Archives Web Site: Unbuilt WPI

An Interactive Qualifying Project

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Abstract

This report describes the continuation of a previous Interactive Qualifying Project, titled "Unbuilt WPI". Last year's group used the resources of Worcester Polytechnic Institute's archives to compile a history of the campus's hidden past; buildings that had been planned but never built. Our project was to transform the research done on these "unbuilt" buildings into a user-friendly website interface, housed with the WPI archives site that could be accessible to students and alumni alike. The Omeka software system was utilized as a framework on which our website was built. The data retrieved, both written and pictured, was organized into Items and Exhibits on the website. Exhibits include Atwater Kent, Boynton Hall, the Campus Center, Goddard Hall, Proposed Administrative Buildings, Proposed Humanities Buildings on Boynton lot, and Gordon Library. Screenshots of each website page are included in this report. This project is important because it ties together technology and history, providing a medium for readily exchanging information about WPI's past that would have been previously inaccessible to the general public.

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Introduction

Being a student at Worcester Polytechnic Institute (WPI) means being part of 152 years of history in the making—a history that was born upon a hill under the vision of John Boynton and Ichabod Washburn, where the legendary two towers still stand. But what about the other buildings of WPI's history that were never built? Unbeknownst to many, WPI's campus has a secret past of forgotten building blueprints. Thus the aim of our Interactive Qualifying Project (IQP) is to bring these "unbuilt" buildings into the spotlight of the public eye.

IQPs at Worcester Polytechnic are special in the fact that a project is not necessarily done when its final report is submitted. Oftentimes, one group's work leads the way for numerous other group's projects. Our project happens to be one of these continuations, where the previous project researched what buildings were never built on WPI's campus and why. By using the research that was already compiled about WPI's unbuilt buildings, our team was able to focus on transforming that research into a publicly accessible website. The original IQP project created posters and exhibits around campus to peak the interests of students and faculty on these unbuilt buildings. However, we want to reach a wider, more public audience. Our team worked hard to make sure we kept the core point of the previous team's project while developing and transforming it into a format that could reach a wider audience. The history of WPI's unbuilt buildings and unperformed renovations is a unique and curious one that we believe would interest students, faculty, and beyond. Thus by using a previous group's historical research we were able to create an interactive way, namely a website, for the general public to be introduced to WPI's unbuilt history. Project continuations, like this one, are one of the unique qualities of the IQP and other WPI projects that make the school a leader in project-based learning. It teaches

students how to utilize the work of those that came before them in a way that furthers the scope and goals of a project.

Much like how we utilized the work of a past team in order to reveal the secrets of WPI's unbuilt past to a wider audience, we will also be passing our work onto another project team in order for them to widen the scope of the newly established platform. We accomplished creating a website to display the unbuilt buildings on WPI's campus, primarily focusing on the technicalities of forming the website itself rather than delving into the history portion. We owe the latter to the past IQP team as they did the research portion, allowing us to be more meticulous in our website design. In this way we hope that our project can be a starting place for the next IQP team to develop it even further. Our task was to transfer the past group's research into a website that was available to the public and we hope the next team can expand upon this website by adding more history to it, or even taking the website and converting it into a mobile application so that the information is more so readily available to the public. Ultimately, our team hopes that this project can continue to reach a wider audience and be expanded upon to include even more of the secrets of WPI's unbuilt history.

History of Unbuilt WPI Exhibits

Before Unbuilt WPI became the idea for a website, it was first and foremost an exhibition put together for WPI's 150th anniversary. The original project team unearthed various unbuilt building designs from the archives, then constructed display cases and posters around campus as part of the WPI 150th exhibition. When they created their display pieces, their "primary goal for these exhibits was to ensure that they [were] placed in high traffic areas of campus in order to allow for the highest visibility and to allow the WPI population to become informed of these buildings that never came to be" (Bernier).

