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Cover Art: “Ganesha,” by Miri Willis.
Artist Statement: Ganesha is my favorite Hindu god. He beams wisdom and positivity and is entirely majestic. I drew him at a low point in my life to help balance the sad with the happy.
When I started my program in Medical Assisting, the advisor gave me the list of academic core courses. I was not happy to see this list. But when I started these courses, I realized they gave me so much knowledge and taught me how to work hard for my education. If I had gone directly to my professional education, I would have been immediately overwhelmed. I want to suggest that the learning process should not end until the last breath. Learning is not bound to an institution; people can learn from their surroundings, other people, and even the flying birds.

We live in an era of technology. Everything is changing very rapidly. In this whirlwind of change, today’s technological marvel is often tomorrow’s junk. This technological revolution inevitably brings increased human knowledge, which is changing the nature of education. Elisa Parrett, a professor of English at Lake Washington Institute of Technology, where I am a student, explains that as the breadth of human knowledge expands, college majors have become increasingly specific because there is only so much a single person can know. With this trend, many people have begun to believe that general education requirements are useless, a waste of time. They believe that the specialized knowledge from their major is all they need. However, in my view, students who believe that general education is a waste of time may be unaware of the advantages of general knowledge. This is not a time for people to curb their knowledge. It is a time to enhance and expand knowledge, and this is easiest through general education. General education requirements often include humanities courses, social science courses, English
courses, and math courses. Some schools also require other courses, such as physical science or history courses. People cannot ignore the importance of these courses because these courses lay a foundation for every student’s bright future. General education courses are very beneficial and necessary for students in the United States in the modern world.

General education plays the role of a stepping stone in a student’s professional life. It offers basic knowledge which acts as a foundation for future learning and future performance in a career. Nothing can be built without a foundation. If the foundation is weak, the structure of the building will automatically be weaker. In the article “How General Education Requirements Prepare You for Your New Career,” Grant Tilus, an education consultant who writes student-focused articles for Rasmussen College, emphasizes the importance of general education courses, saying they lead to later success for students in their career. He goes on to insist that “understanding these courses are critical and not just general is your first step in getting yourself prepared for a bright future.” Further, according to Yaroslav S. Grigoriel, a student at Lake Washington Institute of Technology, going directly into a course of study without general education creates tunnel vision for students. The problem with this is that students within the tunnel have no access to knowledge outside of the tunnel; their education scenario is restricted (Grigoriel). General education provides broader knowledge and
information, which prove to be the first rung on the ladder in a person’s professional life.

In addition, general education plays a very important role for traditional students in deciding on a major. Traditional students are those students who go directly to college after high school. They are often undecided about their major. Through general education, these students study a variety of subjects, which helps them to explore their interests and select a field for their career. In “Guide to Choosing College Majors,” The Princeton Review suggests that students with undecided majors choose general education courses which interest them because those courses will be a bridge to deciding on a major. Additionally, especially in community colleges where the student population is diverse, these students get the opportunity to meet other students in a variety of fields and with a variety of interests, which can give traditional students even more ideas for the direction of their career.

For returning students, on the other hand, general education fills the education gap. Returning students have had a gap in their studies, and this gap cannot be filled without general education, which refamiliarizes these students with basic study skills. Returning students have to relearn how to learn. General education is necessary to get returning students back on track because their minds have reoriented for the working world and need to be refocused for the educational environment. They also need to get new skills to compete in their future
careers. Tilus advises returning students to recognize that general education courses enhance students’ abilities and skills in adapting to a new career. Not going through general education creates hurdles for returning students on their path towards their career.

Another reason why general education is important is that the whole world is becoming a global village, and this globalization has led to increased competition for jobs. This competition leads to a demand for the kind of multidimensional individuals created by general education requirements, making general education imperative for the employees of the modern world. Tilus quotes Brooks Doherty, General Education Dean at Rasmussen College and former General Education Course Instructor, saying, “Ask any employer and they will tell you there is nothing they value more than general education…the skills taught in general education required courses are the ones that prepare you for advancing steadily in your field.” Doherty makes it clear that general education makes a person multidimensional and that this is very helpful to prospering in a career. The modern employee needs to be able to adapt to a variety of workplace roles. The global world does not want employees with restricted knowledge or skills. As Nicholas C. Burbules and Carlos Alberto Torres argue in “Globalization and Education: An Introduction,” globalization affects the shape of general education. They assert that schools in the modern, global world will need to make sure that general education courses focus on “new skills and the flexibility to
adapt to changing job demands and, for that matter, changing jobs over a lifetime” as well as “dealing with an increasingly competitive international labor pool.” Employers want an employee who is a jack of all trades, who can move fluidly through the ever-changing modern work world. General education prepares the employee of the modern globalized world.

Further, globalization tends to come with changing technology and melding cultures, requiring individuals to be able to adapt to the new global environment. A person who has a variety of skills, especially communication and analytical skills, can adapt to these changes more easily. Burbules and Torres note that globalization creates an environment where “educational aims that have more to do with flexibility and adaptability (for instance, in responding to rapidly changing work demands and opportunities), with learning how to coexist with others in diverse (and hence often conflict-riven) public spaces…all emerge as new imperatives.” It is the flexible and communicative individual who is going to be more successful in the global environment, and general education creates well-rounded, adaptive individuals with good communication skills. For instance, social science courses teach people about human nature and human behavior, which allows a person to more easily understand different kinds of people and societies. Humanity courses, on the other hand, teach direct communication skills, including speaking and writing, which make it easy for a person to
interact with others. It is not the time to limit knowledge. Rather, it is a time to expand and widen knowledge and information, to increase skills and abilities. Overall, it is a time to engage the world and learn different new things in order to flow with the waves of globalism.

General education is also important, particularly in the United States, because democracy requires informed citizens. Every citizen in a democratic country is indirectly a part of the government, and democracy cannot run without the involvement of citizens. People often mistakenly believe that democracy is a system of rights, but it is also a system of civic duties, one of which is voting. However, voting requires knowledge. In “From General Education to Civic Preparation: The Public Purpose of the Liberal Arts and Sciences,” Joseph Urgo, a Provost at the University of North Carolina Asheville, insists that those people who are unfamiliar with the proper functions of American democracy should not participate in it. Indeed, citizens of the United States must have knowledge of what they are voting on, whether it is a leader or some important issue, in order to make a decision that is in their best interest. Further, citizen votes affect the functioning of the state and federal government as well as the daily lives of others. Certainly, the vote of a citizen affects everyone in the United States, including those who cannot vote. Therefore, the present and the future of the nation depend on the voter’s enhanced knowledge.
The knowledge required for democracy to function is received in general education courses. Everyone is impacted by the government, so it is important for American students to learn about democracy in the United States. In this way, people can become familiar with their rights and their duties. In Urgo’s view, the real reason behind general education courses is “that the United States of America is a democracy, and a democracy is a form of government that requires extensive, informed citizen participation.” Urgo goes on to outline some of the basic democratic skills taught by general education courses, such as “sort[ing] and categoriz[ing]” the knowledge that surrounds citizens on a daily basis, understanding and parsing statistical information, apprehending science and technology, and gaining a knowledge of history because “human beings do tend to think that whatever is happening to them now has never happened to anyone ever before.” Indeed, general education courses teach a number of skills which are necessary for democratic citizens. In particular, social science and humanity courses, such as history and political science, can both offer insights into government to help students play a better role in democracy. Overall, general education is essential to civic preparation.

