REVISIONING SCIENTIFIC METHODOLOGIES AND EPISTEMOLOGIES WITH FEMINISM AND INDIGENOUS UNDERSTANDINGS

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BY AMELIA L. GARZA, B.A., M.A.

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UNIVERSITY DENTON,
TEXAS

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To the Dean of the Graduate School:

I am submitting herewith a thesis written by Amelia L. Garza entitled "Revisioning Scientific Methodologies and Epistemologies with Feminism and Indigenous Understandings." I have examined this thesis for form and content and recommend that it be accepted in pruiial fulfillment of the requirements for t ee of Master of Arts with a major in Women's Studies.

Dr. Danielle Phillips, Major Professor

We have read this thesis and recommend its acceptance:

Department Chair

Accepted:

Dean of the Graduate School

DEDICATION

To those who have been marginalized, appropriated, and exploited for the betterment of scientific knowledge.

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ABSTRACT

AMELIA L. GARZA

REVISIONING SCIENTIFIC METHODOLOGIES AND EPISTEMOLOGIES WITH FEMINISM AND INDIGENOUS UNDERSTANDINGS
MAY 2015

Western scientific studies, in the past, have used what is known as a "value-free approach" which calls for a complete disconnection between the scientist's beliefs and their research. Feminist scholars have recently discovered that, as humans, researchers can never be completely separated from their beliefs and personal understandings—known as their epistemologies. Therefore, the research approaches taken by scientists need further guidance to remain ethical particularly when Indigenous communities are concerned. Scientists can greatly benefit from the research methods that have already been used by feminist researchers. This proposal seeks to advocate for Western scientific researchers to gain an Indigenous epistemology as an added protocol to their research process. In doing so, the Western scientific researcher can better make hypotheses, data collections, conclusions, and productions of their research. By placing Indigenous and Western scientific epistemologies in conversation with one another, it is the belief that integrating these methodologies and epistemologies will help to promote a more holistic Western scientific research process.

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CHAPTER I

INTRODUCTION

Remember learning in school that people use to believe that the earth was flat? Or that the sun and all the planets orbed around the Earth? These common topics go along with the well-known phrase, "we must learn history so that we do not repeat it." Even after the discovery that the world is not flat and the Earth is not the center of the universe, people—at the time of these discoveries—still believed in the old understandings. So what changed? Why did people start to believe that the sun was the middle of the Milky Way solar system? Why did they agree that the Earth was a sphere? Changing the way a person sees the world is said to be a hard task to accomplish. Simply look at the wars, discrimination, appropriation and marginalization that continue today. One way to bring about change is through education that builds the knowledges and understandings, or termed as epistemologies, of individuals. The intention of this paper is to explore the possibility of educating Western scientists on Indigenous—which can be categorized as populations that resided in what became the United States of America before European settlement and colonization—epistemologies in hopes of alleviating a portion of the lack of knowledges the Western scientist may have about the Indigenous populations they are researching.

When I use the term ignorant, I do not mean the common definition that is associated with negative connotations. Instead I refer to ignorant knowledges using

Charles Mills' definition in "White Ignorance" where he states, "I will use ignorance to cover both false belief and the absence of true belief…looking at the 'spread of misinformation,' the 'distribution of error'(16) and goes further to explain that, "the idea of an ignorance, a non-knowing, that is not contingent, but in which race—white racism and/or white racial domination and their ramifications—plays a crucial casual role" (20). Forming the idea of an epistemology of ignorance, Mills diverges into the concept that any particular epistemology can have its own "ignorance" or that which it does not know. Therefore, the epistemology of Western science is ignorant to what it does not know that Indigenous epistemologies do. Thus, in order for the Western scientific researchers to fully provide knowledge to, for, and on Indigenous communities, the Western scientific researcher must alleviate their "not-knowing" by seeking an education on Indigenous epistemologies.

I have spent a large part of my life analyzing scientific studies in biology and psychology through the feminist theories and epistemologies I have learned in my Women's Studies undergraduate and graduate courses as well as analyzing feminist knowledges through a scientific lens. What can I accomplish if I integrate one way of knowing with another? Moving beyond the analysis of disciplinary knowledges through varied academic lenses—what if a researcher takes the same approach to their research? What if the researcher builds upon their own epistemology with the epistemologies of the population they are researching? Building an epistemology is different from gaining information about a target population (the intended community that will be researched).

When a researcher gains knowledge on their target population, it is usually from the same epistemologies that already make up their knowledge base. For instance, if a scientist learns about the Indigenous population they wish to research, their information derives from Western sources. For scientific research, the resources usually come from the Centers for Disease Control and Prevention, Science and Technology Collection, and other various science journals that have been peer-reviewed by other scientists. Instead, the scientist should gain information on the Indigenous population from the actual members of the Indigenous nations. A sub-question to this larger concern for building epistemologies is finding an approach that allows a researcher to understand Indigenous epistemologies and add these epistemologies to their research without the appropriation of Indigenous cultures and communities for economic, social, and political exploitation.

Feminist methodologies taught in Women's Studies may reflect one way of approaching and understanding Indigenous epistemologies without causation for appropriation. I first gained insight into feminist research methodologies upon reading Bagele Chilisa's *Indigenous Research Methodologies*. In this first textbook coving diverse Indigenous epistemologies, Chilisa positions research within the cultural context in which it takes place. Chilisa describes her work as being, "[to] make visible voices of those who continue to suffer oppression and discrimination be it because of their sex, race/ethnicity, disability, sexual orientation or social class" (Chilisa xxii). The explanation Chilisa gives for her textbook falls directly into the goals of most feminists' objectives; therefore, I will use Chilisa's textbook as my specific feminist outlook on

researching Indigenous populations. Some researchers, similar to Chilisa, have focused on the issues surrounding the scientific research process—which can be identified as the before, during and after data collection as well as publishing process—used in studying Indigenous populations and have called for more work to be done on merging Indigenous understandings with that of the Western scientific community (Cajete 8). This call for action is what has led me to investigate one angle at merging Indigenous epistemologies with that of the Western scientific research process.

