welfare state in Finland. The childhood poverty rate in Rochester is double that of the United States, and that of the United States is over 4 times that of Finland, which hovers around five percent. In other words, I argue that there is a strong, positive correlation between the extent of a nation's social welfare programs and the quality of the nation's education system. For the U.S. to ignore the role of the welfare state in Finland when discussing the education system is to perpetuate the issues that plague the education system in our country, namely poverty. Why has the U.S. not followed in the steps of Finland and taken steps to eradicate poverty? The answer, I propose, can be found in two places: amongst Protestants, and in Kansas. The emergence of capitalism in the United States is tied to the Reformation and rise of Protestantism, and the right has managed to capture the sense of individualism and distrust of government, which are also tied to anti-elitist feelings that the Reformation brought about. In places like Kansas, the poor and working class vote against their economic interests because of these social issues. A social safety net, a welfare state cannot emerge in these conditions. Neoliberal education reformers, who have everything to gain from an unequal society, are capitalizing on this ideology as they attempt to introduce privatization and market forces as the solution to the narrative that schools are failing.

Weber argues that Protestantism is closely linked to the rise of capitalism. As a predominantly Protestant nation, born out of a desire to practice the faith freely, this is of particular interest. Weber (1904-5) draws an important distinction between the Christian Church of the past (i.e. prior to The Reformation) and Protestantism. Weber outlines the role of the Church prior to the

emergence of Protestantism:

What does Protestantism and Kansas have to do with the disparity between the Finnish and American education systems? Nearly everything, actually. This disparity, and the proposed neoliberal solution, must be placed in the context of the size of the welfare state. In order to understand the welfare state in America, it we must first turn to Max Weber. In a groundbreaking work entitled, The Protestant Ethic and the Spirit of Capitalism (1904-5) For in a time in which the beyond meant everything, when the social position of the Christian depended upon his admission to the Communion, the clergyman, through his ministry, Church discipline, and preaching, exercised an influence...which we modern men are entirely unable to picture. In such a time the religious forces which express themselves through such channels are the decisive influences in the formation of national character. (Weber, 1904-5, pg. 81)

In other words, Weber lays out a history in which society is centered around the church. The church, which should be understood as an institution, plays an enormous role in people's lives because it is an institution that allows one to go to Heaven (the beyond). Taking Communion, interacting with Clergymen, abiding by certain rules, etc. are all means of comfort in so far as by participating, by being an insider, one is a part of an institution that will save your soul. The Church then becomes not only a part of the lives of the individuals, but also a part of the national character. It is not passive—the Church provides a means of assuring that you will go to heaven, but this requires devotion to the Church as something sacred, and a rejection of the secular.

In this way, the Church functioned as a sort of guarantee that was able to put people's minds at ease. Heaven was assured by membership and adherence. However, the Christian Church split as a result of the Reformation, instigated by Martin Luther, which created the groups that we know today broadly as Protestants. Addis (2015) argues that:

Even aside from the English Civil War, the Reformation encouraged democratic revolt against authority, and Protestants thrived in areas of Europe like Switzerland, the Netherlands, and England that contained small pockets of republican rule. These were the same areas that embraced capitalism. Just as Martin

Luther rebelled against the top-down authority of the Catholic Church, Dissenters in both England and colonial America rebelled against the divinely ordained authority of monarchies. Protestants also emphasized equality among worshippers, and that carried over into a similar emphasis on equality that slowly but surely worked its way into American politics between its Revolution and the 21st century. (Addis, 2015)

Notice the underpinnings of capitalism here. A rejection of top-down monarchical rule occurred in the same places that Protestantism took hold, particularly in the United States. This rejection of the monarchy, a belief in equality (which should be understood as applying largely to white men at this point in history), and the rise capitalism all occurred in Protestant regions. Weber offers a theory as to why this is:

The phenomenon of the division of labour and occupations in society had, among others, been interpreted...as a direct consequence of the divine scheme of things. But the places assigned to each man in this cosmos follow ex causis naturalibus and are fortuitous... The differentiation of men into the classes and occupations established through historical development became for Luther...a direct result of the will. The perseverance of the individual in the place and within the limits which God has assigned to him was a religious duty. (Weber, 1904-5, pg. 84)

Protestants envision themselves as standing alone before God in that they lack the Church as an institutional means to ensure their salvation. Instead, they exist as an individual in their unique place in the cosmos that God has assigned to them. For Luther, the division of people into classes and occupations—the function of capitalism—is a divine act. God assigned you to this role, and without the institution of the church as a means to ensure salvation, Protestants are of the mindset that they must perform their role (occupation) to the best of their abilities.

In this way, accumulating wealth, the driving force behind capitalism, is a religious endeavor:

Wealth is thus bad ethically only in so far as it is a temptation to idleness and sinful enjoyment of life, and its acquisition is bad only when it is the purpose of the later living merrily and without care. But as a performance of duty in a calling it is not only morally permissible, but actually enjoined. (85)

Wealth is not inherently sinful then, it is only when it becomes a means to enable a sinful lifestyle that it becomes morally problematic. There is then a sense of discipline associated with capitalism for Protestants. It is not an exercise in accumulating wealth for secular pleasure, but it is a form of duty because wealth is the result of performing one's duty in one's God-given role in the cosmos. Protestants stand alone before God, as opposed to Catholics who have the Church. Therefore, Protestants have only their God-given role to perform as a means of ensuring salvation. Capitalism, a system that creates occupations and classes and is driven by the desire to accumulate wealth is Protestant then. Capitalism is the result of the Protestant effort to work hard, to excel in one's role.

Protestantism is tied to the founding of the United States, as shown by Addis, and Protestants have traditionally made up a majority of the population in the country. That is no longer the case (Chokshi, 2015), though they continue to be a large group that reflects the influence that Protestantism has had on the United States. This is not to say, necessarily, that the traditional

conception of Protestantism still drives capitalism and wealth accumulation, but it is important to recognize that capitalism is deeply ingrained into the culture of the United States, especially in the Midwest and South (Chokshi). This deep-seated belief in capitalism is problematic in so far as capitalism necessarily produces classes, or inequality. Historically, especially in the 20th century, capitalism has coexisted alongside a welfare state. Hursh (2016) argues that, “the dominant social imaginary form of the mid-1930s to the early 1970s was social democratic liberalism” (Hursh, 2016, pg. 28). In other words, beginning with the New Deal Era Democrats under President Roosevelt, the United States maintained a welfare state, with New Deal Programs and the G.I Bill that helped to support and establish a (white) middle class.

Hursh goes on to trace the rise of neoliberalism in the United States, beginning in the 1940s and 50s with figures such as Hayek and Friedman serving as influential voices in favor of neoliberal reforms. He cites Kruse, arguing that, “conservative Christian churches and organizations worked together with the Chamber of Commerce and other neoliberal business organizations to push back against the welfare state and governmental limits on corporations” (28). This should not come as a surprise given Protestantism's relationship with capitalism. Finally, neoliberalism took hold in the 1970s with the 1971 Powell memo, “that articulated the dangers capitalism faced from the social democratic forces...” (28) and in the 1980s with the election of President Reagan (28). Neoliberalism is not a new ideology, clearly, but it is important to understand when discussing Finland and the United States.

What is neoliberalism? It is most fundamentally:

[An] ideology and policy model that emphasizes the value of free market competition. Although there is considerable debate as to the defining features of neoliberal thought and practice, it is most commonly associated with laissez-faire economics. In particular, neoliberalism is often characterized in terms of its belief in sustained economic growth as the means to achieve human progress, its confidence in free markets as the most-efficient allocation of resources, its emphasis on minimal state intervention in economic and social affairs, and its commitment to the freedom of trade and capital. (Smith, 2016)

Both neoliberalism, and social democratic liberalism, are rooted in classical liberalism, a belief in laissez-faire economics, individual freedom and liberty, and a restrained role for government, which associated with Adam Smith (Smith). The distinction is that neoliberals favor a very small role for the government, and limited regulations, while social democratic liberals view the volatility of capitalism as an impediment to individual liberty and perceive a role for the government in addressing that. This distinction is significant because while the Protestant overtones can be seen in neoliberalism, many Protestants live in the poorest parts of the country. The poor are the ones with the most to lose in an unregulated capitalist economy. Neoliberalism is a system in which the rich get richer and the poor get poorer. I will illustrate how neoliberalism has come to be associated with school reform, but first I would like to turn to Kansas to explore why people would support a capitalist system, grounded in Protestantism, that does not serve their interests. The poor and working class have a great deal to lose, but aside from the rich, it is not necessarily rational for anyone to subject themselves to the volatility of capitalism.

In an important book called *What's the Matter with Kansas?: How*

Conservatives Won the Heart of America, Thomas Frank (2004) asks the same question that I have: why would anyone but the rich support the conservative fiscal policies on the right? Why vote Republican? To summarize Frank's argument, I offer a lengthy, yet significant, quote:

...the Great Backlash [is] a style of conservatism that first came snarling onto the national stage in response to the partying and protests of the late sixties. While earlier forms of conservatism emphasized fiscal sobriety, the backlash mobilizes voters with explosive social issues—summoning public outrage over everything from busing to un-Christian art—which it then marries to pro-business economic policies. Cultural anger is marshaled to achieve economic ends. And it is these economic achievements—not the forgettable skirmishes of the never-ending culture wars—that are the movement's greatest monuments.

The backlash is what has made possible the international free-market consensus of recent years, with all the privatization, deregulation, and deunionization that are its components. Backlash ensures that Republicans will continue to be returned to office even when their free-market miracles fail and their libertarian schemes don't deliver and their "New Economy" collapses. It makes possible the policy pushers' fantasies of "globalization" and a free-trade empire that are foisted upon the rest of the world with such self-assurance. Because some artist decides to shock the hicks by dunking Jesus in urine, the entire planet must remake itself along the lines preferred by the Republican Party, U.S.A.

The Great Backlash has made the laissez-faire revival possible, but this does not mean that it speaks to us in the manner of the capitalists of old, invoking the divine right of money or demanding that the lowly learn their place in the great chain of being. On the contrary; the backlash imagines itself as a foe of the elite, as the voice of the unfairly persecuted, as a righteous protest of the people on history's receiving end. That its champions today control all three branches of government matters not a whit. That its greatest beneficiaries are the wealthiest people on the planet does not give it pause. (Frank, 5-6, 2004)

I offer this quote because it serves to illustrate not only what the 'matter' with Kansas is, but what the matter with the poor and working class that dutifully continue to vote Republican. The Great Backlash, as Frank terms it, appeals to social issues—such as abortion. Adams (1997) describes an issue such as abortion as an issue evolution—it is salient for a long period of time, it is polarizing and morally significant, and folks base their political affiliation around it. The Republicans have aligned themselves to the right of center on social issues, which tends to attract the most religious voters, who also happen to be in the poorest parts of the country. This anger, Frank argues, mobilizes the base and is used to elect fiscally conservative politicians into government—the laissez-faire revival.

There is another significant aspect that attracts voters who would not be expected to vote Republican based on fiscal concerns. Frank argues, in not particularly respectful terms, I would argue, that The Great Backlash is a revolt against elites. The poor and working class who feel that the country has abandoned them are attracted to the party that speaks to and empowers them. This has perhaps never been more clear than in the 2016 election, and the rise of Donald Trump. Making a similar argument to Frank, Chris Arnade (2016) argues that:

When they [disenfranchised Trump voters] turn to religion for worth, they are seen by the elites as uneducated, irrational, clowns. When they turn to identity through race they are racists. Regardless of their color. The only thing they can do, faced with that, is break the fucking system. And they are going to try. Either by Trump or by some other way. (Arnade, 2016)

Republicans, and to a much larger extent Trump, have positioned themselves as anti-elitist party because they respect these voters. There is a certain amount of white privilege that should be acknowledged (namely that white people have the opportunity to break a system that they feel has abandoned them), but it is important to understand how deep this anti-elitist feeling runs. The poorest sections of the country, the Midwest and South (Protestant in some way) supported Trump heavily because he validated them. They were not mocked for their religion, and he did not call them racist. He demonstrated respect for this particular group when no one else was. The problem is not with Kansas. The problem is with a party that has abandoned the white, working class voter. These people vote Republican, they vote Trump, to preserve some sense of dignity. They are not idiots, they are playing the cards they have been dealt.

Protestantism, historically the predominant religion in the United States, is tied to the development of capitalism. The matter with Kansas is not a problem with Kansas at all, it is the result of elites, especially in the Democratic party both abandoning and humiliating conservative voters, and pushing them to loyally cast votes that does not have their best interests in mind. What does any of this have to do with Finland? Or education? As I will try to prove, it has almost everything to do with both of these topics.

As a result of a capitalist system that creates classes, discrimination and segregation, and neoliberal policies that have worked to weaken the government's role to regulate and ease some of these burdens, we are left with the following:

- 23.1% childhood poverty rate in the United States as of 2012 (Adams, 2012, pg. 3)
- 55.2% childhood poverty rate in Rochester as of 2014 (Sharp, 2014)
- 16.2% extreme poverty rate in Rochester as of 2015, the highest of any comparably sized city in the United States (Riley, 2015)
- 13.5% poverty rate in the United States as 2015 (Proctor, Semega, & Kollar, 2016)

These numbers are morally reprehensible, to say at the least. To have such extreme rates of poverty, amongst children, no less, in the United States of America is truly disturbing. However, these numbers must be placed in the context that I have established: there is a strong tradition of capitalism in the United States, and a large part of the country that votes for conservative politicians based on social issues, thereby supporting politicians that do not favor a welfare state. Thus, neoliberalism has been taking root in the United States since the 1940s, and has become mainstream since the 1970s and 80s. These outrageous rates of poverty are one of the key features that distinguishes the United States from Finland. This has vast implications on education.

In short, the Finnish have nothing even remotely similar to this level of poverty. The nation has a 5.3% childhood poverty rate (Proctor, Semega, & Kollar, 2016) and 5.5% poverty rate (Yanke, 2014). The question then becomes how? How have the

Finns managed to produce such low levels of poverty? There is a two pronged answer to this question: the specific programs and services in place that comprise the welfare state in Finland and the underlying ideology that supports these programs. While it is beyond the scope of this paper to discuss every aspect of the welfare state in Finland, it is important to highlight some of the specific programs in place to support children and families. According to the European Platform for Investing in Children, Finland:

emphasizes reconciling paid employment with family life and ensuring an adequate level of income for families. Access to public day care is guaranteed to all children under seven and a generous system of family leave and allowances helps parents cope with their child-raising duties, while keeping their jobs secure. Services for children and families are based on the principle of preventive support. (European Union)

This is important because it implies an ideological position that is antithetical to that of the United States. This is not to say that Finland is a socialist country—it is not. Rather, it is a social democratic state. Again, this means that while the Finns have a role for the free market, citizens are not left to endure the worst aspects of the inequality it produces. Adequate income, public day care, family leave, and preventive support—a system of support meant to prevent poverty, not alleviate it once it is already in place.

Specifically, for example, the following set of social programs and benefits exist in Finland:

- A system of support to help balance work and family life, such as paid leave and childcare benefits
- 3.4% of Finnish GDP (€203 billion), as of 2013, is spent on financial benefits for children and families, a full percentage point higher than the EU average (European Union)
 - For comparison, the U.S. had a GDP of \$18.037 trillion dollars in 2015 (The World Bank), with roughly 10% going towards social welfare programs (excluding health insurance and social security (Center on Budget and Policy Priorities, 2016)
- Investments in early childhood education and a commitment to access to high quality education as an equalizer in practice, not only in theory (European Union)

Ideologically, this is fundamentally different from what we see in the United States. Following a model social democratic liberalism, the Finns have made supporting children and families, in all aspects of life, a priority. Again, it is important to note that this is not socialism. There exists a vibrant market economy in Finland. Rather, this is an example of a state in which poverty, especially amongst children, is seen as an impediment to freedom. Paid family leave, high government spending on supporting families with children, access to early childhood care and education, and a belief that all students have a fundamental right to a high quality education all work in tandem because the students and their families are supported. A basic quality of life is virtually guaranteed in Finland, and this is not seen in the United States. Rather than subject children and families to the uncertainty and inequality of market forces, the Finns have taken active steps to alleviate these undue burdens and provided genuinely equal foundations upon

which all students are given the opportunity to succeed.

We have seen how both Protestantism and the ideological stance of ‘Kansas’ can be used to explain why the United States has not maintained a robust set of social programs like those seen in Finland. How was this achieved in Finland? In order to answer this question it is helpful to refer back to the United States as a foil. Recall, in the United States, not only the strong distrust of the government and of elites that was central to the founding the country (beginning with religious dissenters and throughout the American Revolution), but also the distrust that is embodied today by Trump voters. This distrust is not present in the Nordic states, and the Nordic welfare model, upon which the Finnish model is based, relies upon this:

The Nordic welfare model is based on an extensive prevalence of the state in the welfare arrangements. The stateness of the Scandinavian countries has long historical roots and the relationship between the state and the people can be considered as a close and positive one...the 20th century state has not been a coercive apparatus of oppression in the hands of the ruling classes...The role of the state is seen in extensive public services and public employment and in many taxation-based cash benefit schemes. (Alestalo, Hort, Kuhnle, 2009, Pgs. 2-3)

This, I would argue, is the most fundamental difference between the United States and Finland. There is a strong tradition of distrusting large government in the United States, and it is deeply rooted in groups of people that would benefit from it. The Nordic states, Finland included, do not have this tradition. Instead, the state has both the benefit of a close and active relationship with citizens, but also a reputation as not being a coercive mechanism of elites.