Furthermore, general education helps to develop a student’s critical thinking skills. When students learn different subjects, they also learn different ways of thinking. Math, for example, introduces students to quantitative reasoning skills. English emphasizes personal interpretation
and close examination of the nuances of language. In science classes, students might conduct experiments to prove hypotheses, while in psychology classes, students might conduct case studies to explore the human mind. Finally, history classes encourage students to ask important questions such as “why” and “how”. Mathematical thought, linguistic thought, scientific thought, psychological thought, and historical thought progress differently, and experiencing all of them stretches a student’s mind. As an example, Appalachian State University specifically states that one of the goals of its general education courses is to imbue students with critical thinking skills, saying that “the critical and creative thinker is able to apply knowledge innovatively toward useful and meaningful goals” (“General Education Goal”). As ASU notes, critical thinking is an essential skill with many facets. Observation, analysis, evaluation, reflection, interpretation, problem solving, and decision making are all learned and practiced in general education courses and ultimately give people the ability to make inferences that make them able to handle a variety of critical problems. Critical thinking allows a person to solve complex and challenging problems, and this quality can be attained only through general education.

Finally, general education is a good source of multicultural awareness for immigrant students and native students alike. America is a multicultural country. People come to the United States from many
different parts of the world, and it is necessary for them, to some extent, to adapt to living in a new country. General education grants them awareness of the American educational environment and methods of education. It is also important for them to learn the basic skills that the country cares about and to learn them in the American way. Further, this gives immigrant students a chance to become more familiar with United States culture as well as other cultures. Burbules and Torres define one of the major goals of modern general education courses as “learn[ing] about different others as a way of living with them and coordinating social activity with them within a compact of mutual tolerance and respect.” In this view, general education creates a bridge between students of diverse backgrounds. This exposure to new cultures is also helpful for native students, who also benefit from experience with multicultural environments. In general education, students often get the chance to participate in group discussions and teamwork, where native students and immigrant students work together. This collaboration increases each student’s knowledge of the cultures of the others and, ultimately, increases tolerance.

Some students believe that general education courses are a waste of time, irrelevant to their professional career, and create an obstacle in the job market. David Becker, for example, a student at North Iowa Area Community College, argues that “[students] don’t want to be well-rounded. We want to be experts in our field.” Becker states that the
information acquired in general education courses will never be used and maintains that businesses “[want] you to be an expert in your field so that you can (hopefully) have a successful career in doing what you love to do.” At the end, he argues that people in the past “had to be ‘well-rounded’ and familiar with a lot of different subjects because work was scarce, and anyone would do anything for paid work” (Becker). However, as Doherty noted, employers actually do want well-rounded individuals. It is a time to be well-rounded, not to stick to a single profession. Becker seems to think that the important skills of critical thinking and good communication, as well as the study of human nature and society, can be obtained while focusing on a single area of expertise. It is either that, or he may not see the importance of these skills. Finally, Becker underestimates the competition for jobs in the globalized modern world. Some students also believe that general education courses can make it harder to get a job after graduating. Elise Martorano, a student writing for The Massachusetts Daily Collegian, points out that potential employers see the GPA from college, which is “50 percent contingent” on success in general education courses that might be challenging for students. However, if Martorano is correct that employers want to see a student’s GPA in general education courses, it implies that those courses are important to employers. Getting rid of the requirement, then, might raise a student’s GPA but make that student unmarketable.
As the population of the world increases and the size of the world seems to shrink, the world is becoming an increasingly competitive place. To compete in this environment and stand out internationally, general education is very necessary because it enhances overall knowledge and versatility. Further, general education fosters in students a sense of respect and tolerance, a sense of responsibility, a sense of discipline, a sense of integrity, awareness of human rights, and respect for human values. General education teaches different ways of thinking and opens new perspectives. Overall, general education is the first step on the staircase of success.
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Senses
Marc Gouacide (REMARABLE)

Some of the greatest moments in life are the ones that affect you later on down the road. We all grow at our own pace. May you find strength in my words to overcome your darkest days, most difficult obstacles and your loneliest nights. Expect everything, you deserve it all!

It hurts being so far away
But I’m feeling like
I’m at the point where I have to keep going
I have to keep re-identifying who I am
So that there is never a mistake in identity
You have been given the false meaning of time
If you view me as a stranger
Or if you feel you can no longer identify with our connection
I know I have to be realistic
Because sometimes the picture life paints
May have you look passed the symbols in the image
On this journey that is never-ending
So never be afraid to let it all go
Even if you doubt you will get it back within seconds
That’s just one of the ways to know
Because I used to think the dreams I used to have were only for me
Until I started letting them go
And then the world began to see the symbols in their visions
Realizing there was a slight misunderstanding blocking the wisdom
So never be scared to put your life on the line
Especially if it’s you who dares you
Your reflection is one of a kind
So be proud to look in the eyes of the one who stares through
Light and Shadow  
Blake Harrison Keys

"Photography didn't slowly change or progress over all of history like painting or drawing has. Throughout time, humans have seen the reality of things with their own eyes at all times. All that was needed to progress to creating photographs, a replica of the reality, was someone to invent the thing that could create that replica." I made this photograph series as a project for ART 140 - Photography Appreciation, and I wrote the above quote on a discussion board in the class. I wanted to add something to my eclipse photos that would make them a little more interesting.
Reflection in My Time
Brie Blackstone

I wrote this piece as a reflection of World War II, though I am not old enough to have lived through it. The stories and the images touch my heart. I believe we cannot thank the soldiers, the leaders, the families, the friends and unsung heroes enough. We, also, have to remember the lost and those that have no names. We honor them by remembering the past and telling future generations of the sacrifices that were made. Thank you to all.

Here stands the flag, so strong and true
Over the ship where they lie entombed
Here are the words, chiseled in stone
Rows of those who have gone Home
Here is the tomb guarded for all to see
Unknown is the name given to him beneath
Here is an old man in a faded baseball hat
WWII veteran sewn in yellow into the cap
Here are the stories so rare to hear
For memories of their fallen comrades they hold dear
Here is the film that shows us storm Normandy
Scattered bodies on beach front property
Here is the pain that can never be taken away
For we all remember the day which lives in infamy
Here is to the families that have loved ones buried overseas
Never to be brought back to the land of the free
Here is the thank you they may not have received
For you are all heroes across this country
Here is to those that were left behind
For your sacrifice is quietly honored in time
Here is to the men on the opposite side
Remembered you are, in your own right
Here is to the city in the country of Japan
The shadows mark the buildings on your land
Here is to the child who will never know the greatest generation
Learn the history of those who gave their hearts for this nation
Here is to the women who served at home and abroad
How strong and fierce you were in the eye of the storm
And here is to Old Glory the flag that we salute
Forever flying over us, beautiful and resolute
The Blue Lady
Alisa Dawn Bright

Alisa has loved to create art since she was a little girl. Alisa works with mediums such as watercolor, pencil, charcoal, needle felting, as well as digital art programs. She is a Christian, a fantasy writer, a Tolkien Fan, and a former homeschool student. She has won awards for her watercolor portrait paintings, book cover illustrations, needle felting texture art, and has self-published a children’s book titled Diary of a Baby Goat. Her artwork, The Blue Lady, is a cut paper project completed in her Art 102 Design 1 class at Lake Washington Institute of Technology.
**Personal Investments**  
Brooke Flaten

*I'm beginning my second term at LW Tech after an eight-year gap in my education. This essay was a personal narrative assignment in ENG 99. It's a snap-shot of my career experiences without a college education and how I was lead to LW Tech.*

“If you're able to attend college in the future, you could always schedule classes at night so you can be ‘on time’” said my senior high school principal. My mother and I just sat there, stunned, from across his desk. It was four months until graduation, but I was unsure if I would pass my classes in order to receive my diploma. However, I didn't know who to turn to for guidance. I fully admit I dug this hole myself but, looking back, what support did I have? After graduation I went on to work dead-end jobs, and not complete any college credits because making an income in that moment was more important than dreaming of other options. I was determined that I could earn experience and be successful without any additional education.