Literature Review

Higher education institutions are places where knowledge is cultivated, analyzed, and taught which contributes to the individual's and the discipline's epistemologies. No two epistemologies are the same, so placing epistemologies in conversation with one another can allow for more holistic understandings. The term "science" derives from the Latin term "scientia" which translates to "knowledge;" science can be identified as one form of epistemology, which means that science is one way people can learn and understand the world (Longino 51). Scientific understandings usually follow a specific set of methods in their collection of information. Previously known as the scientific method, the step-by step process of scientific research usually encompasses the following steps: asking a question, observing a phenomena or a series of phenomena, forming a hypothesis, testing the hypothesis, collecting data, and drawing a conclusion or reforming the hypothesis. A process that is taught in most elementary schools, the scientific method is a historical technique. Due to its historical use, the scientific method can be identified as being "out of date." A new methodology replaced the commonly used Western

scientific method known as the "inquiry wheel." The inquiry wheel was first developed by William Harwood—an associate professor of science education at Indiana University in Bloomington—and was based on his dissertation paper that analyzed the system scientists use for their research (Harwood 6). This new system is similar to the scientific method because it maintains the same steps, but differs because of its ability to be fluid and flexible (Robinson 791). This new methodological process is considered common among researchers across the scientific disciplines (Robinson 792) and shows that scientific methods can be changed.

Western scientific methods are not the only aspects of change in the scientific community, the approaches taken by scientists have also undergone transformations as a way of improving research. A huge foundational concept to Western scientific ways of knowing is termed as the "value-free approach." This approach consists of the researcher having no outside assumptions or conclusions based on intuition or personal experiences involved at any point of their research (Longino 53). The limitation of this approach is that it has now been determined that there can be no such thing as a "value-free" interaction with research because the collection of information and interpretation of that information is a process that will always be laced with human values and understandings (Weasel 183). Trinh Minh-Ha, a postcolonial and feminist writer explains that "[a]ny investigator who claims to be 'merely recording facts' thereby deludes himself" (Minh-ha 56). In this statement, Minh-ha discusses how denying relationality to the researcher's research is incomprehensible. Science is a field that was formulated out of Western culture and as such, it would make sense that the values influencing it would be of

Western thought (Bauchspies & Bellacasa 338). Given that human beings cannot be without influence, scientific researchers cannot be expected to execute a value-free approach accurately.

Who decides whether a specific research method is out of date and should be changed, or if the methods used in a study give an accurate portrayal and identification of phenomena? Feminist Science and Technology Studies (FSTS) is one outlet that analyzes and investigates scientific research studies (Bauchspies & Bellacasa 228). Some individuals within this field focus their analyses on the concepts and notions that play into scientific outcomes and practices as well as break down the rigid structure science has created for its research process (Nelson & Wylie xi). Another important aspect to take note of is how most scientific researchers do not question the process they use when researching an observation (AAC&U 5). By not acknowledging or continuously questioning their research process, scientists may fall victim to being unaware of how their research methods can influence their participants before, during, or even after the research project takes place. FSTS, then, plays an important role bringing to light the lack of awareness that exists in scientific research. Some scholars of feminist methodology claim that "[f]eminists are at the forefront of critically interrogating the texts and products that compromise culture to resist patriarchal understandings of social reality that push women and other minorities to the peripheries of their culture and social interpretive process" (Hesse-Biber and Leavy 224). As explained in this statement, a feminist analysis of materials can provide a review on how research can negatively impact commonly

oppressed groups. By examining scientific practices, feminists can transform the scientific epistemology.

Although I have explained that feminist analyses of scientific research can best alleviate appropriations and unforeseen forms of oppression from the scientific community on Indigenous populations, mixing science and feminism could lead to hesitations from both communities (Roy 134). Accused of not caring and ignoring scientific understandings, feminists are believed—by some—to be anti-science (Ahmed 29); however, those perspectives are inaccurate portrayals of feminist understandings of biology. Feminist science studies focus, more specifically, on the "…intellectual activity, as conditioned by historical circumstances, societal beliefs, and accepted norms" within scientific knowledges (AAC&U 3). Feminist scientists such as Anne Fausto-Sterling, Marion Lowe, Sandra Harding, Evelyn Fox Keller, Ruth Hubbard (AAU&C 4), and others transform scientific knowledge as well as the scientific research process through their own research studies. For example, according to their websites, Anne Fausto-Sterling is shifting the way biologists identify how human traits develop through her "Dynamic Systems Theory," while Sandra Harding is bringing to light issues of scientific methodology on developing nations. I believe that this particular paper will fall under the FSTS analysis adding another perspective to the ever growing field of work.

One issue some scholars and critics pose is that implementing additional requirements, such as analyzing every step in a research process—and regulations to their research will restrict the research process (Sherwin 12). Although it is true that adding steps and/or regulations to the research process would restrict the researcher's ability to

quickly execute their research; this reflection seems opportunistic of the researcher and fails to take into account the rights and values of the participant and their culture. One way that researchers can promote ethical research is by using protocols that have been established by the Western scientific community. Scientific research studies, however, do not require protocols for execution, and researchers can use and interpret these tools differently (Raven 34).

With the various possibilities for using protocols, it is clear that feminist scientist researchers have a huge challenge in front of them with defining a protocol that does not get misinterpreted or misused. It is the responsibility of the researcher to use their intelligence to create and implement "ethically sound as well as scientifically rigorous research protocols" (Luna 263). Since researchers are responsible for doing quality research, it is also their obligation to Indigenous populations to be conscientious of how their research can affect the people of that population. This is not to say researchers are not providing quality research, but that it is important to continuously be enhancing the quality of their research.

Instead of changing or replacing the methods that the scientific research process includes in its studies, it is important that the focus of creating better research methods is on re-envisioning research practices. It is believed that the Western scientific community will more likely accept a renovation of their methodologies rather than dismiss the Western scientific methods altogether (Weasel 190) making the revision or addition to Western scientific methods the best way to better the scientific research process. Some scholars believe that in order to perform scientific research differently, there needs to be

more than a "will" to change, but also an acceptance of the scientific community to the reshaped methods (Longino 62). In this paper, I argue that the scientific community has made progress in bettering the standard scientific research process, but I wish to work in addition to their methods already set in place. I plan to use a deconstruction perspective when analyzing the current Western scientific research methods. Deconstruction perspective is defined by some feminist research scholars when "a text is analyzed to see not only what is there but also what is missing, silenced, or absent. The goal of this kind of research is not to create conjecture about what should be there, but rather to deconstruct the text to see what is revealed, what emerges, what juxtapositions develop" (Hesse-Biber and Leavy 228). Drawing from this understanding of deconstruction, I will analyze what is missing from the scientific research process to potentially prevent researchers from exploiting Indigenous communities. .