There is a second important factor that I believe distinguishes Finland from the United States: universalism and equality. Alestalo, Hort, Kuhnle distinguish the two, but for the purposes of this research I would like to collapse the two. There is a popular rhetoric in the United States that has perpetuated terms such as ‘lazy,’ ‘entitled,’ and ‘Welfare Queen,’ that is meant to portray welfare as something negative and shameful. Notice, however, that this shame relies on welfare benefits only being made available to low-income persons. Universal benefits, like Social Security, are never spoken about in this way. Francis Fukuyama makes a compelling argument as to why this is the case:

[D]ifferent groups have different abilities to organize and defend their interests ...[M]iddle-class groups are usually much more willing able to defend their interests...than are the poor. This makes such universal entitlements as Social Security or health insurance much easier to defend politically than programs targeting the poor only. (Fukuyama, 2014, pg. 10)

The poor, who lack the same voice in the United States that the middle class has, are in weaker position to defend entitlements than the middle class. It is only the universal entitlements that are politically stable. Entitlements targeting the poor are politically easy to attack because they cannot be defended, and because they can be framed as anti-American. This is not the case in Finland, “In the Nordic countries the principle of universal social rights is extended to the whole population. Services and cash benefits are not targeted towards the have-nots but also cover the middle classes” (Alestalo, Hort, Kuhnle, 2009, pg. 3). In this way, the benefits are more politically stable because everyone benefits.

Everyone has an equal stake in the benefits of the welfare state. This should be placed in the context of greater historical equality, “The historical inheritance of the Nordic countries is that of a fairly small class, income, and gender differences...This inheritance is seen in small income differences and in the non-existence of poverty” (3). A tradition of equality, universalism of benefits, and a close relationship between the state and people make Finland out to be an extremely different country from the United States.

It is worth briefly discussing the how this state of affairs came to be. The authors argue that the Scandinavian route followed a unique trajectory:

Three factors are of major importance in characterizing the Scandinavian route of a peaceful process of general change from semi-feudal agrarian societies to affluent welfare state societies. The Scandinavian route was not paved by bourgeois revolution as in Britain and France, or by conservative reaction culminating in fascism in Germany, or by peasant revolution leading to communism in Russia... These three transformations are:

1. The increasingly strong position of the peasantry during the preindustrial period which was connected with
2. The weakening positions of the landlords and the power-holding aristocracy as a result of domestic crises and international conflicts through which Scandinavia
3. Became a peripheral area in economic and political terms (4-5)

The contrast with the United States is obvious. While the U.S. was created out of revolution, which although does not have explicit classist undertones, the Scandinavian states had a more gradual transition into modern statehood as “affluent welfare societies.” This transition, which can help contextualize the equality and trust of the government, is important to understanding Finland and its success. One notable area of success is in education.

The purpose of this paper, thus far, has been to provide an understanding of how the United States and Finland came to be the countries they are today, especially with regards the size and extent of the welfare apparatus. This is important because the education systems in these two countries, and the reform movement in the United States cannot be understood independently of this context. To do so, I would argue, is destructive. Finland is often touted as having one of the best education systems in the world, as if there is some magic bullet in Finnish education. This is not a productive line of inquiry for the United States to pursue because it reinforces the myth that it is the education system alone that creates this success. This only serves to perpetuate underlying issues, namely poverty, in the United States that depress educational outcomes because it feeds into the narrative that there is something that can be changed in the education system to make it more effective. I would like to argue that until we address the underlying issue of poverty, educational reform movements, particularly neoliberal reforms, will continue to fail.

There is no single way to assess an educational system’s success or failure. One possibility is to look at how teaching is perceived in both Finland and the United States. In Finland, teaching is a prestigious profession, as Pasi Sahlberg argues:

In fact, Finnish primary school teacher education programmes that

lead to an advanced, research-based degree are so popular among young Finns that only one in 10 applicants is accepted each year. Those lucky students then have to study for five to six years before they are allowed to teach a class of their own. (Sahlberg, 2015)

Teaching is a well-respected and highly selective profession in Finland. Teacher education programs accept a similar percentage of applicants that U.S. universities do into prestigious medical and law programs. Teaching in the United States, on the other hand, is not prestigious, and I would argue that it is not a profession in any meaningful sense of the word. Programs such Teach for America, and the ability to teach for five years across much of the country without a Master’s degree undermines the status of teaching as a profession. Teaching fails to meet any one of Ernest Greenwood’s (1957) five criteria of a profession.

Teaching is much more highly respected in Finland than in the United States. Another metric, imperfect, though not insignificant method, is PISA scores. The Program for International Student Assessment is a product of the Organization for Economic Cooperation and Development (OCED), and it is administered in the United States by the National Center for Education Statistics (NCES) (NCES, 1). The NCES describes the exam as:

[A]n international assessment that measures 15-year-old students’ reading, mathematics, and science literacy every three years... By design, PISA emphasizes functional skills that students have acquired as they near the end of compulsory schooling. (1)

In other words, PISA, which is administered every three years, is designed to provide an objective means to compare students across international education systems across three different content areas. While I will not be relying entirely on PISA scores as a means of assessing the strength of an education system, largely because to do so would be condense a nation’s education system down to one exam administered to 540,000 students representing 29 million students in 72 countries (OCED, 3), this does provide a means to begin to assess the relative strength of students. These are the mean scores of Finnish nations and the United States:

Mean PISA Scores and Ranks

Nation	2015 Rank	2015 Mean Score	2012 Rank	2012 Mean Score
Finland	5	531	12	519
United States	24	496	35	481

Again, PISA scores should be interpreted with a grain of salt. In fact, while the United States appears to perform relatively poorly compared to Finland, averaging well over 30 points lower on the last two PISA exams, this is misleading. Jonathan Rabinovitz, writing in “Stanford News,” argues that the United States actually performed quite well when an important factor is taken into account:

Socioeconomic inequality among U.S. students skews international comparisons of test scores, finds a new report released today by the Stanford Graduate School of Education and the Economic Policy Institute. When differences in countries’ social class compositions are adequately taken into account, the performance of U.S. students in relation to students in other countries improves

markedly. (Rabinovitz, 2013)

Recall the extremely high rates of poverty in the United States, and the comparatively low rates in Finland. Engle and Black (2008) provide an extensive analysis of the negative effects of poverty. In the United States specifically (as opposed to developing countries in this research), they argue that,

The association between poverty and children's development and academic performance has been well documented, beginning as early as the second years of life...Low income children are at increased risk of leaving school without graduating...[and] children in impoverished families have lower cognitive and academic performance and more behavior problems than children who are not exposed to poverty... (Engle & Black, 2008, pg. 14)

There is a plethora of well-documented effects of poverty on educational outcomes, and they begin early in life. Recall Finland's efforts to support families and children, specifically during early childhood with regards to education. With this in mind, the Finnish education system begins to appear less mythical. The success that is attributed to the system may not be entirely accurate. Yes, the teachers are trained well, but Finland addresses the contextual issues. Students who live in poverty simply are not in a position to learn effectively. Finland's status as a welfare state means that it is capable of preventing children from having to live in poverty. Quite frankly, this is not rocket science. Far too often, in the United States, education is propped up as the solution to poverty. In reality, as Finland, shows, it is the other way around: eliminating poverty is the solution to what is perceived to be an ineffective education system.

Thus far, I have shown why the United States and Finland have developed the welfare policies that they have. The extensive welfare state in Finland is a major reason why the nation's education system is so successful. The traditions that the United States has been built on make the establishment of an expansive welfare state, similar to the Nordic model, unlikely, though I do think it is important to recognize the fact that without a commitment to fighting poverty and supporting families and children, the state of affairs in American education is unlikely to change.

There is a widespread perception in the United States, citing evidence like low graduation rates and 'low' PISA scores, relative to nations like Finland, that public schools are failing and that teachers are ineffective. In response to this narrative, which is not new, a reform movement has emerged: corporate reformers who are motivated by neoliberal ideology. I have shown how it is possible for neoliberal ideology to take hold and become mainstream in the United States, and my final task is to illustrate what that means for public education. Neoliberal ideology has been connected to education prior to the modern corporate reform movement. Notably, in 1955, Milton Friedman, a neoliberal economist, published an article called, "The Role of Government in Education," in which he argued for what amounts to a voucher system, a form of privatization. Part of a larger ideological stance, Friedman included this work in his 1962 book, *Capitalism and Freedom*. Since then, Friedman's work has become a major tenant in the corporate reform movement (Hursh, 2016, pg. 28). Friedman himself says that, "Little did I know...that it [his article] would lead to my becoming an activist for a major reform in the organization of schooling" (Friedman, 2006, pg. vii). This is one of the earliest instances of neoliberal ideology

being applied to education.

Hursh (2016) has shown that neoliberalism entered the mainstream in the United States during the 1970s and 80s. It is important to understand that, "The rise of neoliberalism in the United States was accompanied by increasing attacks on public education, beginning with the 1983 report from the National Commission on Excellence in Education (NCEE) that we were a 'nation at risk'" (Hursh, 2016, Pg. 30). A Nation at Risk, a report put out by the Reagan administration, is an example of schools serving as a punching bag of sorts. Madaus, Russell, and Higgins (2009) argue that:

Focusing blame on education obscures the failings of business, military, and political institutions. Given its costs and dependence on tax dollars, the educational system is in a strategically weak position to fend off attacks. Yet, education's critical importance for society assures its resilience, that in turn makes it available for blame when reforms fail or new societal problems arise...This focus on the educational system, as a whole rather than specific groups of students, makes a one-size fits all testing program an attractive solution...mandated testing programs that link rewards or sanctions to test scores chronically triggers a number of unintended and often negative consequences. (Madaus, Russell, Higgins, 23-4)

Neoliberals are engaged in a war on education because education is an easy target, and it can be framed in such a way that the country's failures—in the realms of business, government, and the military—can be understood as the fault of a failing education system and ineffective teachers. Public education's weak position can partially be understood as a result of the lack of a welfare state in the U.S. As a public agency, there is a certain amount of distrust and criticism that public education endures, as well as a perceived inefficiency. While, as I have established, it is not the fault of the public school system for low academic performance, the system is blamed nonetheless, and corporate reformers encourage this.

The corporate reform movement is comprised of prominent political figures such as President Obama, former Secretary of Education Duncan, current Secretary of Education King, former Chancellor of D.C. Public Schools Michelle Rhee, and Governor Cuomo amongst others. The other half of the corporate reform movement is comprised of what Diane Ravitch (2010) refers to as "The Billionaire Boys' Club." The 'club' is a group of wealthy members of the business community, such the Gates, Waltons, and Broads, working through their foundations to influence and fund education reform in the United States. Despite having no background in education, the club has been engaged in what Hursh refers to as venture philanthropy, which is a means of:

[U]s[ing] philanthropy to design and implement education policies reflecting their neoliberal political agenda of privatization, markets, efficiency, and accountability...the foundations...use their wealth to actively promote their vision of society... (Hursh, 2016, pg. 34)

It is a neoliberal vision of society, a society in which the rich get richer, and the poor are left to fend for themselves in the absence of a large social safety net as the small one that is in place is continually attacked.

These reformers, who are joined by hedge fund managers and backed by companies like Pearson, all of whom stand to profit from the privatization of education, use the reform movement to paint public schools as failing and teachers as ineffective.

High stakes testing, evaluations, and laws and programs such as No Child Left Behind (2002) and Race to the Top (2009) which force schools to adopt these neoliberal reforms all ignore factors like poverty. Students perform poorly on exams because they are subjected to an inefficient teacher, not because they live in poverty. Why would neoliberal corporate reformers put forth any other argument? Hursh, drawing on Ravitch, exposes corporate education reform, which is grounded in neoliberal faith in market forces and competition, as a rouse:

Ravitch...submitted that the focus on standards and charter schools by the Billionaire Boys Club is a "purposeful distraction" from paying attention to more difficult social problems that will improve students' learning: eliminating poverty, ending hunger, providing healthcare, and creating for parents well-paying and meaningful jobs. (35)

The reformers have set the schools up to fail and offered their handmade solution: privatization. This intentionally ignores the cause of the success in Finland. To create legitimate success would require a massive restructuring of society, and that would cost these wealthy reformers money. It is not only this group that would stand opposed however. A strong capitalist tradition in this country, tracing its roots back to the Protestant Reformation, and the conservative stranglehold of the South and Midwest assures that broad welfare reform is unlikely to occur any time soon. The neoliberal corporate reform movement has history on its side, and little to worry about from Finland.

The public education system in the United States is at risk. The corporate neoliberal reform movement, which is at home in the United States given its history and ideological makeup, is poised to continue its effort to privatize education. High stakes testing tied to teacher evaluations in particular serves to reinforce the notion that America's schools are failing, and that ineffective teachers are to blame. If only our teachers were as effective as those in Finland! This is a dangerous line of thought, however. It feeds the neoliberal narrative that America's teachers are ineffective, and that privatization and market forces being introduced is the answer—laws and competitions such as No Child Left Behind and Race to the Top illustrate the amount of influence neoliberal ideology has on education. This, however, only serves to distract us from the real issues plaguing our students: namely poverty. Finland established a welfare state and enjoyed the benefits in its education system. The United States is in a far different position, currently and historically. The purpose of this paper has been to analyze why this—we cannot hope to change a country that we do not understand, and we cannot hope to blindly emulate another that is so different from our own. Regardless, we must push back against the neoliberal attack on public schools and fight for the establishment of government programs to combat and eradicate poverty. We owe it to our students, who cannot defend themselves.

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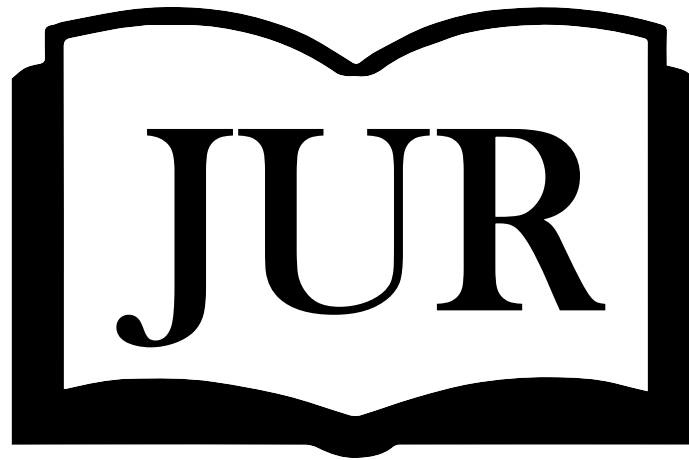
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Dangerous Women of Soviet Education Posters: The Iconography of the Soviet Prostitute in Representation of Venereal Diseases in USSR

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As “seeing” also means “understanding,” images have been one of the most efficient ideological tools for “explaining” an idea to the masses. In the Soviet Union, the propaganda poster was an essential part of everyday life. During his stay in Moscow in the winter of 1926, German cultural theorist and philosopher Walter Benjamin noted the abundance of propaganda posters displayed on the walls of a factory he visited:

The walls are hung with propaganda posters and portraits of famous revolutionaries or images that stenographically summarize the history of the Russian proletariat . . . Many of the posters are directed against alcoholism, a theme that is also addressed by the wall-newspaper which, according to the program, should appear every month but which in fact comes out somewhat less frequently. Its (poster’s) style on the whole resembles color comic for children: pictures and prose with some poetry mixed in, all in various arrangements. (Benjamin, 60-1)

The Soviet poster was communicating the Party’s position in regards to political, as well as everyday issues. Its official stance on questions of policy was as monosemantic as that on the questions of public and individual moral code of the new Soviet person. In its consciences-making faculty, the poster dedicated to sexually transmitted diseases used the female body to personify the disease, as well as the “amoral” behaviors that cause it. As a result of such representation, it created a gendered reality that placed men and women in different positions with respect to the disease. In her analysis of the Soviet sanitary enlightenment poster, Frances Lee Bernstein noted that these images are “peopled primarily by men.” Bernstein continued: “The male image becomes both normative and neutral: his health needs and problems can stand for anyone’s. Women, on the other hand, can represent only particular health issues . . . Sanitary enlightenment illustrated health as a male event and, consequently, naturalized manliness” (Bernstein, 108). The male body and the attributes of masculine physique were presented as the ultimate manifestation of ideal health, both physically and spiritually – the antithesis of disease. When it came to questions of sexually transmitted diseases, the woman’s body emerged. It was not naturalized, but rather demonized, as the personification of the illness. The treatment of the female

form, however, demonstrates itself to be subject to metaphorical, rather than idealist, thinking. As the AIDS Education posters illustrate, the more foreign the origin of the disease, the more its carrier is rendered alien. Her pseudo-human shape is what contains the danger. As sexually transmitted diseases became a more pressing issue at the dawn of the century with the AIDS epidemic outbreak, the female body was portrayed increasingly defaced, subtracted to the role of a carrier, as being the disease itself. The Soviet propaganda posters of the Ministry of Health used imagery of the female body in addressing the topic of venereal diseases, gradually developing new ways of channeling the message of sexual danger through the female body.