While building the website, we had to choose how to divide up the content in a sensible yet concise way. To do this, we took much inspiration from the way the previous team divided up their exhibit display cases. The team decided on seven building-centric displays and one display as a introduction and general project overview; this is the source of our own seven building-centric exhibits, but this time online. The past team made displays to accompany the unbuilt building designs and blueprints for Boynton Hall, Goddard Hall, the proposed Humanities Building, Gordon Library, Atwater Kent, the Campus Center, and the proposed Academic Building. Our team believed this breakdown of the research into these subgroups was logical and easily convertible into a web based format. The only downside to dividing the website up by building like the display cases was that the timeline of these unbuilt design would not transfer over into the website format as well as we would have liked. Unfortunately, even though the previous team spent a lot of time putting this concept on display, it did not make the cut onto our website. However, our team made the decision to divide the unbuilt designs up by building. Even without the timeline, it still accurately and conveniently conveys the story of WPI's unbuilt history to any site visitor.

Combining History and Technology

Similar to the physical displays of the past team, we are now working with the Archives to create a library website to digitally showcase archival material. We hope to provide a fun and interactive way for internet visitors to learn about WPI's history. In the earlier days of our IQP, our team was provided with all of the research that the previous team had accomplished. Although this made our lives easier in terms of research, it was also difficult to digest so much information that was organized in a format we were unfamiliar with. Our team spent a substantial amount of time simply reviewing the existing research and reorganizing it into a way that would

facilitate the progress of our project. The last team's IQP focused on the history of buildings at WPI that were never built, or renovations to current buildings that never came to pass. Our team had a different goal however; we were tasked with taking this existing research and placing it in an online webpage in a format that a wider audience than just the WPI community would have access to. While going through the past team's research, we had to choose specific materials that fit with this overall theme and could be understood by audiences beyond WPI. We took inspiration from the past team on how to format and display the information to the public in order to grab their attention and keep them interested. The previous IQP figured out how to organize their research in a way that would catch the attention of those walking past while also peaking their interest into the other exhibits. In parallel, we want people that visit our site to keep clicking through the pages of blueprints to learn more about the history of these unbuilt buildings; thus format was very critical to our team's goals.

Our team began this formatting by considering what technological platform we wanted to convert the existing research and display exhibits into. Our team took inspiration from Brown University's architecture tour app as model of what we intend future projects will use our website to end up with. This app, called FACADES, is similar to our website in that its goal is to convey a campus history in a technologically advanced format (Coelho). The difference between their application and our project is that we are intending to inform people about what could have been built versus what currently stands today. Our website showcases a unique insight into an alternative view of the present college campus. While we did not produce a phone-specific application for users, we believed the foundation for this would be to create a website. Later on we hope this platform could be converted into a phone based application. We specifically focused on converting a textual research report and poster displays into a website format that a

wide audience would be able to access immediately to learn about WPI's history. Because our primary focus was on converting historical research into a technological format, we did not progress onto the next step of creating phone application. However, we hope that our conversion work makes that an attainable goal for the teams to come.

When we decided on building a website as opposed to a mobile application, Michael Kemezis and the Archives department at WPI introduced us to their hosting site, called Omeka. What made Omeka suitable for our team was that it came with numerous pre-made templates that facilitated the input of information from the existing research to have it automatically formatted. This made it easier to create and test a functional website from day one. Omeka was also a good choice because it was also what the archives use for their other online exhibits. This meant that our site could be automatically added to their main site, encouraging more traffic and publicity to the project. Omeka is also relatively customizable, allowing us to either use their templates or creatively format in ways that streamlined what we aimed to display on the site. As far as hosting sites go, Omeka was generally user friendly and allowed for the insertion of Dublin Core metadata. This was used to keep the research done by the previous team saved in a sensible and easy to reference format. The format would also allow viewers to easily use the site in their own research, as all of the citations were built right into the website.