Chapters

In Chapter 1, "Methodologies of a Western Scientific Researcher," I will discuss how Western scientific studies have been a source for producing harmful effects for the Indigenous communities they study such as: appropriation, exploitation, and oppression. The most famous studies that I will cover are Samuel Morton's "Crania American" along with the firewater myth that has left Indigenous populations stigmatized with the belief that Indigenous people have a biologically lower tolerance for alcohol. Chapter 2, "Arizona State University vs. the Havasupai Tribe," will cover various review practices that exist for research that is conducted on Indigenous populations such as the International Review Board which is Western based, as well as the

mixed/multidisciplinary methods that are available for researchers to use in their methods. I will also discuss the flaws within the reviews boards and methods covered and use the Arizona State University versus the Havasupai Tribe case as my primary source using the Arizona State University case as my main example. Chapter 3, "Biological Materials and Indigenous Collaboration," covers an ethnographic study covering the tension placed on Australian scientific researchers. Observing a need to resolve fear of the researcher to lose their biological materials, I will use this study to transgress into how gaining an Indigenous epistemology can help alleviate such fear. In the end, it is my hope that Indigenous epistemologies will be used in the education of Western scientific researchers who wish to research Indigenous communities.

CHAPTER II

METHODOLOGIES OF A WESTERN SCIENTIFIC RESEARCHER

Unfortunately, Western science has a history of exploitation, appropriation, and misinterpretation of research in regards to minority groups. Dr. Lori Lambert explains in *Research for Indigenous Survival: Indigenous Research Methodologies in Behavioral Sciences* that "[t]he term 'research' is inextricably linked to European imperialism and colonialism. The word itself, 'research,' is probably one of the dirtiest words in the Indigenous world's vocabulary" (Lambert 14). Claiming the word 'research' as a promoter of negative connotations, Lambert explains the harsh associations that Indigenous communities have towards the Western research process. Lambert also connects research to colonialism which stigmatizes Western research as something to be feared, avoided, and hated. Bagele Chilisa defines colonialism as, "the subjugation of one group by another…a brutal process through which two thirds of the world experiences invasion and loss of territory accompanied by the destruction of political, social, and economic systems, leading to external political control and economic dependence" (9). Using terms such as brutal, destruction, and loss, Chilisa acknowledges the hardships that Indigenous people have gone through as they were—and are—colonized. Regrettably, Indigenous communities are still subject to the effects colonization has left on them and Western scientific research is a main contributor to holding Indigenous populations in a colonized position.

Not only has colonialism been a contributing factor to hesitations towards Western research, but the history of studies conducted on Indigenous populations also plays into the Indigenous communities' reluctance to trust Western scientific researchers. One of the best known studies is representational of into Western science's exploitive history is Samuel Morton's *Crania America* (1839) where Morton collected and observed the size of skulls; Morton then made a conclusion that the larger the skull size, the more intelligent the human. His conclusions for Native Americans are as follows:

> In their mental character the Americans are averse to cultivation, and slow in acquiring knowledge; restless, revengeful, and fond of war, and wholly destitute of maritime adventure. They are crafty, sensual, ungrateful, obstinate and unfeeling, and much of their affection for their children may be traced to purely selfish motives. . . Their mental faculties, from infancy to old age, present a continued childhood. . . . [Indians] are not only averse to the restraints of education, but for the most part are incapable of a continued process of reasoning on abstract subjects. (Morton, *Crania America)*

Having the third largest skull out of his data collection, Morton's observation of Native American skull sizes led him to make the above interpretation of his data. Describing Indigenous Americans as unintelligent, unappreciative, as well as other such assumptions, the concluding marks that Morton gives as the product of his research promotes an understanding of how scientific research can be biased, racist, and influenced from the researcher's own view. As a scientific study, Morton's findings were seen as being true which stigmatized the native population in America for decades. Looking at Morton's interpretation of the data, a connection can be made about the

influences that put Morton's places into his explanation of differences in skull sizes. Being that this study is based in the mid-1800's, it may have not been apparent to Morton and other scientists that Morton's findings were based off of his own epistemological conclusions of the data.

Being that Morton wrote *Crania America* in 1839, it is difficult to criticize him in regards to the epistemology of the time period. Most would like to think that Western scientific research has come into better practices than those of 1839 and in many ways it has; yet, Indigenous communities are still being appropriated to benefit Western scientific knowledge. Ann Harding, along with many other Indigenous advocates collected a serious of remarks from Indigenous tribal members and found that the majority disregarded Western scientific researchers all together.

> [R]esearchers cannot be trusted; researchers receive career advancement and tribal communities get poorer; researchers are disrespectful of cultural practices; researchers feel that tribally based organizations are too unstable to be reliable partners in research; results are not shared with the tribal community; …benefits of a study rarely reach tribal members; when the study results are presented to the community, they are too technical to be understandable. (Harding et al. 2160)

Indigenous communities presumes Western scientific research as a potentially harmful and appropriating situation to get involved in, and with research having so many negative effects on ecosystems and Indigenous populations (Cajete 300), Indigenous populations' concerns are incredibly valid.

Due to the process of Western scientific research following a "discovered, extracted, appropriated and distributed" (Smith 58) course, Indigenous populations have also been repeatedly stigmatized. One Western scientific myth that continues to

stigmatize Indigenous communities to this day is the firewater myth. It was found that the general public still believes that Native Americans are biologically susceptible to alcoholism (Dingel and Koenig 173). It is unclear how the myth came into existence, but it is categorized as folklore and has been the basis for many Western scientific inquires. Most Western scientific research studies that investigate the likeliness of the myth seek to find a link between the behavior of substance use and specific genetic cues making Indigenous populations subjects to the stigma of the study (Dingel and Koenig 173). Even today, studies are still being conducted with the hypothesis that Native American's ability to metabolize alcohol is less than non-Native peoples continuing to stigmatize many Indigenous peoples.

Given the history of exploitation, appropriation, and oppression that Western research has created for Indigenous populations in America, it is understandable why native communities are concerned for their community's well being (Cajete 8). Due to unethical research practices and the progression that research methodologies has made in the Western scientific research world, research protocols exist as a way of avoiding exploitation, appropriation, or harm to an individual. At this point in time, Western science has created a system which is intended to act as their sole review system which specifically focuses on making sure research is ethical. This review system is known as the Institutional Review Board (IRB) and is used only when human subjects (there is an alternate IRB for non-human animals) are involved in a research study (U.S. Department of Health and Human Services). Research can happen in many different types of institutions such as academic, laboratorial, governmental. One reason why research takes

place in accordance with an institution is usually due to the institution being the primary funder and supporter of the research. Since research is directly connected to a particular institution, each institution that produces research is required to have their own IRB which reviews applications for prospective research.