In my early twenties I was hired with a large technology company, finally feeling accomplished. The majority of my friends were overwhelmed with college and writing papers; and I had stock options. Starting out at the bottom, I could see that with taking intentional steps I could stay long term and really build my career. After a year of going through the motions it was clear what areas of my skills needed improvement in order for me to succeed.
I didn’t have any practice with writing or composing professional emails; nor did I have any experience with public speaking. I didn’t have any experience with communicating with others in job coaching nor providing feedback without sounding like I was putting that particular person down. The long list of skills I needed to work on felt overwhelming. I wanted to succeed but I didn’t realize that in order to do that I had to learn. I had to study, using trial and error to stretch myself.

Without realizing it, I started to do those things. I went to my co-workers and leaders for feedback on my work, and I was thankful they took time to invest in me. I would write emails and papers for them to proof-read before hitting send to hundreds of people. They would spend time with me in rooms as I practiced presentations and lesson plans to teach training classes. My mentors went through countless resume reviews, mock interviews, and even mock coaching sessions in order for me to learn how to give feedback in the correct ways. I started to understand how to play the game. Their investment in my learning even let me to mentor others and to be that person who taught them how to provide feedback or to help with a mock interview. But, after a few years of all this work, I still found I was lagging behind others in my progression to move forward in the company. My employer would hire people who were fresh out of college with absolutely no work
experience and it would frustrate me because I climbed up from the very bottom but they already had all the skills I did, plus some.

This led to my decision to enroll in school and to leave my career. I’d earn my associates degree and I could come back to work in a similar field and be like those who were direct hires from college. Then, I would feel complete. But, after attending college for several weeks, I ran into a financial issue with my tuition and had to withdraw. I was distraught. What would be my next steps? How could I be successful? If I were to work for an administrative company that was smaller in size I could use my large skills from my previous employer to shine, and that’s what I did. It worked, for a short time. The problem still occurred that after all this investment of my own development that I wasn’t satisfied with where I was. If I wasn’t satisfied after all my hard work, then what was it that I really wanted?

Thus started my search for self-discovery. First, it started with changing what genre of music I listened to, followed by subscribing to different perspectives of news, reaching for more books to read, and experimenting with self-learning programs. After relocating to Seattle from the Midwest it was clear that those in the area had high levels of education, engaged in deep intellectual conversations, and were experienced travelers, and that really put me on my toes. Unsure of what kind of career field I wanted to join, I humbled myself and applied for a barista position. Learning about and how to make coffee interested
me; I used the time to look into jobs or programs. After attempting self-paced drawing courses, blogging, and attempts at learning a new language I looked back on my life experiences and carved out what core subjects best fit myself. Organization, office management, serving others, and development seemed strong in my skill set. Next, I researched jobs and programs and found myself touring then applying for Lake Washington Institute of Technology in the Dental Assisting program.

My failures and successes always consisted of how much closer I could reach the top. Which left me feeling empty. I’ve learned that experiences and education are similar, but it’s how you use them that shapes you. I want to use what I’ve learned to present the best version of myself, have a continuous hunger for knowledge, and to help others accomplish the same. Without the investment from others I’m unsure where I would be.
College Catalog

Rahul Bheemanathi

I’m an ITAD student finishing in Fall 2017. This quarter, I took ART 140, Photography Appreciation. As part of the class, I had to create a catalog image.
**Jus soli and Immigration Complications**  
Kandie Louise Herrera

*This paper was written as a requirement for English 102. I chose the topic of immigration out of my own interest because it directly affects my everyday life. I did not know ahead of time exactly what direction it would take me in. At the end of my research, I realized that this topic is so broad and complex that I needed to narrow it down. I learned so much, but there is so much more knowledge that cannot be gained during one project.*

Abstract

According to the Constitution of the United States, any person born within its borders, is a citizen of not only the country, but the state in which they will reside. This policy of *jus soli*, or birthright citizenship, remains a controversial subject in matters of immigration to the United States. While many western countries have adopted this policy in the last few hundred years, the majority of the world continues to abide by the direct opposite policy known as *jus sanguinis*, meaning the child in question will become a citizen of the country of their parents’ origin. This paper will consider the effects of the policy of *jus soli* as it pertains to illegal immigration and why it could be beneficial to repeal the amendment that made it possible.

*Keywords: jus soli, jus sanguinis, illegal immigration, unauthorized immigrants, anchor babies, birthright citizenship, birth tourism*
As the opening of the 14th Amendment of the Constitution of the United States reads (2009), “All Persons born or naturalized in the United States, and subject to the jurisdiction thereof, are citizens of the United States and of the State wherein they reside. No state shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any state deprive any person of life, liberty, or property, without due process of law; nor deny to any person within its jurisdiction the equal protection of the laws” (Staff).

This change to the constitution in 1868, made the United States one of only 30 countries worldwide to adopt a system of *jus soli*, meaning “law of the soil” in Latin. The system of *jus soli*, otherwise known as birthright citizenship, grants an infant citizenship to its place of birth rather than to the birth country of its parents. The latter system is known as *jus sanguinis*, or “by right of blood”, and is the system most common throughout the world. Because of the ever-increasing political spotlight on illegal immigration in the United States, should the country join the majority of the world in returning to a citizenship system of *jus sanguinis*?

As of 2015, an estimated 4.5 million children in the United States lived with at least one parent who was an unauthorized immigrant (Grabar). This is roughly the entire population of both King and Snohomish counties combined. In 2016, Capps, Fix, and Zong concluded that growing up with unauthorized immigrant parents places
children—nearly 80 percent of whom were born in the United States—at a disadvantage. These children are more exposed to a number of risk factors than children of immigrants generally and all U.S. children, including lower preschool enrollment, reduced socioeconomic progress, and higher rates of linguistic isolation, limited English proficiency, and poverty.

On top of already being disadvantaged, these second-generation immigrant children also face the risk of having their illegal parent or parents deported, most often the head of household. With the fear of deportation prevalent in the immigrant community, many families with both adults being illegally present in the U.S. are drafting caretaker plans for their children should they both be deported. I first become aware of this practice a few months ago when my husband’s cousins asked me to
be the temporary guardian for their three children should this happen to their family. These legal documents “encompass everything from who will pick up the kids from school if their parents are detained, to who will buy plane tickets if the U.S.-born children follow their parents to Mexico or Central America, to who will raise them if they remain apart from their parents but in American schools” (Grabar). John Kelly, Secretary of the Department of Homeland Security, recently ordered the prosecution and deportation of immigrants who aid in the smuggling of children to the United States (Diaz). With the implementation of this new policy among other factors, illegal immigration into the U.S. is at its lowest point in 17 years. With the uncertainty of the course that immigration policy may take under the presidency of Donald Trump, illegal immigration has taken a sharp decline. Only time will tell if illegal immigration continues to decline, but according to Michelle Mittelstadt (spokeswoman for Migration Policy Institute), “at this point it seems clear that would-be migrants are concerned about rising enforcement not just at the border but within the United States” (Valverde). Mittelstadt claims that since the recession, an improving economy, education system, and lower birth rates on the other side of the southwest border are contributing factors to the continued decline in detentions in that area.