The figures of women in Soviet iconography tend to be roughly divided into two categories: “mothers” and “whores.” While the image of the Soviet mother is complex in that it encompasses both the worker (with highly masculine attributes, both of body and character), she is also a loving and self-sacrificing figure, a personification of the motherland (Figure 1). The other deviant state of femininity is painted monochrome and one-dimensional. If the mother is depicted in spaces of labor (fields, factories), as well as in domestic scenes (taking care of children and rarely engaging with her husband), the “dangerous woman” is a creature of the streets, lurking in the shadows, hidden and deadly. In the education posters from the 1920s (Figure 2), the treatment of the female form delivers this sense of danger through the partial masking of the female features. The woman’s face is partially covered by her hat that is casting a shadow over her forehead and right eye. We are distinctively shown her lips, to which we can see, based on the difference in the shade of black, she has applied lipstick. Her hand, raised to her mouth as she is holding the cigarette, draws more attention to her sly smile. Her left eye is looking playfully at the man who is lighting her cigarette. She is the largest figure depicted. The man’s body, presented to us in profile and cut slim by the edge of the poster, seems secondary to the compositional message of the image. The woman, on the other hand, is not only placed in the center of the composition, but is further framed by the tree trunks placed on either side of her. She is the barrier between the man and the crowd of pedestrians walking in the light of the apartment houses. Her

ГЕРОИЧЕСКОЙ СОВЕТСКОЙ ЖЕНЩИНЕ



Figure 1.

role in preventing the man from joining the collectivist mass, in distracting him from socialist values, is precisely where her evil stems from. The words of the posters state a simple Soviet truth: “Casual sexual encounters – main source of venereal diseases.” The physical illness is depicted as consequential of a moral one. The source of illness (moral weakness), in turn, seems to be a woman who has not yet been given a face, but a body – an aggressive sexuality.

In further examining the iconography of the prostitute in the early Soviet period, another important aspect of her image emerges: her facelessness seems to alleviate any moral responsibility from her. Her image is not awarded with a moral dimension, but only a sexual one (Figure 3). The prostitute does not seem to be faced with the possible consequences of her promiscuity. As her meeting, characteristically set in a dark alley, is interrupted by what seems a robust divine intervention, she does not attempt to run or even turn away from her retribution. She is fearless, leaning on the bench, propping her arm on her hip, and holding her head high. Her posture is not that of a criminal nor a victim – which is more than what one could say about her partner in crime. The man on the bench is swept up by the muscular arm of the intervening forces of what is good and moral, his face twisted with fear, his

body attempting to escape the scene. The message of the poster urges Soviet people to engage in the fight against prostitution, to “help girls and women get a profession,” to “expand the building of boarding houses and workshops for the unemployed.” The prostitute is not only to be feared, but also to be pitied. Her destructive power does not belong to her, but rather manifests itself in the weakness and flaws of a man, of society as a whole. However, her facelessness and one-dimensionality makes her an easy object to fear, and a nearly impossible one to fix or eliminate. Even in the image dedicated to the prevention of prostitution, the god-like socialist giant enters the space of prohibited sexuality in a beam of light to rescue the man and enlighten the woman. Considerably more effort is made in retrieving the man – he is being physically pulled out of the alley, whereas the woman is not to be touched. Rather, she is casted a judgmental gaze and is pointed the way towards a better future. Perhaps the lack of physical contact further enforces the idea of contamination, either in an ideological or a physical sense. This image also leaves space for speculation regarding whether the prostitute escapes her punishment from the socialist giant, and whether she presents herself to him in order to expand her clientele. Even this reading of her posture contributes to the idea of promiscuity and the lack of moral standards encompassed by the figure of the woman.

The question of culpability becomes more substantial once the 1926 Article 150 of the Soviet Criminal Code is passed. This article was passed to ensure the punishment of a person who passes a venereal disease to another. In a poster (Figure 4) dedicated to informing its viewer about this article, once again a faceless female form is depicted. Here, the dual nature of the female form is portrayed; the female form is both the victim and the ultimate cause of its own suffering. The woman, with her hair carefully gathered into a braid, looks up at her husband, implying obedience and her gentle nature. The man, on the other hand, is depicted as both demon and animal. His features are cut deeply into his face, composing a villainous grimace, full of harmful intent. Once again, we see the muscular arm of the socialist order, or rather, of Article 150 itself (the words Article 150 on the poster seemingly indicate the arm being a personification of



Figure 2 (left) and Figure 3 (right).



Figure 4.

the law) reaching out for a man who is about to harm a poor woman. At first glance, it seems that, in this case, the man is assigned responsibility – not only is he the carrier of the disease, but he uses his sickness to intentionally inflict harm upon a woman. However, the monstrous female, as usual, is hiding in the shadows, quite literally. The silhouettes cast on the wall behind the figures tell the story of contamination, which is quite opposite from the story presented to the viewer in the foreground. The female profile shows a woman with messy hair and a sharp nose, her lips parted in an inviting half-smile. The silhouette of the man does not seem to bare any particularly villainous characteristics. The promiscuous woman is, once again, in the center of the composition – hers is the most complete and comprehensive portrait we get, and yet, we know nothing about her, except the damaging nature of her sexuality.

Despite the facelessness of dangerous women, their image is built upon the acknowledgement of their humanity; their silhouettes are recognizable from everyday life. They are a common evil, a collective ghost of the philistine uneducated woman from pre-revolutionary times, as well as a sign of amoral capitalist values threatening the progress of socialist society. She is something to be dealt with, but not interacted with; judged, but not touched. The collective understanding of the female image in the context of sexually transmitted diseases is just as incomplete and vague as the image itself. The sexophobic nature of early Soviet health discourse gradually rendered the topic marginal, and by the end of 1930s, sexually transmitted diseases disappeared from the public health rhetoric. The representation of a dangerous woman vanished from the matrix of Soviet existence.

During the period leading up to World War II, the Soviet mother becomes the normative embodiment of the Soviet woman. As socialist values supposedly developed and grew strong within the society, sex and the dangers that came with it were eliminated from the constructed Soviet reality. The personification of the motherland (Figure 5) becomes dominant during the war and the post-war periods, as the country attempts to recover from a devastating warfare. Motherhood is seen as one of many forms of women's contributions to the collectivist good. As the country's morale had to be aided with patriotic symbols, the idea of unity was projected onto the collective consciousness through the image of the mother of all the Soviet people – the Motherland

calling for her loyal sons. The dangerous woman does not have space within the post-war visual discourse.

The portrayal of female sexuality as deviant in its facelessness, however, further developed with a new disease entering the realm of sexual danger in the late twentieth century. Now, instead of domestic in its origin and unintentional by its nature, the harm brought by the female form is imported from the land of an ideological enemy, intentionally seductive and detrimental.

Acquired immune deficiency syndrome (AIDS) has become a global phenomenon in a matter of a decade. Alien to the developed nations (considering the African roots of the disease), AIDS spread in the US and was now manifesting itself in the bodies of the Soviet people. The first case in the USSR dates to 1987, when the Soviet discourse deemed AIDS as consequential – a punishment for the frivolous and amoral Western lifestyle. In his 1985 article *"Anotomiya Sensatsii"* ("The Anatomy of a Sensation"), S. Lyapich explains to his readers that the illness is, at its core, an after-effect of the Bourgeois culture. "In the USA, for example," S. Lyapich explains, "prostitution of all forms is legalized. Bourgeois morals tolerate in human nature what is unnatural to the most of the animal kingdom. That is their understanding of 'human rights.' However, the number of infected through a homosexual intercourse has been greatly reduced. They got scared. No wonder – 75% of people diagnosed in the US have died." When it came to considering the possibility of contamination of national health with the western plague, Lyapich adopted a superior can-do outlook, reassuring his reader that the Soviet people, removed from the Western hysteria, if faced with this challenge, would be able to handle it with dignity and composure, despite the lack of pre-existing conditions that would lead to the spread of the disease. "The scientific community, however, does not have all of the information regarding the reemergence of the epidemic. It is yet to be discovered. And although the social reality of our country does not allow for the spread of AIDS, we must remain alert. The development of prevention of that disease is a feasible task. The Western commercial hype has very little to do with it" (Sovetskaya Belorussiya №272 November 24, 1985). The general denial in regard to the virus spreading among the Soviet public stemmed from the belief that AIDS is the disease punishing the Western, immoral individuals, and because Soviet society, by that point, was free from sexual "perversions," there was no reason to worry. It is worth mentioning that the outbreak of the epidemic coincided with the peak of the Cold War, which provided yet another sphere of public life to be addressed in the general rhetoric of demonization of the west. In the visual representation of AIDS in the late Soviet period, the female body became the grounds for an ideological battle. However, that school of thought was shaken when in 1988, the virus was found in the systems of more than thirty newborn children in Elista - the "disease of prostitutes, homosexuals and the poor" was found in the bodies of innocent Soviet children. The infection was transmitted through medical equipment that was not properly sterilized. Soviet health was invaded. The enemy was of foreign origins and of heinous intent - it had to be fought, and thus, imagined and given a form.

It was in the late 1980s that the image of a dangerous woman, the prostitute, was brought back into the ideological palate of the education poster. The new image had to deliver not only the sense of dangerous sexuality, but also its direct relation to



Figure 5 (left), Figure 6 (center), Figure 7 (right).

the bourgeois morale. The idea of the prostitute once again became the concept through which the corruptive qualities of western values were channeled. A poster from 1989 (Figure 6) depicts a money purse decorated with a large pair of red lips and a cloud of uncontrollable curly hair (perhaps alluding to Africans, conventionally seen as “savage” origins of the disease) that frames the upper edge of the purse. The words on the poster read: “AIDS. For the moments of pleasure, you will pay with your life.” The symbolism of this depiction of disease alludes to the consumerist culture of sexual exchange. Furthermore, the entire composition and design of the purse, colored in a skin-tone beige, embroidered with sensual lips and curly, almost pubic-like hair, renders the image pliantly vaginal, which in a culture of sexual oppression, evokes disgust and discomfort in its viewer. Here, the disease is a monster, a combination of everything in the female body that emanates danger. As in the posters from the beginning of the century, where the face of the woman is concealed as if the system itself was ashamed to shed light on the faces of its promiscuous daughters, in the 90s, the poster presents a collective image of the prostitute, where her face, once again, escapes us.

The lack of an actual face, however, is not the only way that the visual representation of the epidemic demonizes the female form. Some posters attempted to warn their viewers about the nature of the illness through combining the two main publically accepted sources of AIDS – sex and drugs – in one formal embodiment, as shown in a poster from 1990 (Figure 7). Here, under the slogan, “AIDS does not sleep” (which in Russian has a whimsical rhyming quality), a siren is depicted. Bare breasted, standing on her hands with claw-like red nails, the figure carries what seems to be wings composed of fiery syringes. The siren has a face, colored with blush and a peaceful half-smile. The use of the female form, with accented attributes of the female body, carries danger not only figuratively, but also literally. On her back, we see the syringe of an addict transmitting the disease. No matter how human-like the face of the siren appears to be, her torso, the mythological nature of her physical form, carries the creature into the realm of the unreal, the otherworldly, and therefore, the non-human. The effacement here happens on a contextual level, distancing the image from reality as the viewer knows it.

The metaphor that is assigned to AIDS here is deadly to its viewer, as it presents the illness as something distant, inflicting terror from a remote place of myths and legends of lethal seduction. In her work *AIDS and its Metaphor*, Susan Sontag considers the risk in committing the disease to metaphorical interpretation: “the metaphors and myths . . . kill” (Sontag 102). Sontag argues that by poeticizing the ailment, people, and more importantly, she argues, patients are unable to see the disease for what it is, as “just a disease – a very serious one, but just a disease” (Sontag 102). In constructing the identity of AIDS, the Soviet poster creates a monster, an otherworldly creature. Sontag addresses the idea of deeming the illness mystical. “There is a link,” she writes, “between imagining disease and imagining foreignness. It lies perhaps in the very concept of wrong, which is archaically identical with the non-us, the alien” (Sontag, 136). The supernatural nature of the image that both rewards AIDS with a face, and single-handedly defaces the female form with the implication of falsehood, makes a comment on the disease’s relation to the world of viewers, warning us about both his distance from the “sinful” realm, as well as the consequences of his bridging that distance.

Despite the power of the female form to infect with a deadly disease, similarly to those from the 1920s, the posters dedicated to the AIDS epidemic do not assign particular agency to the female form. Her power exists only in relation to the viewer’s powerlessness before her charm, and she is, ultimately, invulnerable. Although a woman is a carrier, she does not suffer from the disease – whether it is out of ignorance and frivolity, as is the case with the early images of Soviet prostitutes, or out of the disease being her nature, and therefore her natural state and purpose. In the visual discourse of AIDS in the late 1980s, the woman becomes the disease – AIDS is now female. This gendering of the illness does not only illustrates the bias with which the female is considered, but also tells us about the target audience of these images. The ultimate victim, the threatened body, is male. Because the masculine, as Berstein points out, becomes normative, and due to its implication that health is “a male event,” the viewer, regardless of his or her sex, adopts a male point of view (Berstein, 108). In this 1989 poster (Figure 8), the viewer is included in the



Figure 8 (left), Figure 9 (right).

compositional space of the image as a silhouette of a man's hat. The male figure is facing a slightly ajar door, lit by a beam of white light emanating from the top of the composition. The geometric shape that the light takes seems to be an inversion of an upside-down triangle appearing in the poster dedicated to the prevention of prostitution in Soviet society (Figure 3). Unlike the intrusive, sharp end of the shape that breaks the scene of indecency, this shape is luring the victim in, spreading its sides to beset its victim, and, similarly to a siren song, hypnotizes him and lures the man towards his destruction. The big red lips, now depicted as one-dimensional and positively caricature-like, as well as the outline of a hat that would have veiled the face of a woman, construct an ephemeral body with a limitless presence. Here, the disease is personified as something that cannot be physically addressed. The disease is not a body (a woman in a dark alley, a siren), nor is it a subject (a money purse). It is light, a wavelength, an entity all-consuming and all-penetrating by definition, and it is indicated to the viewer through the gendering of its representation.

As the political context of AIDS changed for the Russian public with the fall of the Soviet Union in 1991, a global, more human perspective on AIDS has emerged in the post-Soviet space. The tradition of an ideological image as an act of aggression against the female body has begun to gradually fade. More contemporary posters, such as Figure 9, do not only move away from demonization of the illness, but show a person supposedly

infected with the virus. Here, the dichotomy of the female image is not as pronounced, as the mother is no longer sexless but has a body that can be infected. AIDS has received a face: female, but human, well-lit, and destigmatized. In this particular example, as follows from the poster's text, the woman depicted is a mother asking to be heard. The dehumanization and demonization begin to fade.

Political artwork, in a way, is always an act of aggression, as it claims to organize the viewer's experience of oneself within a given ideological structure. The content of such artworks extends far beyond the frame of an image. It is aggressive in its totality, and it is precisely this totality that propaganda art relies on. However, with the demise of the Soviet regime and its need to construct the reality of socialist society, the propaganda poster has lost its instrumental function. The iconography of the Soviet prostitute that was meant to give shape to all that was damaging to the socialist order, has, in turn, lost its symbolic weight. The discourse has shifted from that of blame and denial, to that of acknowledgement. The transition into acceptance and compassion is yet to come.

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Fig. 1. Nina Vatolina, *Praise the heroic Soviet woman*. 1946. Digital Image. Available from: http://softsalo.com/sovet_45_soci/soci_71.html (accessed August 20, 2016).

Fig. 2. *Casual sexual encounters – main source of venereal diseases*. From: Bernstein, Frances Lee. *The Dictatorship of Sex: Lifestyle Advice for the Soviet Masses*. DeKalb, IL: Northern Illinois University Press, 2007. Figure 4. 1.

Fig. 3. Narkomsdrav RSFSR. *Let us fight prostitution – shameful legacy of capitalism. Let us help girls and women get a profession, expand the building of boarding houses and workshops for the unemployed*. From: Bernstein, Frances Lee. *The Dictatorship of Sex: Lifestyle Advice for the Soviet Masses*. DeKalb, IL: Northern Illinois University Press, 2007. Figure 4. 9.

Fig. 4. Narkomsdrav RSFSR. *Article 150 severely punishes those who infect someone with venereal disease*. From: Bernstein, Frances Lee. *The Dictatorship of Sex: Lifestyle Advice for the Soviet Masses*. DeKalb, IL: Northern Illinois University Press, 2007. Figure 4. 10.

Fig. 5. Irakliy Toidze, *The Motherland Calls*. 1941. Digital image. Available from: <http://www.moscowbooks.ru/auction/offline.asp?id=1&categoryId=3> (Accessed August 15, 2016).

Fig. 6. AIDS. *For the moments of pleasure, you will pay with your life*. 1989. Digital image. Available from: <http://aep.lib.rochester.edu/node/47577> (accessed July 10, 2016).

Fig. 7. *AIDS does not sleep*. 1990. Digital image. Available from: <http://aep.lib.rochester.edu/node/47682> (accessed July 10, 2016).

Fig. 8. *Beware-AIDS*. 1989. Digital Image. Available from: <http://aep.lib.rochester.edu/node/47550> (accessed July 10, 2016).