The official IRB site requires that all IRBs become registered through the U.S. Department of Health and Human Services, meaning that any group can become a registered organization of IRB—including Indigenous communities. The first Indigenous community to have a registered IRB is the Navajo Nation which is run by a board of Navajo leaders. By having their own review board, the Navajo Nation has jurisdiction over the studies that are allowed to be conducted on their tribes, meaning that any study conducted with the Navajo people, must first be approved by the Navajo IRB (Brugge and Missaghian 497). Since the creation of the Navajo IRB, more tribal communities have followed and use the Navajo IRB structure as a template for their own (Brugge and Missaghian 498). One major difference between the Western scientific IRB and the Navajo Nation's is the requirement to review manuscripts or finalized studies before publication (Brugge and Missaghian 499). Many scholars, both Western and Indigenous, advocate for tribal nations to create and register International Review Boards as another outlet to safeguard Indigenous communities from the negative side effects Western scientific research can create for such nations.

Although the Navajo Nation is the only specific Indigenous community that has formed its own IRB, one IRB organization exists to cover all health research that is being conducted on Indigenous populations known as the Indian Health Services (IHS). The

Indian Health Services has been reviewing interested research studies on Indigenous populations since 1991; however, this organization only reviews studies that are being conducted in its facility or with its staff (Morton et al. 2160). Even though the IHS does not mandate that all health research go through their review process, they do add a few steps to their review process that most IRBs do not. The first difference—although similar to Indigenous IRBs—is a review over the final report as a protection to the Indigenous population. The second step is for the researcher to read their report out loud to the participants or the tribal leader before the listener signs their name for approval (Morton et al. 2162). The additional steps that the IHS takes to protect the sovereignty and values of Indigenous populations is by far the most progressive of the review boards; however, it is also one that is avoided by scientists due to the amount of time it takes for a study to be approved (Morton et a. 2162). Having Indigenous-ran IRBs and other review organizations can help alleviate Western scientific research negatively influencing a study that is intended to be conducted on Indigenous populations. Some scholars even claim that, "[a]lthough IRB goals and procedures center on protection, informed consent, and minimizing risk, community consultation in the context of a tribal IRB is embedded within the characteristics of the tribal IRB committee members and their families and community relationships" (Morton et al. 2161). With the Indigenous values' being present in the review process of Western scientific inquiries, Westernized research is taking a step away from colonization.

Some scholars have begun work on creating research methods specifically for research conducted on Indigenous populations as an additional way to avoid conflicting

issues created by Western influences. Western scientific researchers now have the ability to integrate such Indigenous research methods into their research; though, adding these methods may not be enough to protect Indigenous people from appropriations, exploitation, and oppression. Reviewing studies that are conducted on Indigenous populations is vitally important to the ethical wellness of a research study; however, it is equally as important for Indigenous populations to understand the research that will be done on their community. For this reason, the Tribal Leader/Scholar Forum (TLSF) was created and acts as the primary educational tool for tribal leaders on the studies that asked to be conducted on their Indigenous community. Even with the TLSF, Indigenous communities are still at risk for appropriation, exploitation, and oppression from the researcher. One solution to the continued risk to Indigenous populations is by educating Western scientific researchers on Indigenous epistemologies, particularly the epistemologies of the specific tribe that is being researched. By deconstructing the methods in place, Western scientific studies conducted on Indigenous communities can become something that Indigenous groups welcome.

Another step that has proven to help Western scientific researchers conduct Indigenous research ethically is the incorporation of Indigenous research methods into their studies. Returning to Bagele Chilisa, the author of the first Indigenous research methodologies textbook, Chilisa explains the four components to Indigenous research methods.

> Indigenous research has four dimensions; (1) It targets a local phenomenon instead of using extant theory from the West to identify and define a research issue; (2) it is context-sensitive and creates locally

> relevant constructs, methods, and theories derived from local experiences and Indigenous knowledge; (3) it can be integrative, that is, combining Western and Indigenous theories; and (4) in its most advanced form, its assumptions about what counts as reality, knowledge, and values in research are informed by an Indigenous research paradigm. (Chilisa 13)

Understanding the differences between Western research methods and Indigenous research methods can help Western scientific researchers ethically improve the research they are conducting on Indigenous populations. In the excerpt, Chilisa explains that unlike Westernized research methods, Indigenous methods are based not on theories, but are motivated by the Indigenous community itself and the community's phenomena as they see. The differences in methodologies that Chilisa discusses do not disregard the Western research methods, but suggests that such methods be integrated with Indigenous methods. Another professional Indigenous research organization, known as the Native Research Network, works to promote scientific research that is "multidisciplinary and collaborative, embodies the principles of trust, respect, and ethical conducts, and, most importantly, builds capacity" (Morton et al. 2161). Using multidisciplinary approaches as opposed to completely eradicating the Western scientific research approaches helps to avoid the dominant voice battle of Western influences versus Indigenous influences and allows for the research to maintain their Western scientific worldview.

In addition to Western scientific research allowing for mixed methods in their research, researchers should be aware that the National Congress of American Indians (NCAI) funds and supports a "Tribal Leader/Scholar Forum" which is designed to help educate Indigenous leaders on Western scientific studies, research practices, and their sovereignty rights. The program produced by NCAI is geared towards certifying tribal

leaders with the ability to approve or dismiss research studies in their community. Having its own published textbook, *Research that Benefits Native People: A Guide for Tribal Leaders*, the Tribal Leader/Scholar Forum (TLSF) breaks down Western research in detail and educates tribal leaders to not only understand Western research, but to be able to manage and produce program evaluations of that research ("Research Regulation").

> The curriculum was developed in response to requests from tribal leaders who wanted resources to make better decisions about the proposed research in their communities and was launched in September 2009 following pilot use in several tribal communities. The five modules of this research curriculum have been field tested and are being used with tribal communities at their request and as funding is available. It emphasizes the validity of Indigenous knowledge while highlighting the benefits of Western research methods when used in an ethical and community-informed manner. ("Research Regulation")

Out of necessity due to tribal leaders requesting an education on Western research studies, Indigenous population leaders are now able to gain an understanding of the Western scientific researcher along with the researcher's studies that wish to be conducted in their Indigenous community.