Concerning the millions of unauthorized immigrants, the countries that most are emigrating from in descending order are Mexico,
Guatemala, El Salvador, Honduras, and China. While China is currently fifth in rank on this list, its emigrants are comprising a huge chunk in the number of immigrant women participating in what is known as birth tourism. Birth tourism, its product commonly (but offensively) known as anchor babies, is when foreign nationals travel here temporarily to give birth to children, without any immediate intention of taking up residence. . . The issue reveals some immigration myths. Birthright citizenship isn’t unique to the United States. It’s typical for countries in the Western Hemisphere to grant citizenship to any person born on their soil. Birthright citizenship does, however, produce families that contain both children who are Americans and parents who lack authorization to live in the United States. It also creates policy questions about what to do with those families (Barro).

Some Chinese women are able to enter the United States legally to give birth, however many seek out the services of agencies that cater to birth tourism. These agencies, often funded by criminal organizations, arrange travel to California around the time that the pregnant woman would give birth. Fees for these services average over $20,000, but are a small fraction of the minimum $40,000 fine Chinese parents face if they are caught in violation of their country’s “one-child policy” (Sheehan).

Birthright citizenship could potentially be the biggest factor contributing to illegal immigration if all long-term benefits of being born in the United States are considered. The most obvious benefit of
conceiving a child on U.S. soil is the potential for that child to petition for their parents’ citizenship upon their 21st birthday. Not only can they petition for their parents, but also a spouse and children should they also marry a first-generation immigrant (this can be even before the age of 18). Other benefits for American born children include free public education, which isn’t the norm in some third world countries, and access to social services such as healthcare, TANF (Temporary Assistance for Needy Families), and WIC (the Special Supplemental Nutrition Program for Women, Infants, and Children).

Another potentially huge benefit for unauthorized immigrants to give birth to a child in the United States is the Deferred Action for Parents of Americans and Lawful Permanent Residents (DAPA) program, currently being blocked in court pending legal action. If the DAPA program is allowed to be carried out, parents of American citizens or lawful permanent residents can apply for permission to live and work in the U.S. for three years if they have lived here before January 1, 2010. This program alone has the ability to change the lives of millions of immigrants nationwide.

While some parts of the judicial system remain busy blocking the DAPA program, others like those in the state of Texas, have reviewed the cases of other attempts to block birthright citizenship. In 2015, Texas “limited the types of identification that parents can use to obtain birth certificates, with the result that some unauthorized immigrant parents are
unable to obtain certificates for children born in Texas” (Capps, Fix, & Zong). However hard the state tried to uphold this policy, they could not continue to deny birth certificates to children born on U.S. soil, as the Constitution deems them citizens. The state settled the lawsuit with the agreement that Mexican nationals would be allowed to provide voter registration cards as a valid form of identification, while immigrants from other countries could continue to use consular documents. “Some states and localities continue to push laws and policies intended to make life difficult for unauthorized immigrants, hoping it will encourage them to leave. Time and time again, these policies have proven expensive, harmful, and unsuccessful” (Waslin).

As attempted harmful policies are continuing to be written, what other options to immigrants have to ensure their children do not grow up in fear of losing a parent to deportation? In 2013, a group of bipartisan senators came together in attempt to answer this question, however their proposal, titled the “Bipartisan Framework for Comprehensive Immigration Reform” was vague and lacked any serious answers. While they recognized “that the circumstances and the conduct of people without lawful status are not the same, and cannot be addressed identically” and “individuals who entered the United States as minor children did not knowingly choose to violate any immigration laws”, they failed to map out exactly how minor children immigrants and parents of American citizens would earn a pathway to citizenship that
isn’t burdensome. Their plan touched on the idea of having illegal immigrants pay fines, back taxes, and wait at the end of the line of current visa applicant while. However, this simple idea is unfeasible for families already residing in the U.S. when the line of current visa applicants never dwindles. The number of applicants waiting for their day in immigration court continues to grow exponentially as immigration judges continue to try less cases each year (especially in regards to cases of asylum).

Growing up in a diverse community myself, I have firsthand seen many of the different points of immigration researched. In regards to the term anchor baby, I remain curious as to why some immigrants find their way into the United States by illegal means, to purposely have children knowing full well that they do not intend to become a lawful resident. Many preach the notion of immigrating for “a better life for their kids”, yet without legally seeking citizenship for themselves, are they not contradicting that statement as living in fear of parental deportation is psychologically detrimental to a child’s health?

My family is of mixed citizenship, one familial structure that is mostly left out of this ongoing debate. In much of the research conducted for this paper, the statistics, stories, and policies refer to children born in the U.S. with both parents being unauthorized immigrants. Ours is that of one American citizen and one immigrant. While we do not share with the majority of families in the fear that our
children will be left unattended should the head of household be deported, we do share in the fear of what emotional and financial implications it would cause them. Being a child of a young single mother, I can contest to the fact that having one parent absent in childhood can be detrimental to the emotional wellbeing of the child. As well as can be said for those with a parent in the Armed Forces or other occupations that require long lengths of travel. I also fear that my education would be compromised should I need to take over the financial responsibility of the household, trying to make it through the next two years to where I am able to re-enter the workforce is our ultimate goal. Being the mother of four young children is hard enough in itself, not considering the fact that one day my spouse may not return home.

As a couple, we have often discussed what it meant to be a child of immigrants and what we would do to change the laws if given that power. Something we have always been curious about is why the United States grants birthright citizenship, unlike most countries, when it continues to cause so many unsolved social and legal issues. I have since learned that the 14th amendment was made in regards to the end of slavery, however it could possibly be time to take another look at the Constitution. History has shown that it isn’t easy to make changes to this founding document, but amendments had to be made considering the issues citizens were being affected by at whatever point they were being
considered. Had section 1 of this amendment been long ago repealed, the number of immigrants illegally making roots in the United States by ensuring that their children on born on this soil would not be at the numbers they are today.

With all points considered, repealing the Section I of the 14th Amendment to the United States Constitution could very well be one of the easiest tools in combatting illegal immigration. With the right of petitioning citizenship based on U.S. born children taken away, illegal immigration would decrease, considering 44% of newly lawful permanent residents in 2015 were “immediate relatives of U.S. citizens” (Zong & Batalova). With the popular path of citizenship barred, it may also discourage the dangerous practice of very pregnant women crossing over the border on temporary visas to give birth and pregnant women overseas from paying tens of thousands of dollars to journey to the west coast with the same agenda.
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Malcolm X—History Unwashed
Jason Emmett Hill

I am an MMDP Digital Gaming Student.
NW Rainbow Ride
Jason Emmett Hill
My Black-capped Chickadee Birdhouse
Diana M Korpi

In the spring of last year, when I was thinking about all the things I needed to do to get my Black-capped Chickadee birdhouse ready for this year's nesting couple, it dawned on me that this would be a perfect theme choice for a process essay assignment I needed to write for my ENGL 101 class. I was having trouble coming up with a topic, so I got very excited when these two thoughts came together in my mind. I hope you enjoy reading “My Black-capped Chickadee Birdhouse” essay as much as I enjoyed writing it.