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Advancements in Nanobiotechnology for Cancer Diagnostic Applications

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Early diagnoses of cancers have a major effect on survival of patients, as almost half of these cancer patients survive in early cancer surgery, significantly higher than later-term treatment methods such as chemotherapy. There are a variety of *in vivo* treatment approaches utilizing nanobiotechnology, in which proteins and biomarkers (HER2, VEGF/VEGFR, PI3K, and MMPs) and mutations (in EGFR and BRAF) can be targeted. In MRI, PET, SPECT, and others, superparamagnetic, Au/Ag and silica nanoparticles can be employed, along with PEG conjugations to enhance circulation time. Oftentimes, targeting of biomarkers is done by use of a surface antibody (e.g. anti-*mesothelin*). *In vivo* imaging strategies have been successful for a variety of cancers, ranging from breast cancer to prostate cancer to melanoma. While *in vitro/ex vivo* methods just as invasive, they can have benefits. A microfluidic device used to synthesize SWCNTs for biomarker detection can have sensitivities over 80% and detection limits on the order of pg/mL. Nanoarrays have the unique benefit of diagnosing gastric and lung cancers early and noninvasively through breath tests.

Cancer is the second leading cause of death in the United States and the lifetime incidence of cancer diagnosis is 42% in men and 38% in women ^[1]. In fact, cancer has had such an ill effect on the population that, the National Institute of Health (NIH) invested over \$21.6 billion towards cancer research from 2012-2015; the greatest amount of money allocated by the agency for a specific disease ^[2]. Despite advances in both diagnostic and therapeutic methods, early diagnosis remains the best predictor of cancer survival. In these instances, the tumorous region is more amenable to effects from therapeutics ^[3]. For solid tumors, early diagnosis makes surgical removal possible as it reduces the volume of tissue necessary to be removed and optimally allows removal of the tumor prior to metastasis. Surgical removal of solid tumors remains the most effective approach with a cure rate of approximately 45% compared to chemotherapeutic and radiation therapies, which combined have a cure rate of approximately 5% ^[4]. There is a need for early detection of non-solid tumors, as is the case with leukemia. Even after treatment, recurrence can occur in about 20% of the cases of acute lymphoblastic leukemia, so early and multiple, non-invasive diagnoses are key. Moderate success

for recognizing non-solid tumors has been achieved by analyzing patients' serums for predictive biomarkers ^[5,6]. In this way, earlier diagnosis is highly correlated with survival across the spectrum of cancer diagnoses, as it enables a greater variety of options for treatment with much higher probability of full remission ^[7].

Historically, magnetic resonance imaging (MRI) has been an established image modality used to detect cancer by applying a magnetic field to detect the positional directions of protons in biological tissue ^[8]. It is often touted for its sensitivity, but it lacks specificity. This is an obstacle for clinicians attempting to diagnose between a benign and malignant tumor and can result in inaccurate diagnoses. In breast cancers, it can be challenging to observe the extent of tissue damage caused by the tumor ^[9]. Contrast agents are useful in targeting tumors and are better able to display angiogenesis and rapid growth of tumors ^[10,11]. They also tend to have magnetic properties that increase image contrast by as much as 33% ^[12]. Since biological tissues are transparent to X-rays, contrast agents are typically used in X-ray computed tomography (CT), and this method can be used to visualize inner tissue ^[13]. Since the resolution of CT is fairly low, developments such as microCT and the application of nanotechnology has improved this aspect ^[14,15]. Radiologists find interpretation problematic even with mammography due to ambiguity caused by low contrast. Oftentimes, additional digital processing has to be used to correct for this contrast issue ^[16]. This method is typically used to image breast cancers and early detections has been shown to decrease mortality by as much as 40% in some studies ^[17]. However, the dangerous possibility of having false negative diagnoses is very possible due to low contrast and sensitivity, even with a second interpreter ^[18].

One potential solution is utilizing nanotechnology in the realm of cancer treatment. This field involves the use of nanoparticles, which are on the order of 1-100 nm. These particles are unique because they have different optical, chemical, and physical properties that differ from their bulk properties on the macroscale. Inherent in this small size is the large surface to volume ratio of nanoparticle ^[19], which gives them an advantage over typical treatment agents. The specific size of nanoparticles is important, because they must be synthesized small enough to keep from

being filtered by the kidneys or the liver (between about 10-100 nm). Fluid pressure in the bloodstream also causes smaller nanoparticles less than about 10 nm to be displaced as well [20-22].

The size property is crucial for nanomedicine, as it has a positive impact on all of the stages of the cancer treatment process – diagnostics, imaging and detection, and treatment. The minute size of nanoparticles improves imaging and detection of cancers by offering more accurate representations of tumor cells. This in turn allows for better and earlier diagnoses. Early diagnosis increases the cure rate of oral cancer by 80% [7]. Despite the potential of nanoparticle-based diagnostic technologies, the risks, cytotoxicity and increases in unnecessary treatment due to false positive diagnoses, are too high [23]. Accumulation of nanomaterials can result in a foreign body response, potentially causing inflammation and other side effects. Smaller-sized nanoparticles are more likely to traverse through openings and make their way deeper into tissue. This increases the likelihood of an immunological response, which could have negative effects for the patient.

Improvements can be made through applications of nanotechnology, which allows for more accurate probing of cancer, especially with recent developments in nano-biosensing, Raman spectroscopy, quantum dots, and nanowires. Improvements in diagnostics can aid oncologists in understanding the extent of cancer and form a more accurate treatment plan in a substantial amount of cases [24]. The ability to degrade or get broken down is beneficial in that it allows a drug to be delivered and the foreign matter to be disposed of [25]. Researchers in the field of cancer nanotechnology are putting more of an emphasis on developing devices or particles that are biocompatible, especially in blood and serum. The goal is to alter nanoparticles in such a way (like with the use of an antibody) to detect cancer cells or proteins found on cancer cells [26]. Having more accurate methods of detecting cancer cells will result in more personalized cancer treatments, especially because of how fine the focus of nanooncology can be [27].

IN VIVO ASSAYS

Many diagnostic assays have been designed for direct administration to patients with readout through imaging modalities including MRI, ultrasound, CT, positron emission tomography (PET)/single photon emission computed tomography (SPECT), and PET-CT. Molecular probes and various nanoparticle formulations can be designed to facilitate cancer detection using these imaging modalities. While historically there have been challenges associated with the accuracy of these imaging methods, nanotechnology is now routinely being utilized to improve the accuracy of diagnoses. Many of these assays are based on the tracer principle.

MOLECULAR IMAGING

In recent years, there has been a stronger emphasis on molecular diagnostics that enables the current push towards personalized medicine, whereby a patient's treatment is managed at the individual level based on diagnostic feedback concurrent with the therapy.

This molecular-based diagnosis can allow for the proper prescription of drugs such as imatinib, which is a tyrosine kinase

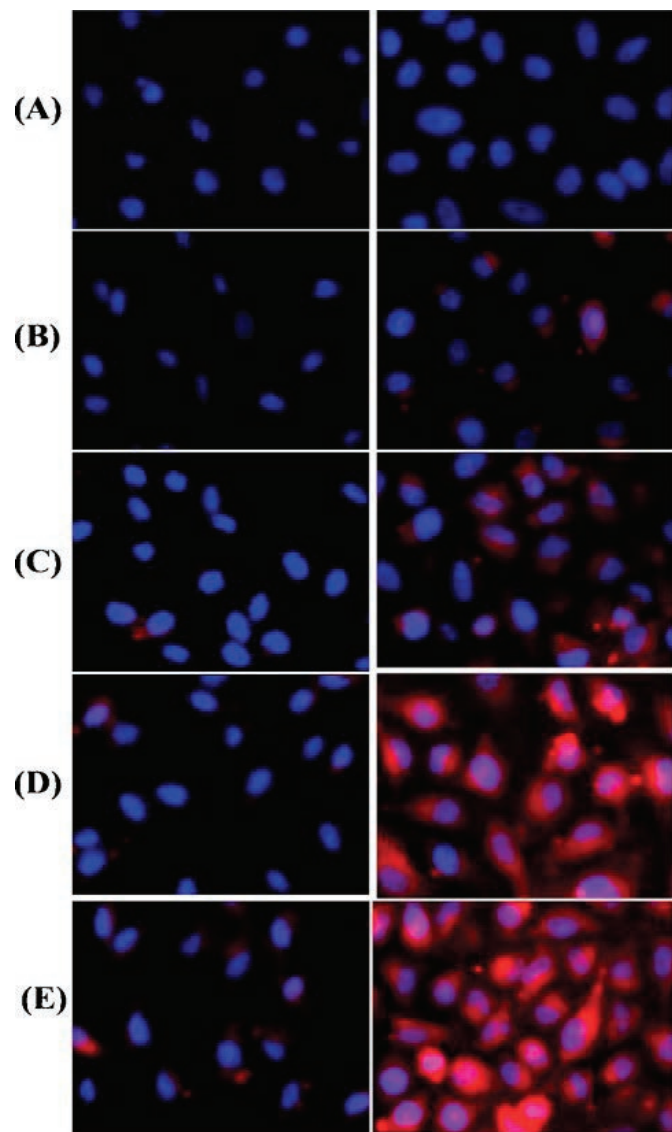


Figure 1: Targeting overexpression of folate receptors. NIH 3T3 cells (left) and HeLa cells (right) after (a) 0 h, (b) 0.5 h, (c) 1 h, (d) 2 h, and (e) 4 h incubation with Fe_3O_4 -CMC-AA-FA (salt, acrylic acid, folic acid) [35]

inhibitor, and trastuzumab, a monoclonal antibody that targets a domain located on the HER2 protein. HER2 protein is a protein common in many breast cancers [28, 29].

In order to understand the process by which diagnoses can become more personalized and specific on the nanoscale, researchers had to better understand the genetics and characteristics unique to cancer development. Mutations are found in effectively all tumors, and often, these are mutations that affect signaling proteins. These mutations could range from point mutations to deletions in important coding sequences, DNA insertions, fluctuations in the repeated sequences of DNA (known as copy numbers), and DNA translocations within a chromosome [27].

An increasingly studied cause of cancers are protein kinase mutations. Some popular kinases include VEGF/VEGFR, PI3K, HER2, mTOR, EGFR, and MET. Some clinically relevant biomarkers that have gained attention include KRAS mutations

that occur in metastatic colorectal cancer, EGFR mutations in non-small cell lung cancer, and BRAF mutations in metastatic malignant melanoma [30].

Using biosensors to detect the presence of biomarkers has a clinical relevance in a diagnostic and predictive sense. As illustrated earlier, DNA is an indicator for the development of a tumor. However, it is also predictive in that it allows the oncologist to determine the best treatment for the patient. Many drugs are specific to particular form of tumor, whether that be malignant or cancerous. Better understanding the condition of the patient will result in more accurate treatment plans [31]. A biosensor can be synthesized that tracks matrix metalloproteinases (MMPs), which are associated with tumor growth. The Bhatia group fabricated magnetic nanoparticles complexed with protease substrates to recognize MMPs, and this complex was surrounded by thermosensitive liposomes that would dissociate in the presence of applied heat. Alternating magnetic fields images are useful in that they can be far-reaching through tissue and do not cause tissue damage [32]. Further, near-infrared imaging fluorescent molecules along with magnetic nanoparticles, can be attached to substrates that can be cleaved by proteases such as MMP2/9, which can play a role in cancer progression [33]. Once cleaved, the tumorous region can be observed via fluorescent imaging or magnetic resonance imaging [34].

MAGNETIC RESONANCE IMAGING

MRI is a noninvasive modality that offers the highest resolution, providing a way to image *in vivo* systems. While this method has historically shown little specificity [9], magnetic nanoparticles coupled to molecules to recognize cancer cell markers would have increasing success. Superparamagnetic nanoparticles have an ability to disrupt an applied magnetic field in such a way as to improve accuracy of MRI [35]. Since most contrast agents that could work to enhance MRI images do not seem to be biocompatible, much of the research is currently focused on magnetic nanoparticles. Although MRI can be used to observe tumors for cancer such as prostate cancer, it does not perform as well in visualizing small-sized tumors or in early detection. A way to solve this problem is by using iron oxide magnetic nanoparticles that are conjugated to J591 antibody to prostate specific membrane antigen (PSMA), a biomarker for prostate cancer. With no radiation, cell viability was maintained while contrast was improved, which could have a positive effect on diagnoses [36]. These magnetic nanoparticles, along with other inorganic nanoparticle contrast agents, succeed in disturbing the magnetic field and being tumor specific, either through antibody conjugation or being directed to the tumor site with an external magnet [37]. This type of targeting can even increase signal intensity, as was done by targeting intracellular adhesion molecule-1 (ICAM-1) expressed by triple negative breast cancer, resulting in a 2.6 fold enhancement [38].

Since sensitivity is an issue with MRI, there has been increasing emphasis on coupling MRI with other technologies for improvements in this area. Since the magnetic nanoparticle contrast agents used have characteristic magnetic relaxation and can target cancer cells, a superconducting quantum interference device (SQUID) can observe these unique relaxations *in vivo* with a tiny detection limit of 104 cells [39]. Additionally since circulation in biological systems can be difficult to maintain, a PEGylated

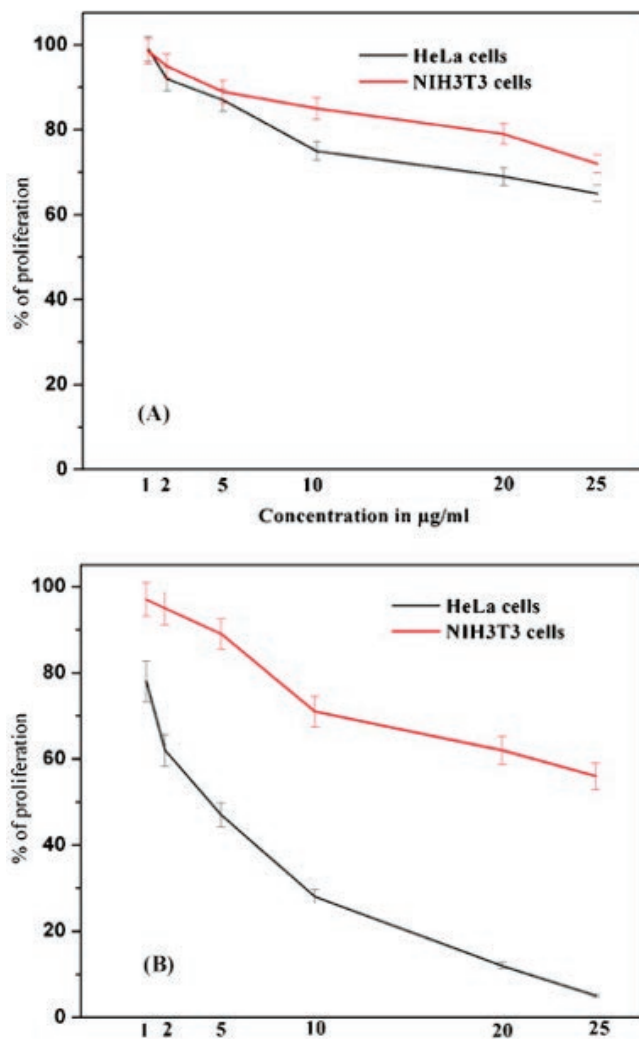


Figure 2: (a) Cell viability HeLa and NIH 3T3 cells in Fe₃O₄-CMC-AA-FA [35]

shell with diethylenetriaminepentaacetic acid gadolinium (III) (Gd-DTPA) is afforded enough time in the body to reach the tumor by the enhanced permeability and retention (EPR) effect. This conjugated molecule shows about six times as much relaxivity as Gd, so this increases the contrast abilities and results in more accurate imaging [40].

Acidity is an aspect of the tumor microenvironment that has been taken advantage of [41]. Iron oxide nanoparticles can be coated with hydrophilic casein protein to improve biocompatibility, as this complex can be perceived by the body as being natural. The hydrophilicity also increases relaxivity 2.5 fold, as compared to iron oxide nanoparticles with an amphiphilic coating. Moreover, this relaxivity is further increased, as the complex becomes more loose and soluble in acidic conditions, such as at the tumor site [42]. Another pH-sensitive complex, a micelle-Gd molecule, can be synthesized, forming cations in acidic tumor conditions. Cations can interact with magnetic fields to improve the sensitivity, and these polymeric cations can result in detection of 3 mm² tumors [43]. In terms of clinical availability, dextran-magnetic nanoparticles, ferumoxides, ferumoxtrons, and ferucarbotrans have been approved. These types of particles can assist radiologists by

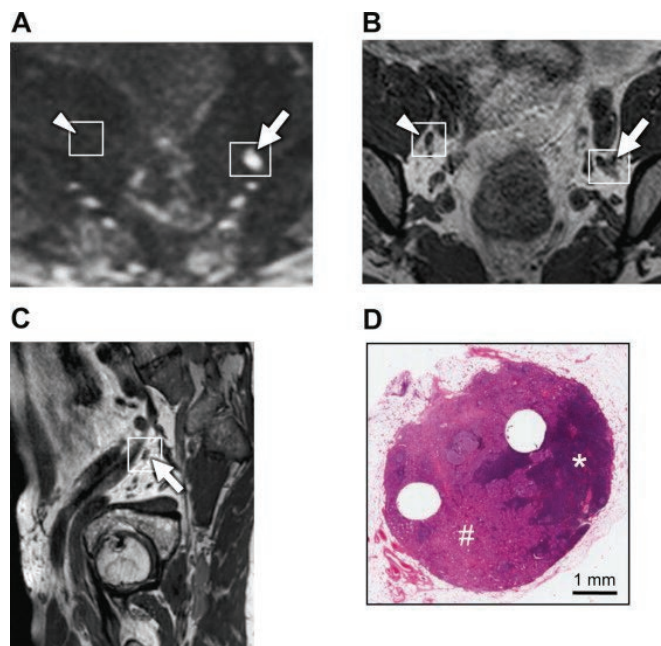


Figure 3: Metastatic and benign lymph node imaging for patient with prostate cancer. (A) Axial diffusion-weighted MRI after 24 h of interacting with ultrasmall superparamagnetic particles of iron oxide. (B) T2-weighted image with a metastatic lymph node on the left and benign one on the right. (C) T2-weighted image was reconstructed in a parallel way. (D) Pathology after the dissection and stained with haematoxylin-eosin. #=metastatic and *=benign.^[40]

making diagnoses more clear, as they can exhibit the presence of highly vascularized regions and macrophages near a tumor site. Real-time cell tracking techniques can even be utilized for surgeons^[44]. Another improvement resulting from the use of magnetic nanoparticles' ability to tag macrophages is a clearer method of distinguishing between benign and malignant tumors. Metastases from malignant tumors leads to unique patterns of macrophages and tissue, which can be visualized through these modern MRI techniques^[45].