If tribal leaders of Indigenous communities are calling for an education on Western scientific research practices and studies on their communities, then why are Western scientific researchers not advocating to receive an education on the Indigenous communities they wish to study? The Tribal Leader/Scholar Forum is set up to allow their participants to fully learn the culture of scientific inquiry and tribal leaders are highly requesting more educational offerings on Western scientific research to be offered so that they can protect their communities. To further the protection of Indigenous populations, why is the Western scientific community not working towards learning

about the Indigenous epistemologies of their targeted populations? Why is there little to no effort to create a Scientific Researcher/Scholar Forum to researchers interested in studying Indigenous populations? These questions are highly essential to consider in order to benefit the Western scientific community with ethically savvy practices from an Indigenous standpoint.

CHAPTER III

ARIZONA STATE UNIVERSITY VS. THE HAVASUPAI TRIBE

Exploitation and appropriation still exist in the Western scientific world today and there is no better example than Arizona State University vs. the Havasupai Tribe. In March 2010, the Arizona State University had a lawsuit filed against them by the Havasupai Tribe whose members had participated in one of the University's studies. Reporting and reflecting on the series of events taken by Arizona State University and the Havasupai Tribe is Katherine Drabiak-Syed, JD who is a visiting assistant research professor and faculty investigator at the Indian University Center for Bioethics. The research process used by Arizona State University in conducting research on the Havasupai Tribe will undergo a deconstructive analysis in this chapter. Drabiak-Syed's records the case in "Lessons from Havasupai Tribe v. Arizona State University Board of Regents: Recognizing Group, Cultural, and Dignitary Harms as Legitimate Risks Warranting Integration into Research Practice" and the actions taken by both Arizona State University and the Havasupai Tribe. Her written accounts will be used as the primary resource explaining both groups' actions.

The Havasupai Tribe is an Indigenous group that is well known among health professionals as having the fourth highest occurrence of diabetes in the world (Drabiak-Syed 177) and because of their prevalence for diabetes, also likely to be the basis of a Western scientific health study. Even though the Havasupai Tribe is a target for health

studies, Arizona State did not originally approach the Havasupai Tribe asking to conduct research—on the contrary, a member of the Havasupai Tribe asked Dr. John Martin, a professor at Arizona State University; if he could help their tribe in finding answers and treatments for their diabetes epidemic (Drabiak-Syed 178). In order for Western scientists to explore why the Havasupai Tribe were so prone to diabetes, Arizona State University needed to collect blood samples from as many participants from the tribe as possible. To help with the execution of the Havasupai study, Dr. Martin recruited colleague Dr. Therese Markow, who works as a genetics and zoologist expert at the university. After partnering together, Dr. Martin and Dr. Markow began their research in hopes to find out why the Havasupai were susceptible to diabetes.

The first step in conducting research with human participants is to gain approval from an Institutional Review Board (IRB). Since Dr. Martin was performing the Havasupai study with Arizona State University's resources, the researchers needed to gain approval from the Arizona State University IRB. To gain IRB approval, either Dr. Martin or Dr. Markow needed to submit a proposal to the Arizona State University's IRB discussing their methods, identifying how consent will be gained, and potential harms of their study. It was found, though, that Dr. Martin and Dr. Markow had been using human participants before approval was given from Arizona State University's IRB (Drabiak-Syed 184, 208). The most common system for gaining approval is by submitting a proposed research project to the IRB containing information on how consent will be obtained, the methods used for collecting and securing data. Once the proposal for a research project is approved, then research can begin on human participants. This is why

Martin and Markow's collection of blood samples before IRB approval can be labeled as malpractice and be placed under ethical questioning.

Not only was there a lack of submission to IRB, but the proposal that was submitted to the Arizona State University IRB was for a study being conducted on schizophrenia—not on diabetes (Drabiak-Syed 182). Accounts from the case acknowledge that Markow had originally discussed having an interest in studying the tribe's genetic contributors to schizophrenia; however, this request was initially discouraged by Martin (Drabiak-Syed 179). The Havasupai tribe was also under the impression by Markow and Markow's team of researchers that the blood samples that were collected were strictly for diabetic research (Drabiak-Syed 180). Although the tribe was told that the research was for diabetic studies, the consent form that some tribal members signed (Consent was also given orally) described the purpose of collecting samples "to study the causes of behavioral/medical disorders" (Drabiak-Syed 180). Another discovery was that the Havasupai tribe was not the only group under the impression that the Arizona State University study was solely purposed for diabetic inquiries. The Tribal Council, the Indian Health Services members and data collectors themselves all believed that the blood samples were only for diabetic studies (Drabiak-Syed 181). Given false information, the Havasupai tribe was under the impression that their diabetic concerns would soon be answered.

Concerned with using the blood samples from the Havasupai tribe for schizophrenia research, Markow ignored warnings from Dr. Martin to cease using blood samples for her work and instructed her team members to gather information connected

to schizophrenia from the tribe's medical charts that had been housed in the Indian Health Services clinical building (which showed that the tribe also had a higher percentage than any other racial categorization increasing Markow's need to research) without approval from Arizona State University, the participants, or her institution's IRB (Drabiak-Syed 182). From Markow's actions, it is clear that protocols for ethically practiced research—such as getting approval from the IRB, giving informed consent, and respecting privacy with medical information—were not taken creating an exploitation and appropriation of the Havasupai tribe. Due to Markow's generalized consent form, new policies have been put in place to avoid the unethical practice that was exhibited on the Havasupai tribe. Now, researches must provide proof that "informed consent beyond conventional institutional review board (IRB)," is given to Indigenous participants, "because of the potential for adverse consequences at a community or governmental level that are unrecognized by academic researchers" (Harding et al. 6). Having an additional step to the IRB review's process further promotes ethical research; however, this new regulation only solves the initial communication issues of the Arizona State University case.