As winter starts to creep back north and the first signs of spring begin to emerge, I see from my window a Black-capped Chickadee. Seeing it reminds me that I need to head outside and into my garden. It’s time to get the songbirds’ house ready for this year’s couple. When I first decided to buy a birdhouse, I found there was a myriad of different houses available for purchase, all different shapes and sizes and some even designed with specific bird species in mind. Rather than buying one already made, I decided to make my own birdhouse. The plan I settled on was one that filled all the needs of the Black-capped Chickadee. I enjoy watching and listening to these adorable little native songbird, with their oversized, black-capped heads. So, by putting a house up, I hoped it would encourage them to move into my garden. I now had better get out there, so I can be sure they have everything they need in order to start setting up house.
The first thing I need to do is to clean out last year’s nest. My birdhouse sits atop an eight-foot galvanized pole, so I need a step-stool to get to it. Once I unscrew it from its perch, I take it into the garage to clean it out. The right side of the birdhouse is held shut with a screw. This side of the birdhouse is hinged, so once I remove the screw, it swings open, enabling me to get at the nest. I like to examine it closely, to see what materials the birds used to make it. Last year’s nest was a tangle of sphagnum moss, tiny fragments of wood, and dog hairs.

Next, I clean the house out with a solution of one part bleach to nine parts water. Using this solution, I give the entire inside a good scrubbing. I then leave it outside, so it can thoroughly dry in the warm spring air. Once it is completely dry, I add a handful of wood chips to the house; this makes it more appealing to the birds. After I do all these things, I close it up, secure the right side with the screw, and mount it again, to the top of the pole.

Next, I like to provide nesting material for the chickadees. My material of choice comes from my sister’s dog, Finn. I make a special trip to her house just to collect hair from his luxurious coat. He gets a brushing, and I get my nesting material. It’s a win-win for the both of us. I place two to three good-sized handfuls of the collected fur into a mesh bag, specifically designed for this purpose, and hang it close to the nesting house. I take great pleasure in knowing that the undercoat that helped to keep Finn warm through the cold winter will now help keep
any potential spring chicks warm and snuggly through the chilly spring nights. Another thing I provide is a source of fresh water. A generous-sized birdbath, which gets washed and filled regularly, sits next to the birdhouse.

Now comes the waiting. I keep a vigilant eye in anticipation of a potential nesting couple. When I hear their chickadee-dee call, or see little black-capped birds near the birdhouse, I hold my breath in anticipation. *Is this pair interested?* They fly from branch to branch. *Are they checking out the house?*

I recall how excited I got when, last year, a pair finally settled down in my house. I excitedly watched them build their nest. As they were delivering the nesting material to the birdhouse, they looked like little balls popping in and out of the round entrance hole. Before I knew it, I heard the soft sound of chirping emanating for the birdhouse. *The chicks had hatched!* And, my favorite part had begun: feeding time. The new parents flew back and forth, bringing a variety of bugs, ranging from green caterpillars to little white flies.

Since I have had success with this particular birdhouse design, I hope to use it again. If you are also interested in having the Black-capped Chickadee reside in your yard, you need to be aware of their very specific nesting needs. The inside dimensions, hole size, and hole placement are critical. Below is a drawing that includes these specific details. If you follow them, along with my other advice, you will
significantly increase your chances of drawing a couple to your birdhouse (see fig. 1).

Fig. 1, Black-capped Chickadee Birdhouse’s Critical Dimensions. (Diana Korpi)

Wood makes the best material to construct the house. It’s an excellent insulator, easy to transform and it blends well into the landscape. I made my birdhouse out of cedar, which has natural waterproofing characteristics, and it smells great too. Two other things to consider are the location and height placement of your birdhouse. A yard with mature hardwood trees will make an ideal location. I placed mine among a
grove of native vine maples. Make sure the spot you choose receives 40-60% of sunlight daily. The entrance should face north or east to ensure overheating doesn’t occur. And finally, the house should be at least three to ten feet off the ground. Mine currently is facing my front window, allowing me to view all the activity.

Even if you follow all these recommendations, it doesn’t always mean that you are guaranteed a nesting couple. It took five years before I finally had a couple move into my birdhouse. The house was vacant for all those years, with only moss and lichens taking up residence on its roof. Don’t be discouraged by this. Because all of a sudden, last spring a couple moved into my house. Be persistent and patient, and I’m certain you will eventually be successful, as I have been.

The final stage of the birdhouse activity is seeing the chickadee babies leave the nesting house. Last year, even though, I faithfully watched the birdhouse, I still missed the fledging. Next time, I suppose, I’ll just have to be a bit more dedicated.
Place
Nima Mirzaei

All I've got in photography was learned by experience, and this was a great chance to learn more about photography in depth by taking this class.
Anna Fletcher

*My form of art is 2D Animation and Pet Photography. I love cats, and enjoy taking photos of them in their finest moments. I have no pets, but I love to give pet owners a little more than whiskers and wags, I hope to give them warm and fuzzy memories.*
Oral Health Outcomes and Access: A Study of the US Dental Health System
Alanna Lachowsky

I am currently a student who is pursuing a career in Dental Hygiene. I have been in the dental field for 4 years and have learned a tremendous amount about healthcare, which was the inspiration to this research piece.

Everyone will need medical and dental care in the course of their life. So, physical and mental medical benefits affect everyone regardless of economic status, skin color or age, or even existing physical or mental conditions. Given the structure of the medical industry in the US, where insurance and pharmaceutical companies benefit the most because of the high cost of medicinal drugs, treatments, and procedures, having adequate medical insurance is crucial to people’s quality of life. From regular checkups to ongoing treatment to emergency procedures, maintaining personal health can be very expensive and time consuming. Especially vulnerable groups include children, minorities, the disabled, and the elderly. Balancing personal finances and personal health is a source of great stress for everyone in the US who isn’t comfortably wealthy or otherwise extravagantly rich. The decisions everyday people face when confronted with treatments plans that can be relatively expensive for their financial situations have very serious consequences for their health and quality of life. This paper explores recent research around dental health outcomes in the US and argues that there are
significant disparities in access to dental health care and oral health outcomes for people in the US.

Although advances have been made in the “coverage and affordability protections gained by children and families” (“ADA, Other Dental Groups,” 2017) there are still deficiencies in the dental health care system. A 2012 report to the US Senate from the Subcommittee on Primary Health and Aging titled “Dental Crisis in America: The Need to Expand Access” found that there were many groups that still had “a much harder time accessing” dental health care, such as low-income individuals, minorities, pregnant women, the elderly, people with disabilities, and people in rural communities (Sanders, 2012). The solutions proposed in the report echo the “framework for action” recommended by a US Department of Health and Human Services (HHS) published report over 10 years ago: expand the oral health care workforce and improve infrastructure; expand coverage and raise reimbursement rates to providers; and promote dental health education and prevention (Sanders, 2012).

