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Lang Prize Reflective Essay

Before taking UWP 49: Writing Research Papers, I did not know the difference between quantitative and qualitative data. I equated researching to a simple Google search and was ignorant of the greater systematic endeavor behind the research process. The goal of UWP 49 was to complete a research proposal to be presented to an imaginary panel of blind reviewers who approved funding for research projects. I've written many literature review-type papers but never had to develop a methodology for a proposed study or document my research methods. I was introduced to various methods of research organization throughout this course. I wrote an annotated bibliography and matrix while keeping track of the key terms I input to access relevant sources to inform my final research proposal entitled, "Human-Centric Research in Energy Retrofitting Methodology for Historic Architecture." With the help of library resources such as UC Library Search and subject-specific research guides, I could freely access all the articles I needed to complete my final paper.

The topic of my research paper spans various fields, which required me to research within a multidisciplinary framework to form my literature review. I had to dabble in academic journals with subjects in engineering, architecture, design, policy, historical conservation, etc. My guiding research question was, "How can energy retrofitting techniques be applied to historic buildings to address the impact of climate change while preserving the historical and cultural aspects of the architecture?" This mouthful of a question at first seemed too ambitious to answer.

I had to divide my research question into parts to make my research process more manageable. I used the UC Library Search tool to find academic journals that helped inform my

research question. At first, I tried finding case studies about historic architecture that's undergone energy retrofitting to get a sense of what the process was like. I searched phrases like "historic energy retrofitting case study" and "historic building energy retrofitting process" to produce relevant articles. I found that by adding the words "case study" to my search, the results were more specific and ultimately more useful. Examples of two informative case studies I found in Poland and Italy outlined specific energy-saving methods that could be implemented in historic architecture and their challenges. I trusted these Euro-centric articles due to the prevalence of opportunities for historic building energy retrofits throughout Europe. From prior research, I knew that countries in the European Union (EU) were subject to the EU's vast sustainable building efforts. These case studies provided quantitative data that outlined the advantages and disadvantages of different energy retrofitting techniques in terms of energy saved. By doing further research on the authors of these texts (Rek-Lipczynska and Galatioto), I found their previous publications were related to historic conservation and architectural-engineering disciplines, with both authors being respected scholars at their accredited universities. I used this verification method–searching an author's name on Google Scholar and accessing their previous publications and titles–on all the authors of the journals I included in my final paper to ensure my sources were reliable.

After reviewing multiple case studies, I established the most prevalent topics in energy retrofitting historic architecture: energy efficiency, insulation, HVAC, aesthetics, and culture. I narrowed future search terms to respond to these categories. I also used synonyms like sustainable energy and heritage preservation to expand the relevant results. I became familiar with the library's subject-specific research guides. In the "Engineering, Technology & Transportation" category, I came across *Compendex*, an expansive engineering literature

database. Through this database, I found one of the most informative articles of my research process, "Energy retrofits in historic and traditional buildings: A review of problems and methods," by Amanda Webb, an Assistant Professor of Architectural Engineering at the University of Cincinnati. To find this article, I searched the phrase, "energy retrofitting historic buildings problems," with the intention that the results would be geared towards aesthetic and cultural preservation. This search was successful as Webb's article popped right up. Webb's article touched on different aspects of my research question, outlining the difficulties of following traditional energy retrofitting procedures (like installing HVAC systems) when dealing with historic architecture from cultural and engineering perspectives while highlighting the important role historic architecture plays in the climate crisis. Webb's emphasis on the importance of including historic architecture in the fight against climate change helped solidify the relevance of my topic, presenting it as urgent and necessary–an important aspect of any research proposal.

My literature review research continued by utilizing the UC Library Search, *Compendex,* and Google Scholar to find sources that addressed the prevalent topics outlined in the prior paragraph. I found that by inputting phrases like "HVAC energy retrofitting historic buildings" and "cultural conservation energy retrofitting historic buildings" into the search bar, I was able to find more studies on the different aspects of my research question. As I built a well-informed understanding of the existing research available, I found a gap in the existing literature. There was no research about how the energy retrofits of historic buildings affect the human experience. In other words, the existing research relied on statistical, quantitative data and there was little qualitative research done to measure the effects of these energy retrofits. I had trouble finding sources that prioritized the human experience, leaving me wondering why it wasn't deemed

important. My research question expanded to include how a humanistic approach could evaluate the success of an energy retrofit on historic architecture, measuring people's experiences and values.