Giving a vague and generalized description of the reasoning behind collecting blood samples, Arizona State University contained the rights to the blood samples—and in the Western scientific researcher's eye—was considered a waste product of the Havasupai tribe (215). Not only was it considered a discarded product by Arizona State University, but the court overseeing the Havasupai lawsuit termed the blood samples as having been donated by the tribe and rejected the accusation that the blood samples were private to the Havasupai people (Drabiak-Syed 189). Although the blood samples were

considered waste products, policies exist for rights concerning biological materials. Such rights include: "[i]ndividuals may object when their biological materials are used for research without their consent, when used beyond the scope of consent, or when used for purposes with which the subjects do not agree" (Drabiak-Syed 185). Individual participants have certain rights in regards to any biological material that is collected for research purposes. Subsequently, the Havasupai tribe organized a lawsuit based on this right, not for any particular individual, but for the tribe as a whole (Drabiak-Syed 186).

Arizona State University's Dr. Markow exceeded her actions beyond the unethical practice of collecting blood samples without consent and proceeded to share blood samples and data with other researchers and institutions. Drabiak-Syed writes that "twenty-three academic papers, articles, and dissertations used the Havasupai blood as a source. Of these, fifteen contained research specifically related to schizophrenia, inbreeding, or population migration, rather than diabetes" (183). Not only did Arizona State researchers use the Havasupai blood samples as resources for their inquiries, but Markow also shared the samples with Stanford, Roche, and the University of California at San Francisco who were also not executing studies on diabetes (Drabiak-Syed 183, 203). Markow's research methodologies are far from protocol, which is incredibly inappropriate and unethical, but also shows how vulnerable participants in a Western scientific study can be.

Another example of Western scientific practices in research producing a lack of action toward ethical research is when Markow did not provide the Indigenous community with a complete understanding of the research being conducted (or

potentially conducted) on their community. Indigenous members helping with the research as well as being participants can only give total consent if they understand completely the methods, questions, and foreseen conclusion of the study being conducted (Harding et al. 6). Indigenous researchers have found that "[t]he ability of a tribe to give fully informed consent requires extra explanation and/or trained tribal staff who can consider the risks and benefits from a perspective inside the subject group's legal, political, and cultural milieu" (Harding et al. 7). If Western scientific researchers are not providing an excess amount of education for their participants and Indigenous leaders that are helping them with the research, then they have created a space for harm in their research studies. Over the years, Indigenous populations have gained access to sovereignty rights which has helped alleviate their communities from exploitation. Sovereignty rights can be defined as a way of preserving the Indigenous populations' governmental structure as well as protection over the land the tribe exists on, the businesses that reside in the community, and the health of the community (Harding et al. 2160). Since each governing tribal community has their own rules, regulations, policies, and constitution, it is vitally important that the researcher understand the community's laws, their ethics and epistemologies (Harding et al. 6)—and in the Arizona State University's case, understanding the tribe's beliefs could have helped alleviate the potential for a lawsuit.

If Dr. Markow had gained an education on the Havasupai Tribe, she would have come to know that blood has a significant meaning to the tribe. To the Havasupai people, blood makes up their identity and if it is misused it can cause harmful consequences to

their community (Drabiak-Syed 176). At this moment, the production of knowledges such as the field of science is being done in the "colonizer/colonized" structure (Chilisa 91), and understanding Indigenous epistemologies can help alleviate this framework. Bagele Chilisa, a prominent Indigenous research educator explains that a postcolonial approach to Indigenous research methodologies is the best way to do research.

> In postcolonial Indigenous research methodologies, non-Westerners are called on to invoke community oral literature and Indigenous knowledge to inform what is relevant methodology from the perspectives of the colonized. Postcolonial Indigenous research methodologies move beyond knowledge construction by the Western first world as the knower (Chilisa 91).

Chilisa's statements introduce the idea that a postcolonial structure applied as an Indigenous methodology can lessen the influence that Western values play into research studies as well as help introduce Indigenous epistemologies to the researcher. The first action that researchers need to take is to listen to the participants that are being researched and identify the key research issue based on their knowledges. So although Arizona State University may have believed that they were benefiting the tribe by sharing the tribe's blood samples with other Western scientific researchers, they, instead, were creating significant harm to the tribes' belief systems. Having gained an Indigenous epistemology, the researchers at Arizona State University could have avoided harming the Havasupai Tribe that they had originally wished to help.

Disregarding protocol greatly hurt Dr. Markow's ability to conduct responsible research, but her neglect for understanding the epistemologies of the Havasupai tribe also played into her misunderstanding of the tribe's needs. Not only was their beliefs about

blood a primary reason why the Havasupai were upset with Dr. Markow and Arizona State University's actions, their beliefs about death and inbreeding also play an important role for the Havasupai. To begin, the Havasupai tribe believes that inbreeding can cause a family member to die which makes approaching the topic of inbreeding a topic that produces emotional distress and concern for the Havasupai community (Drabiak-Syed 217). To recall, inbreeding was one of the research topics explored using the Havasupai's biological materials. Finding out that the Havasupai had a significant amount of inbreeding would promote both physical and emotional harm to the tribe (Drabiak-Syed 217) not to mention will stigmatize the tribe as the "inbreeding" tribe. Secondly, the tribe also believes that in order for a person to move on to the afterlife, they must be completely physically intact (Drabiak-Syed 214). Without their blood samples, those who had passed away during the time of the Arizona State University study were not able to move on to the spiritual realm according to the tribe's epistemology. In court, Dr. Markow is noted saying that it "[never] 'occur[red] to her that the research may be upsetting to the [tribe]'" (Drabiak-Syed 219). It is quite possible that if Dr. Markow had gained an education on the Havasupai epistemology, she would have been aware of the tribe's beliefs and been more likely to return the blood samples to the tribe as well as protect the biological materials from being used for other studies.

Understanding Indigenous epistemologies will help the researchers produce knowledge that is not only beneficial to the Western scientific community, but to the Indigenous populations they are studying. In the end, Arizona State University was court ordered to pay the Havasupai tribe a settlement of $700,000, return the blood samples

that were collected along with any documents or papers written using the blood samples, deny all IRB proposals to use the blood samples or the date from the blood samples, and forfeit all contact information with whom Arizona State University shared information concerning the Havasupai tribe (Drabiak-Syed 195). The court ruled in favor of the Havasupai tribe due to Dr. Markow's inability to follow the Western scientific research protocols. What the court, and the Western scientific community, did not recognize was how Dr. Markow's values and own epistemologies were the motivation for her to neglect the Western scientific community's research protocol. Pursuing her own desires to find answers to her research interests—schizophrenia—Dr. Markow is a primary example of how Western scientists are still humans who impose themselves into their research. Simply following the present research protocols cannot resolve how the Western scientist views their participant. But gaining education on the participant's epistemology can.