Changes to the Affordable Care Act (ACA) will greatly affect all of these factors of dental health in the US. Originally passed in 2010 and officially called the Patient Protection and Affordable Care Act, the ACA regulates financial, technological, and clinical practices of hospitals and primary care physicians (Hellerstedt, n.d.). It covers the entirety of the US health care system including dental and oral care and
its goals are to expand the quality of and access to insurance coverage (especially for minorities and other disadvantaged populations), focus on prevention over treatment, and overall “reduce the costs and improve the efficiency of health care” (Hellerstedt, n.d.). Changing this one law could impact tens of millions of Americans including particularly vulnerable groups such as low-income children and the elderly (Sanders, 2012). Health care laws influence dental and oral health outcomes because many people can’t afford health or dental insurance outside of government-regulated health care exchanges. By requiring providers to have affordable options that include required dental coverage, the ACA makes good dental health accessible for disproportionately at-risk groups.

In 2000 there were significant disparities in dental health outcomes of children based on economic factors. That year the *Journal of the American Medical Association* (JAMA) published an article that illustrated how economic factors contribute to the gap in preventative care for children in the US. “Disparities in Children’s Oral Health and Access to Dental Care” compares numerous statistics to show how children’s dental outcomes are impacted by their access to services. Children with special health care needs, from low income families, and minorities “are at greatest risk of inadequate access and poor oral health” (Mouradian, Wehr, & Crall, 2000). The US Senate report published in 2012 found that not much had changed and that there were still many
Americans who could not get the level of health and dental care they need (Sanders, 2012).

The JAMA article claims there is a large discrepancy “in oral health and access to care” based on family income around the Federal Poverty Level (FPL). For example, children between 6-18 years old from lower income families have fewer dental visits: “only 36% of children from families at or below the FPL have dental visits compared with 71% from families with incomes above 400% of the FPL” (Mouradian et al., 2000). Furthermore “children from… families with incomes below 199% of the FPL are 3 times as likely to have an unmet dental care need as children from families with incomes above or at 200% of the FPL” (Mouradian et al., 2000). Having fewer dental visits leads to more dental problems because routine checkups help prevent tooth decay and other oral health problems, such as infections, inflammation, or premature loss of teeth. Additionally, dental visits are opportunities for good dentists to inform their patients about how their diet affects oral health and to demonstrate and emphasize the importance of developing beneficial oral hygiene habits (for example, proper brushing and flossing techniques).

A more recent study in 2012 by the US Senate Subcommittee on Primary Health and Aging found that similar disparities still existed nearly 12 years after the JAMA article was published. The subcommittee cited a Pew study that found “about 17 million low-income children go each year without basic [dental] care” (Sanders, 2012). Children and
adults miss literally millions of hours of school and work due to dental disease or visits (Sanders, 2012). This shows that there is a real impact on people who have poor dental care. There are significant barriers to proper dental care for low-income and minority families in the US: high costs, language and cultural barriers, transportation challenges, and difficulty finding work and childcare arrangements (Sanders, 2012). While it’s true that these barriers apply in some degree to any person who needs dental care, they disproportionately affect low-income and minority populations because they have more limited resources to overcome these barriers.

Populations like low-income families, minorities, and people with special health needs face tougher challenges in receiving dental care. As the US Surgeon General said in 2000, “there are profound and consequential disparities in the oral health of our citizens” (US Department of Health and Human Services, 2000); and the populations who need health services the most, the ones who experience oral disease at higher rates, receive the least attention under the current US health and dental care system (Sanders, 2012). Children from these disproportionately impacted groups are particularly vulnerable to poor oral health outcomes and they have higher rates of “unmet health needs” (Mouradian et al., 2000). Understanding the shortcomings in health care coverage and who is impacted is important because it helps inform
health care policy. Improved health and dental insurance programs will help close the dental care gap in this country.

What can the US learn from the different ways in which other large, developed countries address the dental and oral health of their citizens? An article published in the Journal of the Canadian Dental Association (JCDA) gives good information on dental health care in Canada and 4 additional countries: Australia, New Zealand, the United Kingdom, and the United States. The authors consider how much each country spends on dental care, how dental care services are distributed, and each country’s oral health outcomes. (Birch & Anderson, 2005) The article cites health data statistics, per capita spending comparisons, and survey data about adults “who needed care but did not consult a physician or dentist due to cost,” (Birch & Anderson, 2005) this gives reasonable context and relevant comparisons between the 5 countries. The references cited by the article include many sources from government, university, and national and international organizations. The article concluded that per capita health expenditures were relatively high, particularly in Canada and the US so “any perceived problems with oral health… are not the result of low levels of spending” (Birch & Anderson, 2005). The authors recommended to instead “look at the sources of funding and the organization of services” (Birch & Anderson, 2005). Public funding on dental care as a percentage of total government spending disproportionately effects “the less prosperous members of
society” (Birch & Anderson, 2005) because they are the ones who need the most assistance. The study also finds that Canada and the US are lacking children’s dental care programs which can impact future dental health outcomes. The article recommends to improve “access to services, particularly among poorer groups” by giving direct access to “publicly funded fee-for-service systems [that are] commercially viable to maintain coverage” because “public funding alone does not guarantee access to services” (Birch & Anderson, 2005). This is because when “providers are free to choose practice locations or can choose to provide mixed public-private care” (Birch & Anderson, 2005) the location and fees make services less accessible to rural and economically disadvantaged populations. This conclusion is backed by a US Senate report, which finds that there is “a shortage of dental providers willing to serve those with the greatest needs” (Sanders, 2012), meaning that people who live in rural areas, are poor, or have disabilities or chronic oral illnesses will have less access to dental care.

Dental and oral health are important parts and direct indicators of a person’s overall health; that is to say oral health reflects overall health. “The mouth is the major portal of entry to the body” so it “can become a source of disease or pathological processes” that affect the rest of the body (HHS, 2000). There are many cancers, genetic disorders, and birth defects that can start in the mouth and negatively impact overall health. Even seemingly less severe problems like cavities or gum disease can
harm a person’s overall health by impairing their diet or reducing their resistance to diseases and bacterial infections. These connections are often overlooked when people consider the impact of dental and oral health on being generally healthy. Because oral health plays a significant part in overall health, the implications of poor dental health means that it has a significant future impact on individuals and also on society. Examples of the negative outcomes of poor dental health can include losing a job or personal relationships, having to pay for expensive dental procedures, and increasing the burden on health care system. Promoting good oral health helps individuals by providing an advantage to their general health; it also benefits society by decreasing the pressure on health care infrastructure and reducing the economic impact of lost productivity. Individuals with poor oral health can be harmful to society in different ways. One way is that these people will require more resources from medical and dental providers. These people will also be less productive economically. Even for people with stable employment, having poor dental health could mean they miss work more often and are also less productive economically.

Recent gains made in dental health in the US have been the result of a conscious and coordinated effort to improve the situation since the early 2000s. The HHS report on “Oral Health in America” in 2000 showed, among other things, that the public considers “oral signs and symptoms to be less important” indications of overall health. The report
recommended that public policy needs to raise awareness of the impact of oral health and that improving health infrastructure is necessary to meet the needs of all Americans (HHS, 2000). The report laid out “a framework for action” that included changing the perception of the public, policymakers, and health providers on oral health, removing barriers between people and oral health services, and improving oral health from disproportionately impacted groups (HHS, 2000).

Another important factor in dental and oral care outcomes is the overall situation of health care provided through the ACA, also known as Obamacare. The American Dental Association and other groups want to continue to support “parts of the ACA that expanded dental coverage, particularly for low-income children” (“ADA, Other Dental Groups,” 2017). Under the ACA, all insurance packages sold on the national health care exchanges are required to include pediatric dental benefits; however, the requirement could be lost if politicians follow through on their plans to pass legislation that repeals and replaces the ACA (“ADA, Other Dental Groups,” 2017). Dental procedures can be very expensive and access to preventative care can be limited based on socioeconomic factors. Government mandated and subsidized dental coverage gives millions of Americans, especially children, access to affordable health insurance so they can have more positive oral health outcomes.