However, Omeka did have some drawbacks. It was not as customizable as our team had wished, and did not allow enough space to upload as much information as we would have liked to. We hope that our project will serve as proof for the Archives to persuade WPI to host their own local archives website, and not use a hosting service anymore. This would allow future teams to be able to fully customize the website in a way that works for the Unbuilt WPI format, giving them the means to upload and publicize more research.

When we were converting the previous research report into a digital format, we devoted much of our efforts into formatting. A textual format is intended to be read from top to bottom in a linear fashion. However, in a web-based format, the user can jump to whatever page they wish on the site. For this reason we put a lot of thought into the best way to divide up the site so that the information was conveyed in an understandable format. We took inspiration from the past group's exhibitions format by dividing the website by building. For each building, we discussed the history of the proposed designs compared to the ones that ended up being built.

Interface Design and Human Computer Interaction Principles

Using a hosting service with templates for our website provided many advantages to our team. At the start of our project we used a template that was not very customizable, but was formatted in a way that was easy to learn and work with. We were drawn to a specific template because it divided up the research into manageable groups that resembled the poster exhibits done by the previous team. As time progressed and more of the previous team's research was added to the site, Michael recommended that we use a different, more customizable template. At that point we switched focus from just getting research onto the site to making a site that was sensible and user friendly. This is the point where our team began focusing on interface design.

Audience

We knew from the beginning of this project that the audience of our website would be wider than just WPI students or faculty. Thus we wanted a site that made sense to someone who has never visited WPI before. According to interface designers Kate and Tom Gomoll, "the most important thing about writing is understanding your audience and how they will accept and understand the information, and that's really what usability and user interface design is about,

too" (Thoreson). Knowing that our audience would not be only people familiar with WPI, we wanted to make the website's introduction to the project as general and informative as possible. For this reason, we added the following landing page, shown in Figure 1, that users would be greeted with when first visiting the site.
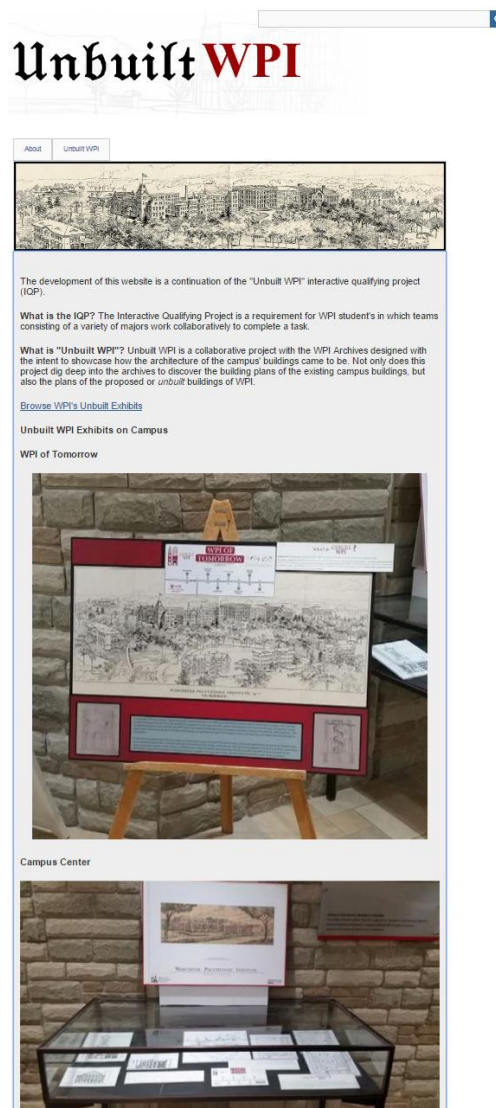

Figure 1: Landing Page for Unbuilt WPI Site

While Figure 1 does not capture all of the landing page, the main idea is that the user will be greeted with a brief introduction to the project, and then immediately be shown photos of the previous teams exhibits. The purpose of an introductory page, such as this is, to ensure that even if the user is not from WPI, they will still know what the site and project are about. Visually, this first encounter should also be attractive enough to make visitors interested in continuing on through the site and learning what the project itself is about.