ULTRASOUND

Ultrasound is an imaging modality that utilizes acoustic waves, and it poses similar challenges as MRI, namely differentiating between malignant and benign tumors. In modern imaging, ultrasound has been shown to have low cost, high efficiency, a reasonable sensitivity of 10-8 moles of label detected, and a high penetration depth that is on the order of centimeters. However, simultaneous imaging with ultrasound has not been a common practice^[46]. The heterogeneity of fluid surrounding tissue poses an obstacle for optically observing tissue properties. Since ultrasound is able to penetrate tissue exceptionally well, photoacoustic imaging with ultrasound has enhanced the spatial resolution of images. Gold and silver nanoparticles, with large absorption cross-sections, can target cancer biomarkers like EGFR and HER2, which are receptors commonly found on cancer cells. The receptor-antibody interaction increases the photoacoustic signal intensity of the complex over the intensity of PEGylated gold nanoparticles, which is shown to have corresponding effects in detection ability^[47]. Photoacoustic imaging is different

from ultrasound in that it involves outputting light waves and measuring sound waves reflecting back from the target, which allows for above-average contrast and the ability to tune due to optical properties. When used alone, photoacoustic imaging has problems with accuracy due to low penetration and high noise caused by tissue interactions with light, and inaccuracy^[48]. These targeting gold nanoparticles can even be used to raise the accuracy of imaging when ultrasound is coupled with photoacoustic imaging, especially when used with targeting nanoparticles in contrast agent. By using both photoacoustic and ultrasound imaging simultaneously, the best effects from both modalities can be taken advantage of^[48,49].

Microbubbles, which contain a polymer coat surrounding gas, can be used to target cancer cells, form pores in their membranes once burst by ultrasound, and release nanoparticles for imaging and detection^[50]. An issue with microbubbles involves them being on the order of microns, which causes a bottleneck effect in blood vessels, which results in slow transport and lowered accessibility. Nanoparticles such as superparamagnetic hollow iron oxide nanoparticles (HIONs) coated with perfluorohexane (PFH) polymer can evaporate and form larger microbubbles once accumulated at the tumor site through magnetic drop vaporization (MDV). MDV uses a magnetic field to heat the magnetic nanoparticles by about 30°C and cause thermal expansion into microbubbles, by which ultrasound can be used. MDV increases pixel intensity by about 1.7 times compared to a group that only contained HIONs, since PFH has a low boiling point^[51].

POSITRON EMISSION TOMOGRAPHY/COMPUTERIZED TOMOGRAPHY

X-ray computerized tomography (CT) exploits absorption differences for various tissues from X-ray images. The use of contrast agents can be important for targeting specific tumor sites, especially if the agent used has a high contrast density and biocompatibility. Inorganic molecules, such as gold nanoparticles, are typically used as contrast agents because of high X-ray absorption capability, use for surface modification for targeting, and biocompatibility at low concentrations^[52]. CT has a high cost, low efficiency, a low sensitivity of 10-6 moles of label detectable, a fair resolution of 50 μm, and no limit to the penetration depth^[46]. Since CT is associated with several negative characteristics, it could only result in more accurate diagnoses when coupled with another technique.

Positron emission tomography (PET) tends to be a method used along with CT, since it utilizes radioactive labels, measures positron emission from these radionuclides, involves high cost and low efficiency, an exceptionally high sensitivity of 10-15 moles of label, low resolution of 1-2 mm, and no limit for penetration depth. A drawback is that neither PET nor CT can simultaneously mark more than one label^[46].

Historically, a major issue with PET and CT is that they can be used most effectively to diagnose larger, already spreading tumors with accuracy. It can be difficult for clinicians to effectively treat a metastasis in the latter stages of cancer, so earlier detection would be preferred. A ⁶⁴Cu (radioactive label) surrounded by a porphyrin nanovesicle is a common tracer for this multimodal imaging, and it was shown to detect small malignant metastases in lower limbs^[53]. Hollow gold nanospheres

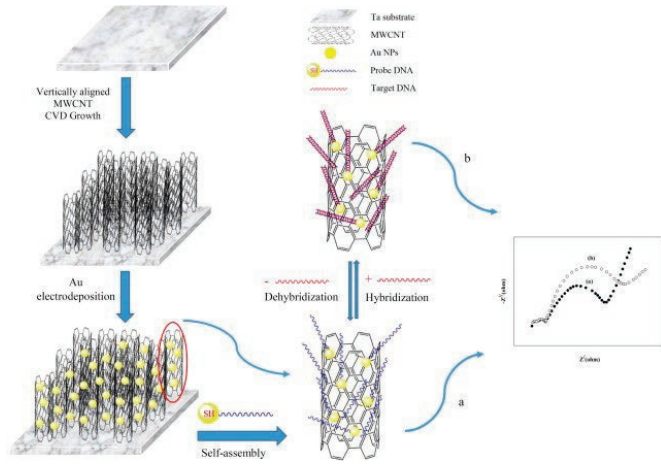


Figure 4: Use of carbon nanotubes to coat gold nanoparticles, conjugate thiol linked to probe DNA, which hybridizes and links to the target DNA. The electrical impedance sensor can distinguish between the hybridized and dehybridized states. [50]

coupled with PEG and ^{64}Cu can be used to conduct a PET scan of the entire body. The biodistribution of nanomaterials can be visualized as well, and a CT scan can be used to focus in on a specific area, as well as cause a further effect, such as drug delivery in further conjugated nanomaterials [54]. CT can be used to image on a more specific molecular level along with PET. Cost and efficiency can be improved by a combined imaging technique, and adding yet another optical imaging method can improve efficiency even more while keeping costs low. Cross-linked iron oxide nanoparticles can be coupled to the radioactive ^{64}Cu for accurate diagnosis of tumors *in vivo*, as the detection threshold for PET was $0.1 \mu\text{g}/\text{mL}$ [55]. ^{64}Cu is an ideal label is that it has a long half-life and thus long circulation time [56]. PET/CT has been shown to improve the contrast of images, resulting in more clear-cut diagnoses. There are also no major biocompatibility concerns at low concentrations of radiation since kidneys expel it over time. Slight accumulation of radiation exists at the pancreas, from which it gradually is removed [57]. When PET/CT was studied with ^{11}C -choline and ^{18}F -fluorochlorine tracers for prostate cancers, it was uncertain how effective imaging was to stage patients, but if information was known about the antigen level, antigen doubling time, and initial stage, the restaging process can be accurate with this method [58].

Even using mesoporous silica nanoparticles, with a radioactive titanium-45 and PEG molecule, resulted in successful targeting and visualization of 4T1 breast cancer cells *in vitro* in mice [59]. Radiotracers are important in the targeting of the cancer site, especially since tumors can be heterogeneous in response to other particles. For example, the EPR effect does not necessarily target all tumors in the same way. In using a PEG-liposome- ^{64}Cu complex, malignant tumors in canines would usually take in these complexes. However, there was significant retention of these particles, which would not allow for effective imaging unless a biomarker were to be searched for [60]. PET/CT can be used as a predictive tool in early-stage cancers, as volume parameters from PET have been shown to predict earlier stage non-small cell liver cancer [61].

MAGNETIC RESONANCE IMAGING/SINGLE-PHOTON EMISSION COMPUTED TOMOGRAPHY

Single-photon emission computed tomography (SPECT) is similar to PET in that it is a modality for imaging that utilizes a radioactive label and discharges gamma rays. Even though SPECT has the ability to hone in on specific targets, has high sensitivity, and has a workable detection time in a clinical setting, it does feature a poor spatial resolution and has radioactive isotopes with too long of a half-life. Common radioactive isotopes used in SPECT include ^{123}I , $^{99\text{m}}\text{Tc}$, and ^{133}Xe [46, 62, 63]. Nanoparticles clinically approved to be used with SPECT radioisotopes are sulfur and albumin colloidal nanoparticles, which can be tuned to be phagocytosed by macrophages and indicate tumor sites, where macrophages accumulate. Use of nanoparticles can result in targeting that allows surgeons to map primary and sentinel lymph node sites in breast cancer. This aids them by giving information about which groups of nodes to remove, rather than removing several, including healthy ones [64].

The combination of MRI and SPECT is useful for imaging treatment processes, especially in cancers, but it can also be used for diagnoses. MRI is useful in imaging the entire anatomy of the patient to provide a general view, while SPECT's use of radiolabeling gives it an ability to follow molecular and cellular processes closely, especially since it can detect in the pico-molar range [62]. MRI is a common complement to SPECT because it has better spatial resolution and can give a view of activity in deep tissue. Another way in which combination modality can be helpful in the clinical setting is that it allows for earlier diagnoses through pinpoint location, and it keeps the patient from having to undergo multiple anesthesia procedures [65].

Because of biocompatibility strengths, the use of peptide agents can be useful to target tumors, depending on binding affinity and stability in the bloodstream. Rapid movement is likely with smaller peptides (defined by the FDA as having fewer than 100 amino acids). Some common peptides for cancer imaging include somatostatin (SST) peptide, Arg-Gly-Asp (RGD) peptide, and vasoactive intestinal peptide (VIP). PEGylation or attaching stable D-amino acids can be used to prevent unwanted modifications in the body, and imaging labels can be attached to the peptide. The correct combination of peptide and biomarker is discovered using affinity separation with a phage library that contains hundreds of millions of peptides [66, 67]. Peptide antagonists, which do not cause changes upon binding, are preferred to agonists, which cause changes. It has been found that for two types of SST peptides, the antagonist bound to neuroendocrine tumors is twice as long [68].

The radioactively labeled protein DOTA can be complexed with iron oxide nanoparticles and an RGD peptide complex for SPECT/MRI imaging, as RGD uniquely assists in improving binding efficiency to the target molecule [69]. A similar ^{125}I , cyclic RGD, and ultrasmall superparamagnetic iron oxide nanoparticle complex was used to image breast cancer tumors in mice *in vivo*. This complex showed above 90% stability in human serum after 24 hours, distribution that does not indicate accumulation, and a clear ability to visualize tumors for early diagnoses [70]. This type of method can be combined with antibodies for targeting of biomarkers, as antimesothelin antibody can target a mesothelin biomarker typically expressed in cancer cells. An antimesothelin conjugated to an ^{111}In label and combined with

superparamagnetic iron oxide nanoparticles was added to cells positive and negative for biomarker presence in a competitive binding assay. After 24 hours, the complex was bound to the cells with mesothelin in a 4:5 proportion. Changes in biomarker concentration by as much as 0.005 mM can be detected in MRI imaging. So this technique can allow for early cancer diagnoses, as well as monitoring during treatment [65].

RAMAN SPECTROSCOPY

Raman spectroscopy is an imaging technique that can be used for diagnostic purposes. It involves vibrational spectroscopy and can sense differences between normal and cancerous tissue. Multiplexing is possible as Raman is able to distinguish between molecules. There is also a lack of autofluorescence and photobleaching, as this technique involves scattering light rather than absorption and emission of light. While Raman itself is not very sensitive, the development of Raman scattering (SERS) has increased its sensitivity capabilities, as it involves a higher field intensity by complexing ligands on a nanosurface metal [71, 72]. Raman can be applied to cancer treatments to improve diagnoses and make treatments more personalized. Another benefit of Raman is that it can be a noninvasive diagnostic. Raman imaging can be applied to different areas, namely in nanotechnology with SERS, to provide high sensitivity imaging that is a step above the other techniques [73]. The fact that it uses noble metals, which are superb contrast agents, enhances the effects that much more [74].

Raman imaging alone is not enough to make advancements in prognostics. However, SERS exhibits increased sensitivity. It is noted that SERS has a superior imaging ability to the common enzyme-linked immunosorbent assay (ELISA) and radioimmunoassay (RIA). This was quantified by the higher detection limit, readout times, and needed sample volumes. This efficiency is crucial if SERS is to be used more in a clinical setting. Pancreatic cancer was especially difficult to image, but SERS was successful through the use of a substrate to bind to MUC4 gene marker on cancer cells using gold nanoparticles that produce detectable signals. [74, 75].

Tissue poses a challenge in imaging, because it gives off fluorescence, absorbs, and scatters light itself [76], restricting the excitation wavelength of SERS to the near-infrared region (NIR) of 700-1100 nm. At these wavelengths, gold and other noble metal nanoparticles are unique in abilities to give off measurable signal. SERS signaling has been used to quantify the effectiveness of ovarian cancer diagnosis. It was able to show a bright signal in the tumor region, as the number of pixels in the tumorous area decreased from 65.7% to 6.2% after surgery, which is both expected and verified the accuracy of this method. [74].

One issue involves the journey of nanoparticles to the target site. An effect often taken advantage of is the enhanced permeability and retention (EPR) effect. Since tumors are fast-growing and angiogenic, they exhibit leaky vasculature, making it more favorable for tiny nanoparticles to aggregate in these regions [77]. This is an *in vivo* process that researchers commonly rely on for nanoparticles to reach the targeted cancerous area, that utilizes the vascularization surrounding tumors [78].

A structure that has had success is the nanorod, especially compared to a spherical nanoparticle. When nanorods and nanospheres of equal hydrodynamic diameters (33-35 nm) were

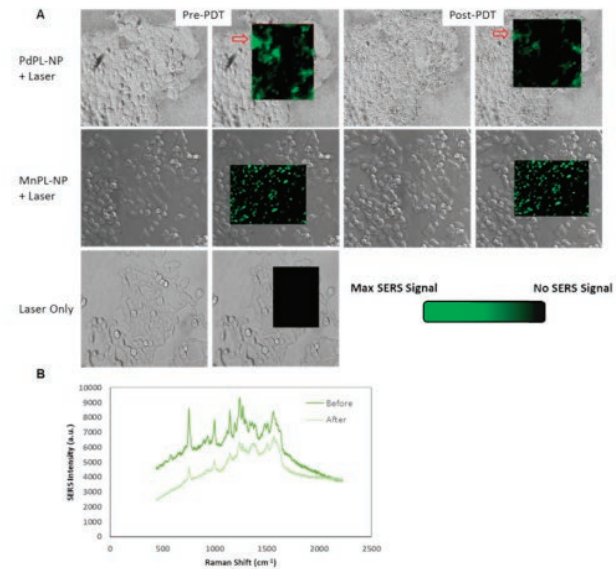


Figure 5: A.) Imaging KB carcinoma cells using SERS. These cells have folate receptors, and both groups of nanoparticles (PdPL-NP and MnPL-NP) target folate. Since these particles are photosensitive and fluoresce with SERS signal after photodynamic therapy (PDT), a clear Raman shift can be observed. [80]

measured for transport abilities through an *in vitro* membrane with small 100-400 nm pores (simulating the leaky vasculature of tumors), nanorods diffused 10 times faster than nanospheres. Even diffusion through porous collagen gel was 5.3 times as fast for nanorods compared to nanospheres [79, 80].

In vivo tests involving nanorod diffusions showed the same results. In orthotopic mammary tumors, the nanorods were transported 4.1 times as rapidly as nanospheres. One challenge due to the EPR effect is that the vasculature, while leaky and an attractant to nanoparticles, also tends to be uneven and unpredictable. Sources of heterogeneity in the leaky vasculature are in pore size, changes in pore size due to which organ the tumor is located at, and variations in pore size due to the stage of cancer [78, 79]. Losartan, a drug that stops collagen I production in blood vessels, can aid in imaging cancers that form fibrous tissue at an alarming rate. This drug causes leakier vasculature, increasing the likelihood of nanoparticles being taken up by a tumor. However, this can typically open up opportunities for virus growth [81]. This highlights some challenges associated with the use of nanorods, another of which involves the aspect ratio. More research would be helpful focusing on optimizing aspect ratio of nanorods for ideal penetration of tumor cells, as its effects are still widely unknown [82].