Some people may argue that only people with poor dental hygiene have bad dental health outcomes, so society shouldn’t devote resources
to improve dental health care coverage and provide them with better oral health outcomes. The statement is an example of the “post hoc ergo propter hoc” logical fallacy because it confuses correlation for causation. People who use this argument ignore or aren’t informed about many of the other causes of poor dental outcomes. Although there is a high correlation between having inadequate dental hygiene habits and needing more corrective procedures, there are also many other causes that are independent of dental hygiene.

There are different ways that people can have negative oral health outcomes, even if they have good dental habits. For example, expensive dental procedures are not always the result of skipping checkups or not brushing your teeth every day. Malocclusions are a simple example of a dental outcome that is not always caused by poor dental hygiene. When the contact between upper and lower teeth is misaligned, it’s called a malocclusion, also known as over/underbite, crowded teeth, etc. Malocclusions can be caused by genetics, injuries, tumors, or even habits like sucking your thumb and prolonged bottle feeding that can change the shape of a person’s jaw or the position of their teeth. Fixing occlusions can involve removing or reshaping teeth, installing braces, or in some cases surgery to reshape the jaw. These procedures can be prohibitively expensive, particularly if a patient doesn’t have dental insurance.
Another basic example of a dental outcome that isn’t caused by poor dental hygiene is cracked or broken teeth. For this I’ll share an anecdote about a friend of mine. My friend is a 20-something male who actually takes great care of his teeth and mouth, he doesn’t miss his regular checkups, brushes and flosses every day, and avoids sugary sodas. He had braces when he was younger so his bite is straight (no malocclusions) and his teeth are in excellent condition. However, he still suffered a broken tooth one day while eating a hamburger at a restaurant. Somewhere in amongst the soft beef patty, lettuce, tomato, cheese and other fixings he bit into something very hard and immediately chipped his tooth. Although in his case, he had the financial ability and insurance coverage that allowed him to get his damaged tooth repaired, not everyone is so fortunate. Even a simple procedure to repair a chipped tooth with a dental filling or bonding can be too expensive for some people; delaying or completely ignoring the need to fix a broken tooth can cause infection and lead to worse outcomes. This is just one example of a freak accident that can cause a broken tooth by eating(!), but other activities such as action- and contact-sports or uncontrollable events like being in a car accident or getting mugged can put people’s mouths in even worse condition.

For people without adequate dental insurance coverage these situations and many others can either create significant financial hardship, if they have to pay out of pocket for treatment, or they can lead
to even worse situations for their health, if their dental issues are left untreated. I’ve provided two examples of negative dental outcomes that are independent of poor dental hygiene and there are a lot more. So, the argument that only people with poor dental hygiene have dental problems is a logical fallacy that confuses correlation with causation.

The current US dental health system leads to gaps in coverage for vulnerable groups. The disabled, children, elderly, minorities and people with pre-existing conditions face significant barriers to receiving quality health and dental care. The consequences of this disparity are economic and physical; less healthy populations require more resources devoted to health care. The US spends relatively little on dental care as a percentage of overall public expenditures compared to several other English-speaking countries (Birch & Anderson, 2005), so there is certainly room for improvement. However, any increased spending must be directed in effective ways: changing the perception of the public, policymakers, and health providers on oral health; removing barriers between people and oral health services; and improving oral health from disproportionately impacted groups (HHS, 2000).
References


Ying Yang
Kate S. Jacob

Drawing is not only a hobby for me, but it is also a passion. I stopped drawing at one point in my life and I have only recently started again. Trying to begin again gave me an incentive, it gave me the idea to put my thoughts into paper. Whenever people ask me how and where I get my ideas from, I can never answer them properly because whatever I draw, I don't think about. I just go with the flow of my hands. My art is my own chaos drawn onto paper.
The Wavy Night
Jeonghwa Lee

I'm currently in the MMDP program and Spring was my 1st quarter. I took ART 102 - Design I and I've done some fun works in the class. This is one of my favorites of what I did. I was inspired by waves and tried to make its look dynamic with curved shape, radiations and wavy lines. Each curved wave has a direction to a star which is a focal point.
Appeal in Steel
Steve Pflueger

The whole idea that you can take some plain steel plate, and make something cool and appealing to the eye is inspiring, and encouraging.
Electric Cars: What is the Real Cost of Charging?
Ben Smith

This essay was written for an English 101 class.

In 2017, many of the cars on the road run on electricity. Buyers are drawn to them because they are what appear to be great for the environment: quiet, low emissions, cheaper to operate than gas and diesel-powered options; and in recent years have provided extra tax benefits. Who wouldn’t want to save the environment with an efficient commuter? Less emissions means you’re contributing less to ozone deterioration and global warming; you can feel good about yourself as you join all those other “gas” drivers sitting in the daily traffic jam on your way to work. Some consumers will never succumb to the electric dream; there are many hidden environmental factors that you don’t see on the sticker price of these fuel efficient “green” vehicles. The true “cost” of charging an electric vehicle includes the production of the batteries as well as how the electricity is created that is used to charge them. These environmental impacts are felt worldwide and we are all paying the price, maybe even at a higher cost than we think.

The first electric vehicle was invented in the 1830s; 80 years before a battery/electric starter combo was created that could fully support an automobile. Over the decades, attempts to main-stream electric vehicles were tried. PBS indicates in its Electric Vehicle (EV) Timeline, that in 1900 “Of the 4,192 cars produced in the United States 28 percent were
powered by electricity, and electric autos represented about one-third of all cars found on the roads of New York City, Boston, and Chicago.” By 1908 though, Henry Ford had begun mass-production of the gas-powered Model T, and by the 1920s “the electric car ceased to be a viable commercial product. The electric car’s downfall was attributable to a number of factors, including the desire for longer distance vehicles, their lack of horsepower, and the ready availability of gasoline,” (PBS). None of the initiatives in the U.S. turned the tide, including a bill

by Congress in 1966 “recommending use of electric vehicles as a means of reducing air pollution,” (PBS); and a renewed interest in EVs with the rise of oil prices in the 1970s. Heavy lead-acid batteries combined with all-steel constructed vehicles (common U.S. manufacturing of that time) would have weighed so much performance would have suffered enough to deter buyers. Eventually, in 2008, “gas prices reached record highs of more than $4 a gallon and car sales dropped to their lowest levels. American automakers began to shift their production lines to smaller, more fuel-efficient cars,” (PBS). In 2009, as car manufacturers around the world were experimenting with EV options, “BYD, a Chinese battery manufacturer turned automaker, released the F3DM, the world’s first mass produced plug-in hybrid compact sedan,” (PBS), powered by lithium iron phosphate batteries.

Barack Obama was also a big supporter of electric powered cars in the U.S. Shortly after he took office, “The American Recovery and
Reinvestment Act of 2009 allocated $2 billion for development of electric vehicle batteries and related technologies. The Department of Energy added another $400 million to fund building the infrastructure necessary to support plug-in electric vehicles,” (PBS). This included tax credits for U.S. buyers; supporting Obama’s goal to reach “one million plug-in hybrid and electric vehicles on America's roads by 2015,” (PBS). EVs were finally getting the necessary backing to become a feasible option for car manufacturers and purchasers, yet the adverse impacts on the environment were overlooked.