CHAPTER IV

BIOLOGICAL MATERIALS AND INDIGENOUS COLLABORATION

Throughout the many years of exploitation and appropriation, Western scientific research has continued one practice in their studies on Indigenous populations—a lack in accountability of how their research could negatively impact the specific community that they are studying. It is not enough to simply acknowledge that Western scientists may not be aware of Indigenous beliefs and practices, as Dr. Markow stated in the Arizona State University case, but Western scientists must take responsibility for knowing the epistemologies of the Indigenous communities they are studying. The Indigenous communities have already taken responsibility for educating each other on Western scientific epistemologies by providing education and certification process to tribal leaders. Thus, the Western scientific community needs to play catch up and become accountable for knowing the epistemologies of the Indigenous groups they intend to study.

Placing the responsibility on the researcher, Bagele Chilisa suggests that Western researchers "research back" during the step of gathering information about the target population which means that the researcher would have to examine the history of the population directly from the historical sources of that population (50). Although Western scientific research, due to their unawareness, has been a producer of negative issues for Indigenous populations, which is why it is important to not completely eradicate or

dismiss the beneficial aspects of such research. In "On the Absence of Biology in Philosophical Considerations of Race," Stephanie Malia Fullerton suggests that "race theorists must recognize the ways in which biological knowledge in this area [biological differences in race] both shapes, and is shaped by, sociocultural understanding and must engage with that knowledge production as it occurs" (253). So instead of Western science using their value-free approach, Fullerton proposes biological race theorists and researchers acknowledge their lack of knowledge of the negative effects of their researcher; for example, state the sociocultural foundation that the researcher is coming from and how these specific epistemological bases could be influential to the research.

In order to move away from one's lack of knowing within an epistemology, a researcher must first recognize how their research will affect another individual, family, and community. Indigenous methodologies can help the researcher to better study the Indigenous population, as discussed previously in Chapter 1; however, many Western scientific researchers to this day conduct their research *on* Indigenous communities rather than *with* Indigenous communities (Lambert 14) which is what was seen in the Arizona State University study. Previous research shows that it is critical to include Indigenous people of the particular Indigenous community being studied to assure that the researcher is providing the most accurate research (Lambert 13), yet some researchers only connect with Indigenous people through consultation and does not give them the "in-depth real respect" of having an educated voice in the Western scientific research (Lambert 14). It is unclear why Western scientific researchers do not see the Indigenous community having an equal voice to them in regards to conducting, reviewing, and producing knowledge,

but it is imperative that researchers view Indigenous members of their target population as having an equal say in the research (Cajete 8, Harding et al. 6). By giving the participants and tribal leaders equal say in the research, the Western scientific researcher can produce research that is truly beneficial to the Indigenous community.

The history of a culture greatly plays into the epistemology of that culture as well as the traditions, beliefs, and ethics of that particular culture. Researchers have found that "[f]ew nonnative researchers possess an awareness of Native American culture and belief systems, including the continuing effect of American colonialism on the peoples they seek to study" (Harding et al. 6). If a limited amount of researchers are knowledgeable on Indigenous culture and beliefs, then how is Western scientific research meant to be accurately and ethically conducted? An Indigenous epistemology is not a concrete structure; instead, it is dependent upon the Indigenous community and changes with each community (Louis 133). Therefore, it is essential that each Western scientific researcher become attuned to the specific Indigenous community they plan to research.

Emma Kowal, a professor in Anthropology in the School of Social and Political Sciences at the University of Melbourne in Australia performed an ethnographic study on scientific researchers that wanted to conduct research on Indigenous populations. Kowal's published study, "Orphan DNA: Indigenous Samples, Ethical Biovalue and Postcolonial Science," begins with a review of the Human Genome Diversity Project (HGDP) which set out to collect DNA from all Indigenous groups around the world to further develop migration theories (Kowal 578). Cavalli-Sforza, the promoter of the project, asked Australian geneticists who had already collected Indigenous DNA samples

throughout Australia to share their samples with the HGDP (Kowal 578). When the Australian media presented the story to the public, many of the biological materials that had been housed in laboratories since the 1960s were shut down and termed as "The Vampire Project" by many aboriginal people in Australia (Kowal 578). One reason why scientific researchers were so adamant about the HGDP was because of the Indigenous peoples of Australia having a significant amount of isolation before colonization creating a unique DNA—meaning a valuable DNA (Kowal 578). Kowal states that, "[m]any geneticists see Indigenous people as the last frontier of global genetic knowledge and are attracted to the unknown genetic variation that lies within Indigenous human populations" (579). Giving value to Indigenous blood, the scientific researcher moves beyond the ideals of colonizing a land, to colonizing biological materials.

Following a geneticist who has spent the last fifteen years making a connection to seven Indigenous communities in hopes of performing research on their ancestors' blood samples (Kowal 579), Kowal oversees the steps that scientific researchers must take in order to gain approval to use an Indigenous community's biological materials. Being close to retirement, the original geneticist Kowal brings along an apprentice throughout her work in hopes that said apprentice can take over her research after she retires (Kowal 579). Explaining in more depth, Kowal states that "[g]eneticists based in Australia want to avoid having their samples used in ways that the Indigenous donors disapprove of, both for their own sakes and for that of the donors" (Kowal 579). Fearing situations such as the Arizona State University case, geneticists have increased their awareness to the importance of following ethical protocols in their studies. The Australian National Health

and Medical Research Council (NHMRC) has made the claim that "[p]rojects that include Indigenous people must conform to a higher ethical standard" (Kowal 582). Due to this regulation, Kowal's geneticists must meet a stricter criterion for ethical research than that of the American Western scientific researcher.

With to the advancement of ethical protocols, Australian scientific researchers are at risk of losing the Indigenous biological samples they have collected if any protocol is not taken, if they have a bad reputation with any Indigenous person, or if any Indigenous tribe being approached does not trust the researcher (Kowal 585, 588). Therefore, Australian scientists have become accustomed to being weary of other scientists in fear that said scientist could be the end of their life's work (Kowal 585). In one particular case, Kowal observed scientific researchers being recruited not because of their experience and knowledge with genes or evolutionary theories, but because of their ability to build rapport with the Indigenous community (Kowal 589). If scientists cannot find a suitable partner or successor to take care of their research, then the Indigenous biologic samples may become dormant, divorced, or—as Kowal terms it—orphaned (Kowal 589). Unlike Western scientific research, Australian scientific researchers work on a basis of fear of losing their work and strive to create strong relations with the Indigenous community they wish to study.