In the *in vivo* domain, a gold-silver nanostructure coupled with an aptamer can be used to detect specific cell lines. For instance, an (S2.2)-guided aptamer could be incorporated to diagnose the presence of MUC1 glycoprotein present on a human breast adenocarcinoma cell line (MCF-7). As for other SERS procedures, this one was fairly noninvasive, and the nanoparticles did not undergo major photobleaching. There was also negligible cytotoxicity on healthy cells. Benefits of using the gold-silver complex include that their combined effects produced cleaner

results than when used alone, and surface plasmon resonance (SPR) of the nanoparticles can be altered by modifying the structure [83, 84].

QUANTUM DOTS

Quantum dots (QDs) are semiconducting nanocrystals typically under 20 nm in diameter that exhibit fluorescence that can be used for a wide range of activities in the cancer treatment process, like in diagnostics, imaging, and treatment [85]. The diversity of the quantum dots arises in how easily these particles can be modified and tuned for individual purposes. QDs are photostable, meaning that light will not have a negative effect on the structure and thus function of the nanoparticle. However, they can also be patterned in a controlled fashion. These molecules will also not degrade easily in the body, which is a positive trait if it can be controlled. The most significant application in the nanomedicine realm involves QDs ability to mark biomolecules [86].

Recent developments are being made, like with carbon QDs, which have been shown to be biocompatible and display considerable luminescence. Another negative factor of using QDs involves their small size. Since these particles are about 10 nm in size, they are able to gain access to even tighter regions in the tissue and organs. This results in more high quality and accurate images [87]. However, these small sized particles can be excised by the kidney. neutral coatings can help with this problem [88]. QDs seem to be more popular, in terms of sales demand, in areas such as electronics and optics, while purchases for applications in biological systems does not even register on the same magnitude [85].

Since there can be photoluminescence from the individual crystals given off at random time points, the signal received from quantum dots has not been as reliable and replicable as was the case for other imaging modalities. It has been shown that this phenomenon is likely due to charged regions in some parts of the nanocrystal QD [85]. These trap sites of built-up charge can be minimized by using additives of specific cations [89]. While fabrication can be difficult with quantum dots potentially posing a toxicity risk, modification with recognition sites can improve the effects, as there can be specific targeting and fewer aggregations. However, this would decrease the fluorescence of QDs [90]. These developments have been made in this recent decade, so the thought is that by reliably solving this issue, diagnostics with quantum dots can be improved, along with imaging [85].

Breast cancer may be the second most-detected cancer, with about 1.67 million diagnoses each year, but there is still room for improvement. It still causes more death than coronary heart disease or stroke [91]. It is also the leading cause of death for women around the world [92].

Carbon-based QDs are carbon nanoparticles complexed with oligomers that exhibit bright fluorescence. These types of QDs have been shown to be consistently biocompatible *in vitro* and *in vivo*. After an intravenous injection of carbon QDs *in vivo* in a mouse model, QDs took about 24 hours to travel to the sentinel lymph node but did not have a setback in optical imaging [93, 94]. Electrochemiluminescence (ECL) used gold nanoparticle-graphene complex to capture breast cancer cells (MCF-7) with carbon coated silica nanoparticles because the particles were conjugated with mucin1 aptamer. The group

quantified a detection limit of 230 cells/mL, which shows high sensitivity. Optical uniqueness of carbon QDs, such as in ECL and photoluminescence, make them more favorable than the semiconductor QDs that were originally used [95, 96]. Another way to mitigate harms resulting from *in vivo* imaging with QDs is to coat these particles with polymer-based micelle or silica. This type of shell can be formed through an emulsification process in which the core of the micelle is hydrophobic, interacting with the QDs, and the surface is hydrophilic, which eases the system into organ and tumor interactions. Even with the extraordinary fluorescence of QDs, this method could be used to retain about 50-70% of fluorescence in the bloodstream, and FA can be used to target cancer cells [97, 98]. Hydrophilic PEG can be functionalized to these micelle layers in order to give the QD structure more stability and circulation time in the body. This is due to the hydrophilicity of PEG [99]. The cytotoxicity results for *in vivo* imaging with this micelle-QD structure is a bit mixed. Over the span of months, minimal cytotoxicity was noted in a monkey model. When Zn was used to fabricate QDs, it stayed in the body at higher concentrations and break down slowly. However, Cd and Se broke down relatively quickly, even though the kidney, spleen, and liver had a markedly high concentration compared to other organs [100]. Breakdown of Cd seems to be slow in the liver, spleen, and kidneys after 90 days, so longer term studies are likely needed [101]. In some models that are less similar to humans, such as mice, the QD accumulation in the liver had adverse, visible effects [102]. Despite the promise of the micelle encapsulation of QDs, it seems as though long-term studies should be done in monkeys to determine how dangerous accumulation is in the liver, kidney, and spleen, and how long it takes for the body to extrude these particles.

IN VITRO AND EX VIVO ASSAYS

In vitro and *ex vivo* assays involve running tests on artificial and natural tissue systems outside of the body, respectively.

MICROFLUIDIC

A potential method of detecting early stage cancer with little invasiveness is to utilizing microfluidic *in vitro* assays. These devices allow for mixing of fluids. Knowing the biomarker proteins present on cancer cells, single-wall carbon nanotubes (SWCNTs) line the walls of the well and contain capture antibody that can bind to the protein of interest located on the cancer cells. Magnetic nanoparticles attached to antibodies can also be used to bind to the cancer cells, by which physical separation can be conducted through use of a magnet [103, 104]. Multiplexing can be done with several wells and thousands of antibodies that can be conjugated to the nanomaterials, with a tiny assay time of less than an hour, and detection limits of over 10 fg/mL. When the carbon nanotube system was used to image prostate cancer biomarkers (IL-6, PF4, PSMA, and PSA) with electroluminescence, this low detection limit between 10-100 fg/mL was replicated, indicating clinical relevance for early cancer screenings [103, 105]. A similar experiment was done for multiplexed protein capture of oral cancer biomarkers interleukin-6, interleukin-8, vascular endothelial growth factor (VEGF), and VEGF-C in only 50 minutes. Magnetic nanoparticles could carry about 400,000 labels and 100,000 antibodies to the proteins. From a human sample,

there was a sensitivity of 89%^[106].

Circulating tumor cells (CTCs) are found in the bloodstream and can be detected early on in patients. While not much is currently known, it seems as though the presence of CTCs corresponds to a difficulty of effectively treating the cancer. In the future, discovering CTCs may be a predictive factor that helps with complete diagnosis in forming a treatment plan^[107, 108]. In a microfluidic device with several wells, a layer of blood cells was placed inside each well and was attached to an antibody for a cancer biomarker, anti-EpCAM. Since each layer of blood cells contained only 90 cells, this method could detect 1 cancer cell, which indicates a remarkably higher sensitivity than commercial CTC microfluidic devices^[109]. The detection limit was 2.7 pg/mL, as compared to a 13.9 pg/mL limit for ELISA, and the procedure only takes about 30 minutes to complete^[110]. Methylation of the promoter region of free floating DNA can be an early indicator of cancer. However, laboratory techniques such as southern blotting and methylation-specific PCR have false-positive diagnosis and efficiency issues, making them unreliable for clinical situations. Methylation on beads (MOB) is a method of detecting the methylation biomarker in genes floating in the medium corresponding to the cancer type (blood, stool for colon cancers, saliva for oral cancer, and urine for urological cancers). MOB combines DNA extraction and bisulfite conversion into one step. Silica superparamagnetic beads (SSBs) are made up of superparamagnetic iron oxide nanoparticles surrounded by a silica coating, and they become heterogeneous in fluid when exposed to a magnetic field, only binding to DNA at lower pH. Magnetic properties are also used to separate the SSBs from solution. It has a sensitivity of 89% for colon cancer biomarker TFPI2 and a sensitivity of 81% for pancreatic cancer biomarkers KRAS, PALB2, and GNAS. Since the issue of false-positives still exists, it is reasonable to either use this technique as one possible tool or to just test patients who are at risk^[111]. The same sensitivity of 81% was found for pancreatic biomarkers BNC1 and ADAMTS1. These biomarkers are also present in 97% of Stage I pancreatic cancers, which exhibits an ability for early diagnoses^[112].

NANOARRAYS

Nanoarrays contain a collection of nanomaterials that cross-react, and they are used in an attempt to simulate the environment in the human body. The nanomaterials are typically be SWCNTs, which can be useful in detecting volatile organic compounds (VOCs)^[113]. VOCs have an endogenous component, which means they were produced by some pathway occurring inside the body, namely cancer, and they can be exhaled through the alveoli in the lungs. A canine was studied for a control, whose adept sense of smell is able to detect cancer with a sensitivity of 91% and specificity of 97%. Using gas chromatography and mass spectrometry to detect VOCs in human subjects obtained an accuracy of 85% (86% sensitivity and 83% specificity). This same breath test can distinguish early stage from late stage gastric cancers with 89% specificity^[114, 115]. In a similar study with gastric cancer, an overall accuracy of 92% was obtained through gas chromatography and mass spectrometry, with the highest individual sensitivity being between early and late stage cancers. It has been hypothesized that VOCs in patients with cancer could have differing compositions because precancerous lesions could

result in oxidative stress in cells. This spurs lipid breakdown and unbranched hydrocarbons in the bloodstream that can later be found in the breath sample. It is clinically impactful to have early detection strategies for gastric cancers, especially since they are initiated early through the formation of lesions in dysplasia^[116].

Breath testing is a crucial technique to research because, when conducted correctly, it can result in almost instantaneous results, with costs, and high sensitivity. This is a technology that can be easily scaled up in the cancer detection market, mainly for gastric cancer and even lung cancer. Currently for lung cancer, 42 VOCs have been identified as predictive biomarkers for the cancer in a nanoarray composed of gold nanoparticles functionalized organic components that interacted with VOCs. The resulting accuracy was positive at 86%^[116-118]. The condensate of exhalation can be obtained through breathing in a 0 °C condenser. This condensate contains DNA and biomarkers. Microsatellite DNA changes were more common in patients with non-small cell lung cancer than a control group by about 50%. So even though the current study of the condensate is not overwhelmingly definitive for presence of cancer, it can still be vital for early diagnosis^[119].

CONCLUSION

Developing early diagnosis strategies is crucial for patients, because it substantially increases survival odds. While there is an emphasis on noninvasive *in vivo* imaging techniques, there has lately been a widespread focus on patient-specific treatment strategies. Many of these detection methods, especially in *in vitro/ex vivo* strategies, allow for multiplexing of several specific antibodies to biomarkers and proteins. This results in giving doctors the ability to verify specifically what type of cancer is involved in each patient. All of these diagnostic techniques also result in personalized diagnostics from the healthcare provider because they make cancer staging possible. Knowing how developed the cancer has become, as well as the specific cancer type, goes a long way in advancing effective solutions.

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FOOTNOTES

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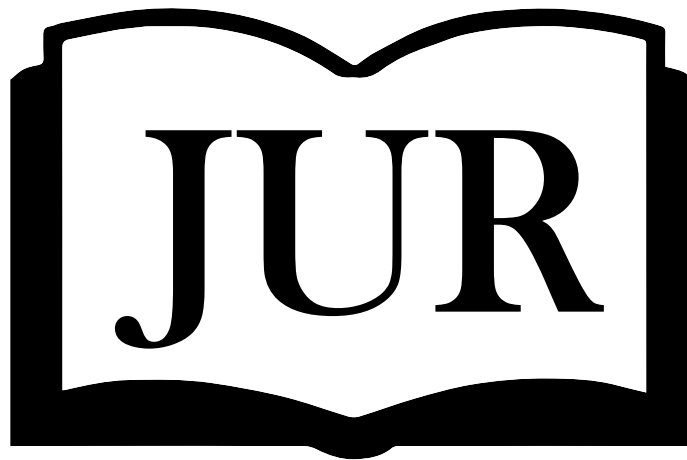
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The Asexual Experience and Community in Denmark

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The purpose of this research is to contribute more qualitative information about the asexual community to the limited present research. Through interviews with members of the Danish asexual community, found through their meeting forum AVEN (Asexual Visibility and Education Network), the research seeks to discover what the purpose of the community is, and what exactly characterizes the “asexual experience” in Denmark. Drawing on theories of ethnomethodology and Axel Honneth’s theory of recognition, a framework is set to better understand why the community was formed and what draws people to it and keeps them engaged in it. In accordance with Honneth’s theories, we conclude that it is likely the community formed to foster a sense of internal recognition that was not offered by the larger LGBT community or society as a whole. The community is maintained through recurring social meetings, an organizational committee, and feelings of belonging experienced by the members. The community is still young and is working to shape its identity within Denmark, but its experience is undoubtedly unique from the LGBT experience.

THEORETICAL BACKGROUND AND HYPOTHESES

Since 1948, when Alfred Kinsey published his Heterosexual-Homosexual Rating Scale that included an additional grade of “X” for those that experienced “no socio-sexual contacts or reactions” to present-day popular publications such as BuzzFeed’s “The Biggest Misconceptions About Asexuality, According to Asexuals” (Karlán, 2015), asexuality has been dropping in and out of the public and scientific community’s interest for decades. The majority of research thus far has focused on what asexuality is: what it means to be asexual, how those identifying as such define and experience it, and what personality characteristics are common (Bogaert, 2006; Brotto, 2010). This paper, by contrast, seeks to move beyond the individual’s experience and analyze the community as a whole -- how the physical gathering of those identifying as asexual functions. Research on how the physical community develops and is maintained is explored minimally in existing literature, and this research strives to fill in those gaps.

The theoretical foundation for this research is rooted in basic *ethnomethodology* and the theories of recognition of Axel

Honneth, professor of philosophy and director of the *Institut für Sozialforschung* (Institute for Social Research). *Ethnomethodology* is based in the belief that one “can discover the normal social order of a society by disrupting it” (Crossman, 2015). Because little is known about how the asexual community functions, interacting with it and then trying to break one of its social norms to see how members react should provide insight into whether or not the unit polices its members. If it does, policing could be one means by which the community maintains itself.

Axel Honneth’s theories of recognition hold that one’s recognition is developed in relation to others, and if one does not receive this sense of recognition from a group, then a new sub-community will form to provide internal recognition for its members. Recognition, he maintains, also contributes to one’s self-esteem and self-confidence (Honneth, 1995).

Self-esteem, which is tied to solidarity, is a sense of oneself as a unique and irreplaceable individual. What distinguishes one from others must be something valuable, and, accordingly, to lack self-esteem is to have the sense that one has nothing of value to offer. Those that identify as asexual are constantly bombarded by negative statements about their sexuality: “what a waste, you’re so pretty!”, “oh I totally understand, if I looked like you I wouldn’t have the confidence to have sex either”, “are you *sure?* You probably just haven’t met the right person”, “you should probably go to the doctor and have them fix that”. If someone is consistently told they are broken, that they need to be fixed, that what they naturally have to offer is not useful and needs to be changed, they will not feel valued. Sexual attraction carries weight in Danish society, and if one simply does not experience it, they are likely to feel worthless and not gain the self-esteem outlined by Honneth. This may be one reason why an asexual community formed in Denmark: to give its members the reassurance that what they have to offer is indeed valuable, and to consequently facilitate the formation of members’ self-esteem.

Self-confidence, which Honneth ties to love, is the capacity to express one’s needs and desires without fear of being abandoned as a result. Through our lives, we learn that we, as well as others, are individuals in our own right, and are consequently loved. If one does not recognize someone as an individual and fellow

person, then they cannot love them, leading to disrespect and the damaging of self-confidence. When someone offhandedly comments to someone identifying as asexual that they are “missing something essential to the human existence”, or jokingly questions “so are you an amoeba?”, they are dehumanizing the recipient of such conversations. They are voicing their opinion that an asexual-identified person is not a human “like them,” and is therefore unworthy of respect. In relationships, people identifying as asexual sometimes feel as though they have to keep this a secret from their partner. They may believe that expressing their needs will lead to abandonment purely due to their sexual orientation. This wariness, tied to the dehumanizing comments these individuals must frequently endure, prevents the unabated development of the self-confidence defined by Honneth. This could be the second reason behind the formation of an asexual community in Denmark -- to provide its members with humanity and the unconditional acceptance needed to be able to express themselves honestly without fear of abandonment, thus fostering self-confidence.

This research seeks to substantiate these two hypotheses regarding the purpose of the asexual community, as well as gather qualitative information about the experience of asexuals in Denmark, and how the community sees and maintains itself.

DEFINITIONS

The Asexual Visibility and Education Network (AVEN) defines an asexual as “someone who does not experience sexual attraction” (“Overview”, 2001). Unlike celibacy, asexuality is not a choice, but rather a sexual orientation akin to heterosexuality or bisexuality. Many asexual people experience attraction in some form (aesthetic, romantic, etc.), but do not necessarily feel a need to act out this attraction sexually. Asexuality is not an inability to experience sexual arousal – some experience it often while others experience it rather seldom, and others may even choose to alleviate it though partnered sexual acts. AVEN offers many qualifiers about what exactly it means to be asexual, but emphasizes that it is an identity for many people and can serve as a useful label to help someone “figure themselves out” for as long as the label applies to them (“Overview”, 2001). For the purpose of this research, we have defined an asexual person simply as “someone that identifies as asexual and in some way participates in the asexual community”. We have also defined the “asexual community in Denmark” as consisting of those who self-identify as asexual, and participate in online forums, and chat with other asexuals from Denmark or the surrounding area, and/or physically meet with those participating in the Danish online thread “Hej danskere” on AVEN.