I now had to propose a way to fill this gap in the literature while still addressing the aspects of my initial research question. I formulated a proposed methodology to outline how I would gather qualitative data used to evaluate the success of energy retrofits completed on historic buildings by surveying both professionals associated with the retrofitting and civilians frequenting the historic buildings. The success of the corresponding energy retrofitting project is measured by the project's ability to adhere to increased energy efficiency, cultural conservation, and consideration of the human experience. I had to research ways to conduct a qualitative study. I took inspiration from previous qualitative studies' methodologies and an interview I conducted with an on-campus researcher to design my study. Using in-class examples of published qualitative research, I noticed effective strategies to gather and analyze qualitative data like surveying random people, tallying any patterns that arise, and providing incentives to participate in a study. However, the most valuable asset to creating my research methodology was my 30-minute interview with Dr. Jae Yong Suk who has a background in human-centric research in architecture and engineering.

By having a conversation with Dr. Suk, I applied my research efforts to something tangible; my research didn't feel as ambiguous anymore. Dr. Suk was the personification of my ongoing research efforts, as he was a library of knowledge in human-centric research. He answered questions I had about his research process and the intricacies of conducting a qualitative study. Dr. Suk's desire to prove that the quantitative statistics found in energy efficiency research do not always translate to human values led me to form a deeper connection

to my topic. My research question deviated from being just a research question to being part of a greater movement that pushes for the importance of qualitative research in architectural and engineering fields.

After I wrote my proposed methodology, I moved on to my anticipated results. I had to reference existing studies to base my anticipated results on. Finding studies that described the common outlooks that professionals and civilians had on historic architectural conservation and energy retrofitting seemed challenging. It felt strange to predict the responses of entire groups of people. Scouring through the existing articles I've referenced and looking through the references of those articles to find more specific sources, I gathered information to draft an educated prediction.

The references portion of Webb's article was a great resource as many relevant studies were listed. For example, I found Gustaf Leijonhufvud's article, "Decision-making on Climate Control for Energy Efficiency and Preventive Conservation in Historic Buildings" under the references. Leijonhufvud's article discussed the intersection between societal and environmental conventions regarding historic architecture, suggesting that the ideal human experience may shift with societal values. As the deputy head of the Department of Art History at Uppsala University in Sweden, Leijonhufvud has produced a research portfolio with an emphasis on sustainable management of cultural preservation. His recent publications center around historic architecture, proving his relevance in the current scope of the topic.

With such a complex research methodology, I had to dissect the existing literature in a way that uncovered subtle references to human behavior. I utilized the "Ctrl F" command in the articles I've referenced throughout my paper to find keywords like "human," "person," "value,

"and "thought" integrated into these quantitative studies. However, my anticipated results could not be completed without finding new sources.

To find sources that discussed human values, I branched into the disciplines of sociology and policy. I wanted to get a greater understanding of how a designer's values inform a project, so I searched phrases like "how designers' values inform decisions," in the UC Library Search tool, but this search was too vague and garnered results that didn't relate to my research topic. So, I adjusted my search term to: "how designer values affect sustainability," and found an article by Daniel Wahl published in *Design Issues* by the MIT Press that detailed a sustainability decision-making process that allowed me to grasp how designers approach sustainability-related projects.

I continued to search for articles related to human values on the subject of climate change. My methodology involved surveying civilians, including people of different backgrounds who may have differing opinions regarding the urgency of climate action. This led me to research any factors that could predict certain groups' values. I considered different age groups and their climate change values, inputting "older generations' thoughts on climate change/climate policy" into the search. Being a successful search, I was left with a plethora of research regarding climate change values by generation. I chose an article written by Daniel Albalate that measured these generational values on an international scale, providing different forms of quantitative data. I appreciated the international scale of Albalate's article and its regard for the influence of global climate policy on society.

In conclusion, my final paper for UWP 49 represents my first attempt at a research proposal. Throughout the quarter, I managed challenges and successes as I developed my

research skills. The library's granted access to scholarly journals allowed me to research without limitations, expanding my knowledge and ability as a researcher.

No AI tools were used in the writing or planning of this essay.