What Kowal's study shows is that researchers do have an understanding of the importance of maintaining a relationship with the Indigenous population they are studying; however, this concept of importance derives from a Western scientific need of gaining knowledge and is still not working *with* the Indigenous populations being studied

The research that Western scientists are currently conducting is being labeled as the new form of colonization due to a lack of attention on Indigenous epistemologies in such studies (Kelly, Belcourt-Dittloff, C. Belcourt, and G. Belcourt 2147). Indigenous communities have been calling for Western scientific researchers to gain an understanding of the target population's communal epistemology for many years (Lambert 213). Dr. Lori Lambert explains in *Research for Indigenous Survival: Indigenous Research Methodologies in the Behavioral Sciences* that researchers should gain knowledge about the culture so that the researcher can relate to the Indigenous people (53-54). If a researcher is to maintain their values—which has been previously discussed—in a research study and said researcher makes hypotheses, method choices, and conclusions with those values then it is essential that the researcher immerse themselves with the epistemologies of the populations they are studying.

One important distinction that is necessary to make is that gaining an Indigenous epistemology is not a one-time concept. Not all Indigenous groups are the same, each have their own epistemology—their own way of knowing. So a researcher cannot go into one Cherokee tribe and use their new-gained knowledge of the tribe's epistemology for a Navajo tribe. Although Indigenous tribes have formed their own nations (i.e. Cherokee Nation, Navajo Nation, etc.), each tribe within a nation can vary—just like each State in the United States varies with the curriculum they teach in schools—creating a unique epistemology for each community. Since Western scientists are already concerned with the amount of time it takes to have a research proposal go through an Indigenous IRB, a clear limitation with the need to gain an Indigenous epistemology is the amount of time

the researcher will have to devote to the community they wish to research. Even with the amount of time it will take to gain an education on the specific tribe's epistemology—it is the responsibility of the researcher to perform and execute their research in an ethical manner and gaining an education on the tribe's epistemology is one beneficial approach.

What the Australian research requirements have done is revealed an importance to the need of the Indigenous community's approval of the scientific research process. Instead of leading with fear, appropriation, and exploitation, the Western scientific researcher should seek an education on Indigenous epistemologies. By gaining such an education, the researcher would be able to better execute their research, connect to the Indigenous population, and understand the values and beliefs of the population they are studying. Fear should not be the main source used to drive Western scientific research and such research is vitally important if Indigenous populations are to overcome health disparities and diseases. If tribal communities are gaining an education on the Western scientific research epistemologies and modes of researching, it should also be vital for the Western scientific researcher to gain an understanding of the Indigenous community in which they are studying. It is not enough to simply build a rapport with an Indigenous population—the research must take responsibility to their own research and include an Indigenous epistemology into their research process.

Advocating for the Western scientific researcher to gain an education on Indigenous epistemologies is easier said than done. The researcher must take a few insights into consideration before they begin their Indigenous educational journey. The first is that the Western scientist must disregard their previous perceptions of Indigenous

people and begin their Indigenous epistemological education with an open mind ready to receive the native knowledges (Deloria 44). Next, the researcher must cease the labeling of Indigenous knowledges as myth and accept stories of spirituality (Deloria 44). The Western scientific researcher does not have to implement the Indigenous knowledges as their own, but they must be aware of such knowledges. Another aspect the Western scientific researcher must acknowledge is that gaining an Indigenous epistemology is considered, from Indigenous perspectives, as a gift and that the information shared with a researcher should be appreciated as such (Lambert 41). Lastly, researchers must recognize that the knowledge and education they receive from Indigenous epistemologies is not theirs to own, but belongs to the Indigenous community that is educating them (Lambert 33). With these concepts in mind, Western scientific researchers can gain an education on Indigenous epistemologies in an ethical and responsible manner.

Unfortunately, there are currently no examples of the success that gaining an Indigenous epistemology can create for the Western scientific researcher. However, Indigenous researchers have pointed out that Western science has used Indigenous knowledge in many of their scientific explanations. Vine Deloria Jr., a leading Native American scholar, explains how geologists have used Indigenous narratives as a basis for what to look for in the fossil composites and land formations (183). Lori Lambert also discusses how scientists observed animal behaviors of consuming specific plants for medical purposes which Western scientists termed as "zoopharmacognosy" and explains that Indigenous communities had been observing these phenomena for many centuries already (25). What these two examples represent is the aspect that Indigenous

knowledges have been validated by Western science centuries after Indigenous knowledges of the phenomena were first observed.

Western scientific researchers can look to Indigenous epistemologies as the guiding force for their research. An Ojibwa elder shares one Indigenous piece of knowledge concerning a lesson on the trees in his tribe's region.

> I was looking one day…and I was noticing all these trees they reach out and they touch each other, that's how they grow. They don't grow straight up, you know. They grow tall into the sky towards the Creator, but they also reach up to touch each other. And they, all the little ones, they'll grow right next to the big ones…And they [the bigger trees] hug 'em, they protect 'em, you know. (Lambert 27)

In this passage, the Ojibwa elder shares his experience with the way trees grow in his region. This observation and story is later explained through science that the larger trees provide nourishment to the smaller trees which is why they "touch" each other (Lambert 27). By looking into the stories that make up Indigenous epistemologies, researchers can have a guiding structure to discover, or re-discover, phenomena.

CHAPTER VI

CONCLUSION

The Western scientific researcher must take full responsibility and be accountable for their research on Indigenous populations. They must not only integrate Indigenous methodologies to perform ethical Indigenous research, but they also must genuinely work in gaining an education on the epistemology of the Indigenous community they wish and are researching. Currently, the significance of gaining an Indigenous epistemology as a way to practice ethical research as well as promote relationships among the Indigenous communities being researched is still unknown and more research is needed to validate this claim. In the end, Western scientific researchers cannot afford to continue to make ethical impracticalities in their research and must become accountable for their research practices. It is unclear how adding an education on Indigenous epistemologies would improve the Western scientific researchers' studies. More research will need to be conducted to understand the limitations of this particular methodology. Listening to Native peoples, elders, communities and not just gathering their opinion on the studies or requiring their help in conducting the studies can help build an overview of the community's epistemology which will lead the Western scientific research community away from epistemological domination and colonization to an inclusive perspective of knowledge.

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