METHODOLOGY

Because this research seeks to gather qualitative data to gain a better picture of the asexual community in Denmark, various qualitative methods were used to uncover answers naturally and allow for further lines of questioning. Using this framework, this research was informed and led by the community itself, rather than by the researcher entering the community and seeking specific information. The researcher used a combination of semi-structured interviews, participant observation, and field studies. These methods were most appropriate for this situation because

there is very little existing research on the subject, creating a need for basic “bottom-up” information. The methods used allowed for organic answers and revealed information that could be used as a foundation for later research.

The sample (eight interviewed and twelve participated) was gathered from AVEN after contacting AVEN’s administrator regarding the researcher’s intent to study the community in Denmark. The researcher was given their own thread and was allowed to advertise the study on the “Hej danskere” thread. Participants signed up for time slots to be interviewed or gave consent to be observed during one of their social meetings. Interviews were recorded for later transcription, and notes from field studies were written up after their conclusion. Transcriptions and notes were coded with a combination of Nvivo 10 and hand coding with Word 2013, labeling certain responses and observations as related to various overall themes, such as “purpose of group” and “maintenance of community.”

This research has limitations due to the fact the community itself was very small, and the researcher had limited time to conduct interviews before coding had to begin. Though only twelve individuals were observed, there was good variety in the sample. For example, the sample included those who were “regulars,” those who had not been to a physical meeting, those who were not Danish, and those who had been part of the community for a long or short amount of time. A possible bias in the research is that the researcher also identifies as asexual, though this fact may have been what put the participants at ease and allowed for honest, unguarded answers. Some participants voiced that knowing this allowed them to answer fully without having to worry about explaining themselves or being misunderstood.

RESULTS

Through the eight interviews and two participant-observation field studies, the researcher received rather consistent answers to how and why the community functions. According to the participants, the overall purpose of the community is to make sure its members do not feel alone or think they are the only ones having particular experiences. It is a place for friends to meet and engage in activities together without having to worry about being alienated due to sexual orientation. The community, which is estimated to consist of about fifty people, has two different types of meetings: social and organizational. Meetings generally happen in Copenhagen, and occasionally, in Odense or elsewhere.

Social meetings are attended by between six and twenty people, depending on the activity and attendees’ availability. These are usually held once a month, though the timing is not strict and is wholly dependent on when someone proposes a new meeting. There is no leader or a hierarchy that directs who should suggest a meetup – individuals take the initiative to post about what they wish to see or attend, and invite the rest of the group to tag along. As such, people’s participation is dependent on their location (proximity to Copenhagen), how much free time they have (whether they work or attend university), finances, current interest (having a desire meet with other asexuals or being satisfied without meeting them), and what they hope to gain from the meetings (friends, something to do, knowledge from the activity). The location of these meetings changes every time, but meetings usually pertain to something cultural, such as a museum or concert. Discussions

usually revolve around the event; asexuality is rarely discussed. For some, the social meetings are a good way for participants to meet people they can talk to on the side regarding things that are too personal for a group setting. For others, the social meetings are simply a way to have a group of people to be with on a Friday night. Members new to these meetings are met with friendly questions, though nothing too personal is ever discussed.

The organizational meetings are attended by a core group of six to eight people in the offices of LGBT Denmark. They discuss issues related to asexuality (such as increasing visibility of the orientation in Denmark), write to sexologists to correct their impression of it, and engage in large-scale activism, such as attending Copenhagen Pride. However, the group is still very new, and members are quick to point out that they are still discussing who they are as a group and where they wish to go as an organization. The meetings are coordinated entirely on the forums of AVEN, where a meeting is proposed in the “Hej danskere” thread, and is then carried off to a separate thread to hammer out details and see who can attend.

The asexual community’s experience in Denmark was rather varied. Some voiced that they were wary of researchers that claimed to be investigating asexuality, since researchers’ agendas could be corrective, or they may ask insensitive and insulting questions. Most members of the community maintained that though the narrative of Denmark claims it to be a liberated place, when it comes to sexuality, the country is decidedly liberal. It is believed that people need sex to be happy, and everyone should want it and have a lot of it. Many participants reported that this has led to pressure from friends to “just try it,” along with pressure from the media conveying that simply having sex will solve all of their problems. Members expressed that these ideas about sex make it especially difficult to be asexual, as those who identify as asexual have to constantly defend their label from those who doubt its existence or believe there to be something mentally or medically wrong being asexual. Though some members experienced understanding and acceptance from the people whom they told, coming out as asexual in Denmark is daunting for many. Some believe that this will make it impossible for them to find a relationship due to the public’s inaccurate ideas about sexuality, or worry that people will feel entitled to ask intrusive and patronizing questions.

The asexual community believes itself to be distinct from the LGBT community in Denmark because it is far less known and its members’ experiences are inherently different. According to members of the community, young children in Denmark are exposed to LGBT terms and persons in media and school long before they start identifying with them. The same cannot be said regarding asexual culture. Adults and children are rather unlikely to come across the term, making it common for youth to go through high school believing themselves to be broken or trying to force themselves into some other sexual orientation category. Because there are no famous Danish asexuals, it is difficult for young people with this sexual orientation to see themselves reflected in the media and have someone to identify with. There are more places for LGBT folk to go, such as bars, clubs, support groups, and organizations that specifically cater to them. The members of the asexual community believe that it is this lack of visibility and effortful inclusion that makes their experience in Denmark

inherently separate from the LGBT experience.

DISCUSSION

From interviews with community members, we can conclude that, indeed, the community was formed in congruence with Honneth’s theories of recognition. A sub-community was created to facilitate a sense of internal recognition that was not offered by the LGBT community or society as a whole. The LGBT community appears to be focused on members having a right to love and have sex with whomever they wish, while the asexual community is focused on the right to be free from sex, and to not be judged for not wanting or not having it. Danish society as a whole encourages liberal sexuality, and is much more likely to accept LGBT individuals because, according to one participant, “at least they’re having sex.” The asexual community offers validation through reassurance that what each member has to offer is valuable, and does not need to be fixed. Though this is not done through explicit statements, the community’s mere existence as a safe place to be and not hide one’s sexuality is sufficient. It proves to asexual individuals that there are others like them, and since those in the community are not trying to alter themselves, they do not need to either. The community gives an unconditional acceptance; it will not abandon you for your asexuality, so you are free to simply be yourself without carefully picking your statements and how you express yourself. Members are put at ease because they need not constantly analyze the intentions of others present (“Is she hitting on me? Could my statement have come off as innuendo? Should I laugh at that sexual joke? Should I offer an explicit hook-up anecdote to get them to like me?”). This recognition from the sub-community is likely why it was initially formed.

We can also conclude from the interviews that what currently maintains the community is its recurring social meetings, an organization committee with a common goal, and feelings of belonging experienced by its members once joined. Meeting to engage in an activity eases the flow of conversation, since participants can chat about the event, rather than feeling pressured to discuss personal things. These social meetings are often large enough that people can talk in small groups if they wish to get to know others better, or they can simply enjoy the event if they would rather not strike up a deep conversation. The community likely engages in these activity meetings because they are the least intimidating for all involved – members can physically do something rather than having to sit and awkwardly try to converse at a café. The frequency of meetings allows members to have about a month to plan around a meeting if they wish to attend, and applies some pressure to attend, since meetings are only monthly. If they were weekly, there would be little pressure to attend because one may habitually push off attendance week by week. This is likely why attendance was as outlined, increasing to twenty or so individuals at a meeting. If meetings had been weekly, there would probably be a more balanced dispersal, with four or five rotating, different people at each meeting.

The organizational committee also maintains the community, through planning future meetups and creating long-term goals for the group. It seems to be the informal job of those who attend the organizational meeting to make sure that there is a meetup every month and for the major holidays, including Christmas.

This is likely a fail-safe to be sure the community does not fizzle out after several months of no one taking the initiative to post. The committee also inspires the community to hold the long-term goal of forming an organization for asexuals in Denmark, which all members could support regardless of their level of activism. This offers a sense of binding to the community, since community members can envision a future together, and this can affect individuals that later choose to enter the community.

The community is also maintained through the feelings of belonging fostered by it. Every person interviewed made sure to tell the researcher about other members' friendliness and genuine interest in one another. There are also no known conflicts within the group, which the researcher feels is due to the fact members would not want to fall out of favor with the only large asexual group in all of Denmark. The community spans different ages, nationalities, and interests, so it is likely quite easy for a new member to feel a sense of belonging and camaraderie.

The findings of this research are significant because they show that the LGBT community, though supposedly encompasses all non-heteronormative sexualities, does not adequately cater to asexuality. The asexual community is distinct from the communities of other sexualities, and formed due to a lack of recognition from that "umbrella" community. The findings also give new perspectives on what asexuals gain from their community and why it is needed. Past research has covered what asexuality is, but this research reveals why the community itself has formed, is maintained, and is unique in the context of Denmark.

Future directions of research on asexuality could involve checking in with the Danish asexual community in several years to see what changes the organizational committee has made and how it has affected the community. Are there more people actively involved? Are there new people suggesting meetups? Is having an officially recognized organization different than the loose meetup group in terms of purpose or membership? Further, research could be done on the Danish asexual group on Facebook and see how it contrasts with the AVEN group. Does this group have a different purpose? How do the themes of the posts compare? Future research could also attempt to recruit more individuals to see if different levels of activity in the online chat or physical meetings affects members' impression of the community.

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The Garifuna: A Modern Maroon Society?

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The Garifuna are an ethnic group of people who live in the coastal areas of modern-day Belize, Guatemala, Honduras, and Nicaragua. They are descendants of West Africans and the Caribs, an indigenous group, who came together on the Leeward Island of St. Vincent in the Caribbean. The manner in which they arrived on the Central American coast is complicated and fascinating and certainly separates the Garifuna from the rest of the populations in those modern nations. In recent years, there have been attempts to include portions of the Garifuna's land possessions in the Central American mestizo political agenda, but the Garifuna still have features that distinguish them from Central American mainstream society.

The Garifuna are different from other groups within the Central American space. Due to their differences, they can be classified as a *maroon community*. A maroon community consists of a society made up of fugitive slaves. Although the Garifuna's history does not necessarily classify them as such because the Garifuna were never slaves, the fact that they developed separately and outside of the mainstream political authority gives them commonalities with colonial maroon societies. While the Garifuna have been forced to cope with becoming more included in the mainstream Central American society in recent years, their unique formation, history, culture, and community organization (that is segregated from the mainstream culture of Central America), as well as the fact that the Garifuna take pride in their otherness, qualifies them as a modern maroon community.

MAROONS IN THE AMERICAS

Maroon communities were extensive throughout the Americas in the colonial period. Terry Weik writes, "marronage, like rebellion, occurred wherever slavery existed."¹ A maroon is defined as "an escaped slave (or a descendant of one) living in the wilderness in an independent, autonomous community."² However, maroon communities were not solely made up of slaves of African descent, as "maroon communities included Indians, Africans, Europeans and Creoles; young, middle-aged and elderly people; enslaved and free people; field workers, domestics, drivers, artisans, messengers and soldiers; adherents to African traditional religions, Christianity and Islam."³ This characterization shows

that maroon communities were made up of various types of individuals beyond just people of African descent who had escaped from slavery. In fact, "marronage was political action on the part of enslaved persons and frequently a challenge to the status quo that the enslavers had established."⁴ It was a manner of rebelling against white colonial power; so, it was not solely confined to members of the black slave community, as other groups, such as Native Americans, who too were oppressed by the colonial power, also joined these communities.

The existence of maroon societies had to do with the mere existence of a slave society within colonial America. The fact that there were groups of people subjugated by authorities and forced to work made resistance inevitable. Thompson notes that "marronage was the most extreme form of such resistance, since it involved opting out of the system of oppression altogether and establishing a new kind of society in which the former enslaved persons took (or sought to take) control of their own lives and destinies."⁵ Becoming a maroon was an escape from ordered society, and:

*"In their own view they were self-liberated persons (who, depending upon their other activities later on, might also regard themselves as freedom fighters); to enslaved persons they were successful rebels (people who had beaten the system); whereas to the enslavers they were simply "runaway slaves" (who might also be bandits or vagabonds)."*⁶

The people who ran away from the slave holding society were viewed as an economic loss, which was associated with the image of African maroons being uncivilized or lawless.⁷ While marronage was problematic for slave societies, the maroon communities were able to flourish. Richard Price comments on how maroon societies were able to succeed: "as long as the number of slaves who took to the hills remained small, only the least skilled slaves were involved, and they did not interfere directly with plantation life, [so] the maroons' existence might be tolerated or largely ignored."⁸

The structure of maroon societies varied depending on their location within the Americas,⁹ but there are similarities that can be used in determining their characteristics. The location of maroon societies is an obvious component to their success. Maroon

societies are generally found in defensible locations,¹⁰ typically away from urban centers. Violence was a way for the maroons to defend their territory against any encroachments from outsiders who could share their whereabouts. Maroons knew that they could be reabsorbed into the slave system if they were caught, and thus, protected themselves through violence and intimidation tactics. In addition to protection against the authorities, “these revolts helped to sustain Maroon communities, since many enslaved persons seized the opportunity to run to freedom.”¹¹

Assistance from people outside of the maroon societies was also incredibly important to the success of the communities. The association between Native Americans and people of African descent has been incredibly important to the establishment and maintenance of maroon communities. Thompson also uses examples of Native Americans living among African runaways in Mexico shortly after the Spanish conquest, and the Maya joining with the enslaved Africans to fight against the British colonial powers. The association between the Native American resident population and Africans is essential to the identity of the Garifuna, which helps define them as a maroon community. Richard Price writes about this interaction between Africans and Native Americans in the making and sustaining of maroon communities:

“Throughout Afro-America, Indians interacted with slaves, whether as fellow sufferers, as trading partners, or in other capacities. Indian technologies - from pottery making and hammock weaving to fish drugging and manioc processing - were taken over and, often, further developed by the slaves, who were often responsible for supplying the bulk of their own needs.”¹²

This alliance system between the Native Americans and the Africans not only helped to supply runaway slaves with survival materials, but also enabled the Africans learn how to be independent from the colonial authority. The Native Americans, who had lived off the land in the Americas for generations, were excellent teachers for the runaway slaves in helping them sustain their population, thus allowing “maroon societies to continue for generations.

Price explains that there are still descendants of maroons living outside of modern society. He writes of modern maroon communities:

“Today their descendants still form semi-independent enclaves in several parts of the hemisphere, remaining fiercely proud of their maroon origins and, in some cases at least, faithful to unique cultural traditions that were forged during the earliest days of Afro-American history.”¹³

There are people who are still recognized as being separate from the mainstream society and proud of their maroon heritage. The Garifuna, through their history and the maintenance of their unique culture, conform to what Price defines as a modern maroon community.

HISTORY AND FORMATION OF THE GARIFUNA

The ethnic make-up of the Garifuna is a mixture of African and Native American, specifically West African slaves and the Native American Caribs of St. Vincent. Once the Lesser Antilles began to be colonized by European powers and those European colonists realized that the Caribs made poor slaves, the shipments of West African slaves began to arrive on these fertile islands. It

is believed of the Garifuna that “their African forebears had been survivors of a shipwrecked slave ship who had combined with the resident Amerindians of St. Vincent and adopted their way of life.”¹⁴ When those shipwrecked Africans arrived on the island of St. Vincent is not clear. However, it is clear that the Africans and native Caribs of the island intermarried and created people that are an amalgamation of both African and Carib.

The term “black Carib,” which has been used by historians to describe the presence of, what are now the Garifuna people, on St. Vincent, is not solely descriptive of the Garifuna. There are other people in the Caribbean with the same ethnic mixture as the Garifuna, but they are simply referred to as Black Caribs. The term “Garifuna” entails much more than just the mixture of Africans and Caribs; it encompasses the political and geographical context of their creation. The Black Caribs on St. Vincent existed for many generations, undisturbed by colonial authority, but when the British gained control of St. Vincent in 1763, they saw the Black Caribs “as mere runaway slaves, who had no right to freedom let alone the land they lived on.”¹⁵ The Black Caribs responded by stressing their Native American roots and the fact that they were free and had never been enslaved. The culture of the Black Caribs of St. Vincent was also indicative of their Native American-ness:

“The Black Caribs were quickly indistinguishable from the Yellow Caribs [or Native Americans who did not have African ancestry] in terms of dress, diet, language and lifestyle - everything in fact, except pigmentation and similar racial characteristics...this also served to distinguish them from enslaved or free blacks which, given European demands for the return of runaways, was of signal importance.”¹⁶

The British wanted the land of the Black Caribs, as it was quite suitable for sugar cultivation, but it remained in Carib possession. The French had control of the island from 1779 through 1783, when the Black Caribs were essentially autonomous. The British gained control of the island again in 1783, after the American Revolution and Treaty of Paris. They wanted to take the land of the Black Caribs yet again, but the latter would not surrender. The British decided that the best solution would be to send the Caribs off St. Vincent. They were first sent to Balicaeux – another island near St. Vincent – but this was not their ultimate destination, for “the destination had finally been decided upon: the Spanish-ruled island of Roatán in the bay of Honduras, some 1,700 miles to the northwest (of Balicaeux).”¹⁷

Taylor finishes his book by stating that after the relocation to Roatán, “within a few years Black Caribs were migrating along the Caribbean coast of Honduras and on to Belize, Guatemala, and Nicaragua.”¹⁸ That is where the people we know of as the Garifuna reside today. Their origins from St. Vincent to Roatán, and then to the Central American coast, are agreed upon by historians, anthropologists, and linguists. However, the exile from St. Vincent to Roatán separates the Garifuna from other Black Caribs. Their movement from the Caribbean to Central America has influenced their identity and has separated them from other ethnic groups in Central America.