Layout

In websites involving historical topics, it is unlikely that every user will be 100% tech savvy. Thus creating easy to navigate user interfaces was highly important to us. We felt the interface must be inclusive of the technological and the non-technological user since its content is intended for both. To accomplish this, we opted for a simple page format with minimal distractions. Most of the pages on our site have the information on the building as well as links to travel to other pages about the building. It is ideal in interface design for "pages [to] use plenty of white space and [to] integrate text and visual elements together to convey ideas [in order to] help users find and understand information quickly" (Brizee). To accomplish this, our team divided up building information into many pages connected by links, so that no one page was too long and the information was easy for the user to digest. According to user interface expert Jakob Nielsen, "A wall of text is deadly for an interactive experience. Intimidating. Boring. Painful to read." (Nielsen). Thus when designing our pages, we made sure to avoid walls of text, as they are not appealing nor user-friendly. Instead we used shorter paragraphs intermingled with images in order to keep the users informed as well as interested. We also made sure that for any given building there was only a couple linked pages, since too many could confuse non-technologically oriented users.

Links

Originally when making links on the site, we used an existing Omeka plugin. This created page links offset to one side of the page that were bolded when a user was on that page, as shown below by Figure 2.
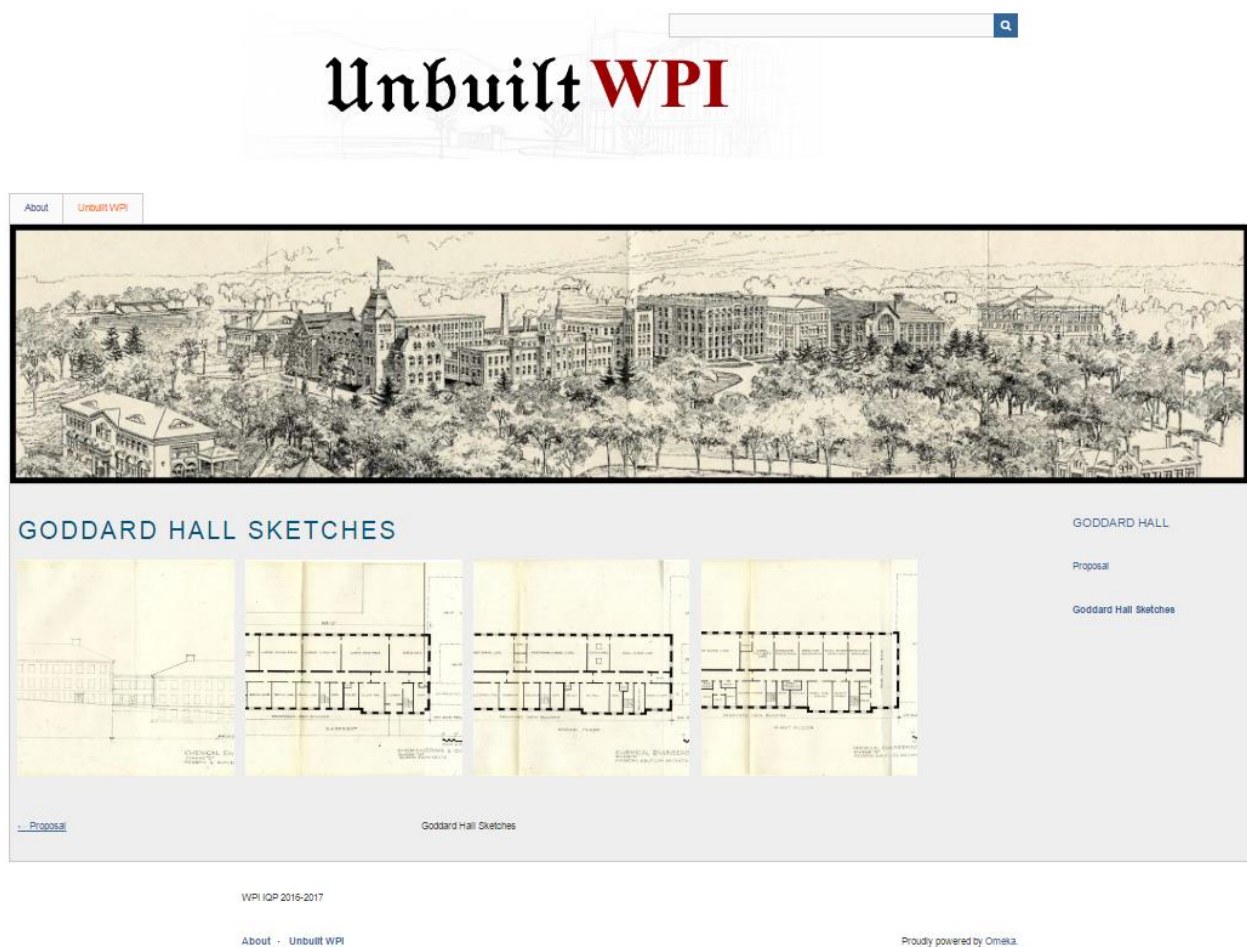