The resources needed to create the massive EV battery packs used today, some of over 1000 lbs. (see fig. 1), are created from large amounts of elements considered “rare earths”. Most of these rare earths currently come from countries with minimal to no emissions policies, poor or unregulated labor policies and little concern for the byproducts of mining and manufacturing. Gathering and refining these minerals is where things begin to get less “green”.

According to British science writer, Chris Woodford, lithium-ion batteries (the types generally used in EVs) are made up of three major components:

Like any other battery, a rechargeable lithium-ion battery is made of one or more power-generating compartments called cells. Each cell has essentially three components: a positive electrode (connected to the battery's positive or + terminal), a negative electrode (connected to the
negative or − terminal), and a chemical called an electrolyte in between them. The positive electrode is typically made from a chemical compound called lithium-cobalt oxide (LiCoO2) or, in newer batteries, from lithium iron phosphate (LiFePO4). The negative electrode is generally made from carbon (graphite) and the electrolyte varies from one type of battery to another.

The lithium-ion battery then charges by passing ions from the Anode (positive) through the Electrolyte to the Cathode (negative); and recharges by passing the ions back through the Electrolyte. The cells within EV lithium-ion batteries typically have a Graphite and Cobalt (or other rare earth) Anode/Cathode with a lithium Electrolyte (see fig. 2).

Fig. 1. This picture shows the 1200 lb. battery pack containing 7104 cells of a Tesla Model D. The battery pack spans the entire length of the floor; from front to rear wheels. (SomeGadgetGuy.com, image)
Fig. 2. This rendering shows the basic components of the lithium-ion cell. (Visual Capitalist, infographic)

The mining processes currently being used to gather the rare earths to build these battery cells are extremely taxing on the planet. Lizzie Wade, an editor at Wired magazine, sums this up well:

Rare metals only exist in tiny quantities and inconvenient places—so you have to move a lot of earth to get just a little bit. In the Jiangxi rare-earth mine in China, workers dig eight-foot holes and pour ammonium sulfate into them to dissolve the sandy clay. Then they haul out bags of muck and pass it through several acid baths; what’s left is baked in a kiln, leaving behind the rare earths required by everything from our phones to our Teslas. At this
mine, those rare earths amounted to 0.2 percent of what gets pulled out of the ground. The other 99.8 percent—now contaminated with toxic chemicals—is dumped back into the environment.

Cobalt, used in a battery cell’s cathode, is valued because it is very strong for its weight, deals with temperature well, and has good conductive properties. Aaron Robinson, a long-time writer for Road and Track magazine, explains the negative impact of mining for cobalt:

Cobalt extraction typically goes hand in hand with copper and nickel mining. About 80 percent of the world’s cobalt supply is believed to be in central Africa’s “copper belt,” a band of ancient, mineral-endowed soil straddling Zambia and the Democratic Republic of the Congo (DRC)… The mining of these minerals takes place amid “one of the worst conflict situations in the world,” says Congo policy analyst Aaron Hall of the Enough Project… In the DRC’s eastern provinces of North and South Kivu, various rebel factions and the national army conduct mining at gunpoint or extract levies at checkpoints along the roads that fund their fighting… The open-pit mining that produces cobalt is causing serious environmental degradation in Katanga. And locals have long complained that multinational mining conglomerates are draining the country of its natural treasures without contributing enough to its economy or development.

Graphite, largely mined in China poses additional environmental concerns. According to the article written by Keith Bradsher, “These
elements come almost entirely from China, from some of the most environmentally damaging mines in the country, in an industry dominated by criminal gangs.” Bradsher also quoted Wang Caifeng, the top rare-earths industry regulator at the Ministry of Industry and Information Technology in China: “In many places, the mining is abused, this has caused great harm to the ecology and environment.”

Andrew Meggison, a writer for Gas2 a “green” car news site explains:

An increase in pollution caused by graphite mines throughout China has led to more than 50 of the mines and processing plants being shut down…Reports of “graphite rain“ (basically rain drops filled with graphite dust and other particles) and hydrochloric acid being released untreated into waterways has prompted the mine shutdowns. This isn’t the first time China has done this, either. In December 2013, approximately 55 graphite mines and processing centers were suspended in Shandong province, which controls 10% of the global graphite supply.

Manufacturers like Tesla are trying to bring mining of these elements to the U.S., but resource deposits aren’t plentiful. For now, we will continue to see and smell the black smoke from an old pickup truck’s tailpipe as the worst pollution. What we won’t see is the pollution an EV creates before it is even on the road; the damage it is causing to the world is oceans away.
In the U.S. most of the country doesn’t benefit from wind, solar, or hydroelectric generated power as we do in the Northwest. Power is generated mainly by coal, which creates more carbon emissions than gas powered vehicles. A study done in December 2014 by the Proceedings of the National Academy of Sciences found that EVs “actually make the air dirtier, worsening global warming.” The Associated Press article about the study noted:

People who own all-electric cars where coal generates the power may think they are helping the environment. But a new study finds their vehicles actually make the air dirtier, worsening global warming. Ethanol isn't so green, either. “It's kind of hard to beat gasoline” for public and environmental health, said study co-author Julian Marshall, an engineering professor at the University of Minnesota. “A lot of the technologies that we think of as being clean ... are not better than gasoline.” The key is where the source of the electricity [comes from for] all-electric cars. If it comes from coal, the electric cars produce 3.6 times more soot and smog deaths than gas, because of the pollution made in generating the electricity…The study finds all-electric vehicles cause 86 percent more deaths from air pollution than do cars powered by regular gasoline. Coal produces 39 percent of the country's electricity, according to the Department of Energy.
Unfortunately, no state in the U.S. is completely free of coal power (see Fig. 3). Drivers living in the Midwest, especially Texas, might want to think twice about plugging in an EV.

![Electricity Production by Coal](image)

Fig. 3. This map shows coal powered electricity in the U.S. in 2011. (Sourcewatch, Map)

According to Johana Bhuiyan, writer for Recode.net, “over a half-million Electric Vehicles have been sold in the U.S. to date, more than seven times the number sold in 2012.” If this rate continues, there will be over 1 million EVs on U.S. roads within the next 3 years. The amount of resources to create batteries and power doesn’t seem to be going down any time soon. New methods of battery manufacturing are being developed, but not fast enough to replace current vehicle production. To put salt on the wound, the same types of batteries are used in mobile phones and other electronics. Eco-conscious consumers thinking about
buying an Electric Vehicle to save the planet or the ozone layer might want to wait a few more years for improvements in mining and battery technology. Consumers only interested in saving money on their commute and not bothered by the hidden costs of charging can go ahead and buy their “non-polluting” EVs today.
Works Cited


Eastbound
Ben Smith
Created for Intro to Drawing, taught by Oscar Baechler.
The Many Layers of Bill Murray
Heather Marie Abernethy

I'm pursuing my degree in Multimedia Design and Production. This is a piece I created in Design 1 using an X-Acto knife, black and white paper, four values of gray paper, and rubber cement. The requirements consisted of taking a famous icon and creating two compositions; one posterized version and one pixelated version.
Beach Walk
The Godfather
Jason Keary Moses

I currently live in Redmond Washington with my wife and three children. This a piece of work from design 1 instructed by Professor Green.
Sail
“Lee Lion”