This admixture of Africans and Amerindians is characteristic of a maroon society. The society that the Black Caribs in St. Vincent created was an escape from colonial powers. The Black Caribs lived in a different section of the island where they were self-sufficient. They used other Carib groups to help sustain their

population and receive resources. In addition, the population of the black Caribs on St. Vincent grew when runaway slaves joined from neighboring islands. This is evidence of a society fueled by the escape from slavery, even if the original members had never been slaves. There was a spirit among the black Caribs, who would become the Garifuna, to fight against the colonial establishments and maintain their independence.

GARIFUNA IDENTITY AND CULTURE

The identity of the Garifuna is a complex. Due to their movement to the Central American coast, the “Garifuna, collectively and individually, can assert themselves as Blacks, Hondurans, Afro-Hondurans, and Garifuna and insist on their rooted, native presence and indigenous status.”¹⁹ Their identity is a complex issue that Mark Anderson tackles in *Black and Indigenous*, where he argues that it is possible to identify as both, even though the Honduran people may disagree. He argues that “indigenous” is defined by the Oxford English dictionary as “born or produced naturally in a land or region; native or belonging naturally to [the soil, region, etc.]”²⁰ While it is the case that this term has been applied to aboriginal populations, the ancestry of the Garifuna, because it includes the native Caribs, would include them in the indigenous category. Their ancestry and movement are also important attributes in characterizing them as a maroon community both on St. Vincent and on the Central American coast.

In addition to their African-Native American ancestry, the Garifuna are also a distinct product of the Americas. It would only be in a setting such as a former New World European colony where indigenous Native American populations and Africans would come together, form a unique culture, and speak a unique Amerindian language with influences from West African languages and French. The mixed ancestry of the Garifuna is clear linguistically, as “their language, passed down from the Amerindian side of their heritage, bears living witness to their radically different history.”²¹ Their history on the island of St. Vincent was unique in the sense that the Garifuna were never slaves, unlike the majority of people of African descent in the Americas. The mixture between the Native Americans and the Africans who were not slaves gave the Black Caribs on St. Vincent, and later the Garifuna people on the island of Roatán and the coast of Central America, a sense of freedom and independence. The independent spirit that the Garifuna brought to the new lands they settled in Central America has led to noticeable features in their culture and organization, which not only makes them stand out from the rest of the society, but also helps define their place in it.

In addition to their language, the Garifuna have created a culture that is similar to that of the Caribs⁷ and other indigenous groups⁷ in “terms of dress, diet, language and lifestyle,”²² but the influence of their African ancestry is also evident. For example, they eat a diet that includes “cassava bread, coconut bread, and coconut milk,”²³ which shows how they live off the land in ways they have retained through their indigenous roots. The foods consumed by the Garifuna have deep ties to their religion, which consists of ancestor worship,²⁴ and is reminiscent of African religions. The Garifuna have a culture “rich in music, dance, folklore, [and] painting, among other forms of artistic expression,”²⁵ that comes from both their Native American and African forebearers.

Those features, namely their religion, diet and language, helped to separate them from enslaved people during the colonial era, and more recently, has distinguished them from other people of African descent and the mestizos in Central America.

The religion of the Garifuna people combines ancestor worship, superstition, and witchcraft. While it is difficult to say whether the origin of the religion is African or Carib, the result is the union of the two, making it distinctly Garifuna. The ancestral religion of the Garifuna is called *dügü*.²⁶ There is a number of ceremonies within the *dügü* traditions that recall the arrival in Central America from St. Vincent, as in Belize: “the arrival of the group (Garifuna) in canoes is the most moving part of the ceremony for it represents the arrival of Marcos Sanchez Diaz and his companions.”²⁷ This celebration bears witness to the Garifuna treasuring their unique history and maintaining the celebration of it through their religious practices. In addition, “the Garifuna believe that their ancestors are close to them, always protecting them from evil and providing good luck... Food becomes a primary medium of interacting with the spirits of the ancestors.”²⁸ Christopher Taylor writes that this practice of ancestor worship “is an important part of modern Garifuna spiritual life and this may be in part a legacy of the transplanted souls of Africa.”²⁹

The religious practices are also in sharp contrast to the majority of people who practice Catholicism or other variants of Christianity in the modern nations of Belize, Guatemala, Honduras and Nicaragua. Marilyn McKillop Wells studied the Garifuna community of Sambo Creek in Honduras and noted that an area of the town, Nutmeg Alley “was built by a missionary couple who had given up ‘trying to convert the heathens,’³⁰ as some “spiritual practices have been vilified aspects of Garifuna culture, historically rendered by dominant discourses as evidence of the lack of civilization and even devil worship.”³¹ There has not been a lack of effort in trying to convert the Garifuna to Christianity, but the Garifuna have retained their historical religious practices, which makes them distinguishable from other groups in Central America.

The formation of the Garifuna through a fusion of cultures, which can be seen through their religious practices, has made them recognizable in Central America. In addition, the Black Fraternal Organization, known by its Spanish acronym, OFRANEH, recognizes that the Garifuna have a distinct cultural heritage.³² This demonstrates how outsiders see the Garifuna’s culture as separate and distinct from the culture of the rest of Central America. That, combined with how the Garifuna view themselves as separate and distinct, helps to characterize them as a maroon community, on the basis of self identity. The Garifuna are recognizable because of their distinctive religious beliefs and unique history, which they continue to celebrate, as well as the structure of their communities. Both this self-recognition and outsider recognition is important in seeing the Garifuna as a maroon community, as it shows how they are not part of mainstream society. While the Garifuna are not necessarily fighting against the mainstream society, it is clear that their differences in culture, history, and ethnicity are enough to separate them from the rest of society both on their own accord and by outsiders. This same dichotomy is seen in other maroon societies throughout history in the Palmares and Yanga.

GARIFUNA COMMUNITY ORGANIZATION

Mark Anderson writes that a “community connotes a home of origin, dwelling, and return. It is also conceived as a privileged locus of Garifuna identity, language, and return.”³³ This is essential for how the Garifuna see themselves and their community. Theirs is a separate community from the rest of the society surrounding the Garifuna, especially in the Sambo Creek and Trujillo in Honduras, Livingston in Guatemala, and Barranco and Stann Creek in Belize. In addition to being seen as different by outsiders, the Garifuna view themselves as different from the outside community. The Garifuna community is an essential part of recognition and self-identification. Anderson notes that the community of the Garifuna goes well beyond the boundaries of Sambo Creek:

“Garifuna evince deep relations to community, even when they do not live there. Many transmigrants who live and work abroad return when they can and, in absence, maintain ongoing connections through letters, gifts, videos, remittances, and phone calls to family and by participating in hometown associations.”³⁴

The maintenance of the community and strong familial ties makes it clear that identity factors into the Garifuna community and extends beyond the boundaries of Garifuna towns. This separate community also helps identify the Garifuna as a maroon community because of their location and purposeful dissociation from mainstream Central American society.

The Garifuna traditions within the community are also unique. The residents of Sambo Creek “historically combined wage labor, fishing, agriculture, and the latter characterized by shifting cultivation of plots cleared by men but planted and harvested by women”³⁵ This gender separation is characteristic of other indigenous populations of the Americas, who, “on arrival in Central America the surviving Garifuna extended the scope of their already prodigious intermixture with other groups, including the Miskito, Creoles, and Maya. Gradually the fact of being mixed with an ever increasing framework has remained integral to their group consciousness.”³⁶ This mixing with these other indigenous groups is important. It adds to the Garifuna’s relationships with other indigenous groups based on their new surroundings. This furthers them as a modern maroon community in the sense that they are able to adapt to a new environment and make use of the locals and their knowledge.

The women in the Garifuna community play a unique role within the community, in such that they are “responsible for teaching the language and cultural practices to future generations.”³⁷ Women also held positions within the local *patronato*, or local government within Sambo Creek. This example of women holding power in the Garifuna community is contrasted with mainstream colonial society, which was influenced by patriarchal European powers. Garifuna women, on the other hand, have retained more equality in their communities, which was enabled by years of separation and the maintenance of a distinct identity from the rest of Central American society. The separation that the Garifuna maintained allowed them to retain the power structure and keep the roles of men and women more equal in their community than in the rest of Central America. The layout of the Garifuna community is more closely related to that of the precolonial Native American and African societies that the Garifuna descend from and preserve in their cultural celebrations.

GARIFUNA LAND AND THE STATE

The Garifuna still see themselves as a distinct group within Honduras, but in recent years, they have been forced to come to terms with modernity. Keri Vacanti Brondo’s book *Land Grab: Green Neoliberalism, Gender, and Garifuna Resistance in Honduras* discusses what has happened to the historical lands of the Garifuna due to the implementation of neoliberal policies in Honduras. She argues that Garifuna’s access to the lands that they have historically inhabited is becoming more and more restricted.³⁸ She also notes that “the Garifuna were excluded from Honduran national identity for a significant part of their time in the nation-state, but in the laws [within the past] few decades there have been efforts to integrate the area and its people into the Honduran nation, because both are seen as having economic potential.”³⁹

Because the Garifuna were viewed as racially inferior to the mestizo majority in Honduras and other Central American nations, they were not given the same rights and privileges as the rest of the society. The Honduran Gulf coast, where the Garifuna have historically lived, was sought out by the banana industry in the late 19th century. At this time, the Garifuna began to work outside of their historical communities in the banana industry because it was in close vicinity to their historical lands. In order to work the banana economy, the Garifuna were initially employed, and soon after, it was decided West Africans would make even better workers. Soon, both of these groups fell out of favor, as Honduran and Salvadoran mestizo workers were preferred. The Garifuna and West Africans falling out of favor with the Honduran banana producers is reflective of the racism toward people of African descent in the Honduran nation. It shows how the Garifuna were grouped with other workers of African descent (the West Indians) by the Honduran majority, and their unique culture was not recognized simply because they did not look like the rest of society.

Since the beginning of their settlement on the Central American coast, the Garifuna have been slowly pushed out of their historical lands. The Garifuna were excluded because they were racially and culturally different from the rest of Honduran society. Due to this exclusion, both by choice and due to their distinct ethnic background, the Garifuna appear to be more like a maroon society than a part of mainstream society. The locations of maroon communities were incredibly important to their successes. Maroon communities were located in defensible communities that allowed for self-subsistence – that is precisely what the Garifuna had. By living in the coastal regions of Central America, the Garifuna had access to farming and fishing, while also being far from urban centers, where their autonomy would be threatened. As the Honduran government realized that the land that the Garifuna inhabited was valuable for their economic goals, encroachments began. The Garifuna became less isolated as more non-Garifuna people began moving to nearby towns such as Sambo Creek.

Interestingly, the Garifuna were never given titles to the land they inhabited. Brondo writes that “the current neoliberal governing structure means that even if Garifuna communities wish to maintain control over development processes within their territories (and communities now hold communal titles to some of their land), they are not given the means to manage local resources.”⁴⁰ The local government organizations of the Garifuna

are not recognized by the national government. The land that the Garifuna possess is not accepted as belonging to the Garifuna by the Honduran government, and the Garifuna are not seen as part of the national identity in Honduras, which is partially due to self-isolation techniques. Unfortunately, those isolation techniques have also led to racial discrimination in the workforce, as well as the acquisition of land that the Garifuna had held in their possession for generations. The Garifuna are still maintaining their identity, yet at the same time, they are being marginalized from the rest of Honduran society because they see themselves as separate. However, while the land of the Garifuna is suffering from government encroachments, the culture of the Garifuna is recognized as unique and is being preserved through the efforts of OFRANEH.

CONCLUSION

The Garifuna have a unique history. They emphasized their Native American roots, which exempted them from being slaves and also endowed them with a sense of freedom not shared by other people of African descent in the Americas. The Garifuna were not originally inhabitants of Spanish America, as they were sent to Roatán through a treaty drafted half a world away in Europe. Due to their ethnic background and unique entry into Spanish America, they were never fully integrated into society. The Garifuna also saw themselves as exceptional, and have sought to maintain their identity. They have managed to maintain their identity through their unique language, religion, and community structure. Even though modern governments and improvements in the areas they inhabit have forced them to adapt, the Garifuna are still holding on to their anomalous history and culture. In the face of modernity, the Garifuna are holding on to the notion that their identity is one-of-a-kind, which classifies them as modern maroons.

Most importantly, the Garifuna see themselves as a distinct group of people living in the Central American coastal regions. This is the most defining feature in determining whether or not they are a maroon community. The Garifuna differ from the rest of Central American society in culture, ethnicity, history, and political exclusion, and thus, are, in a sense, a modern maroon community. However, throughout their history, the Garifuna have had connections with outside communities, namely other Native American people, much like other historic maroon communities. They have been able to sustain themselves without the help of mainstream society for generations, but it has only been in recent decades that the Garifuna have been forced to adapt to modern society through their inclusion into the mainstream work force and neoliberal land grab policies. Even so, the Garifuna still possess a strong sense of community, and they work to maintain this even if they are away from their historical land.

The Garifuna never quite fit in to mainstream society; they were never slaves, but they are of African descent. They are partially Native American, and they used that to their advantage to stress their freedom. The biggest difference between the Garifuna and other maroon societies, however, is what they were running from. The Garifuna avoided mainstream colonial society to *protect* their freedom, whereas other maroon communities went elsewhere to try to *obtain* their freedom. However, this sense of freedom and the rejection of integration into colonial or modern society make

the Garifuna unique; they maintain the legacy of maroons in a modern era.

FOOTNOTES

- ¹ Terry Weik, "The Archaeology of Maroon Societies in the Americas: Resistance, Cultural Continuity, and Transformation in the African Diaspora," 81
- ² Chinea, Jorge L. "Maroons." Encyclopedia of Emancipation and Abolition in the Transatlantic World. Junius Rodriguez. London: Routledge, 2007. Credo Reference. Web.
- ³ Thompson, Alvin O. Flight to Freedom: African Runaways and Maroons in the Americas. Kingston, JAM: University of the West Indies Press, 2006. Print. 13, Citing Landers, 1998, 358
- ⁴ Ibid, 13
- ⁵ Ibid, 9
- ⁶ Ibid, 11
- ⁷ Benton, Lauren A. Law and Colonial Cultures: Legal Regimes in World History, 1400-1900. Cambridge, UK: Cambridge UP, 2002. 61. Print.
- ⁸ Price, Richard. Maroon Societies: Rebel Slave Communities in the Americas. Baltimore: Johns Hopkins UP, 1979. Print. 3
- ⁹ Weik, 81
- ¹⁰ Ibid, 82
- ¹¹ Ibid, 94
- ¹² Price, 12
- ¹³ Ibid, 1
- ¹⁴ Taylor, Christopher. The Black Carib Wars: Freedom, Survival, and the Making of the Garifuna. Jackson: U of Mississippi, 2012. Print. 6
- ¹⁵ Taylor, 19
- ¹⁶ Ibid, 23
- ¹⁷ Ibid, 145
- ¹⁸ Ibid, 148
- ¹⁹ Anderson, Mark David. Black and Indigenous: Garifuna Activism and Consumer Culture in Honduras. Minneapolis: U of Minnesota, 2009. Print. 17
- ²⁰ Ibid, 14
- ²¹ Taylor, 4
- ²² Taylor, 23
- ²³ Gargallo, Francesca. "Garifuna: A Culture of Women and Men." The Garifuna: A Nation Across Borders: Essays in Social Anthropology. By Joseph O. Palacio. Benque Viejo Del Carmen, Belize: Cubola Productions, 2005. 144. Print.
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- ²⁵ Ibid, 118
- ²⁶ Wells, 110
- ²⁷ Arrivillaga Cortes, Alfonso. "Marcos Sanchez Diaz: From Hero to Hiuracha - Two Hundred Years of Garifuna Settlement in Central America." The Garifuna: A Nation across Borders: Essays in Social Anthropology. By Joseph O. Palacio. Benque Viejo Del Carmen, Belize: Cubola Productions, 2005. 76. Print.
- ²⁸ Palacio, 110
- ²⁹ Taylor, 23
- ³⁰ Wells, 105
- ³¹ Anderson, 47
- ³² Brondo, Keri Vacanti. Land Grab: Green Neoliberalism, Gender, and Garifuna Resistance in Honduras. 2013. Tucson: University of Arizona Press. Print. 112
- ³³ Anderson, 36
- ³⁴ Ibid, 36
- ³⁵ Ibid, 51
- ³⁶ Palacio, Joseph O. "Reconstructing Garifuna Oral History - Techniques and Methods in the Story of a Caribbean People." The Garifuna: A Nation across Borders: Essays in Social Anthropology. By Joseph O. Palacio. Benque Viejo Del Carmen, Belize: Cubola Productions, 2005. 48. Print.
- ³⁷ Brondo, 62
- ³⁸ Ibid, 6
- ³⁹ Ibid, 19-20
- ⁴⁰ Ibid, 52

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