Figure 2: Link Format Example from Unbuilt WPI Site

We believed that the physical separation of the links aligned to the right, along with the bolding, would be enough to draw a user's attention to click them. However, after reading Jakob Nielsen's advice on user interface design and page link formatting, we decided that the links

should ideally be a different color or even underlined to pop-out more to the user (Nielsen). Unfortunately, Omeka does not allow this customization, so instead we were only able to utilize their location and boldness to get the user's attention. However, if a future team is able to use a more customizable locally hosted site, inserting different colored or underlined page links would be important to consider. This would encourage users to click through the rest of the exhibits, and ultimately explore the entire site.

Font Sizes

Font sizing is also critical to website interface design because it dictates how easily a user can read the information on a page. When designing an interface, the font should be standard in style and a minimum of 12-point in order to achieve the best user readability (United States). In our design we chose a standard 12-point font size in a serif font for the major blocks of text on the exhibit pages. For the exhibit titles we chose a larger, more attention-grabbing font in a larger point size of 18. By using fonts that a general user is known to be able to read more efficiently, we helped to make the website friendly and easier to read for a general user population.

Color

Research on user interface design has much support for light colored backgrounds and dark colored text, saying that this combination is ideal in making a page readable and interesting to a user. According to preliminary research done into the use of color in computer interfaces, "the [text and background color] contrast should be low enough that it does not attract attention, but it should be high enough that the text is easily read without straining the viewers' eyes" (Pribadi). To follow this advice, our team opted with the Omeka theme of dark blue, and sometimes black, lettering placed on top of a grey blocked background. This choice would

ensure that the contrast between the text and background was not too high, allowing users to better focus on what they are reading. We felt that a white background would be too jarring to the user since they would be reading much text information on our webpage. We wanted to make sure that the users were able to read our historical text without having eye troubles, as this would discourage them from continuing to click through the website to learn more about the project.

Usability Studies

While our team did not get a chance to conduct any usability studies with our website design, we think this would be an interesting experiment for a future team to perform. We hope that our site design, or a modified design, could have usability studies performed on it in order to receive feedback from real users about its functionality and design. Usability testing is relatively easy to set up, however a complete and working version of a site is necessary to do so. The feedback that testing provides would be invaluable in the site design, and useful in ensuring its popularity. "One of the main purposes of usability testing is to identify issues that keep users from meeting the usability goals of the Web site...and...to cause beneficial improvements to the user interface..." (Rinder). In the case of the Unbuilt WPI site, user testing would be useful for determining if a user understands the main idea of the website, which is to reveal WPI's unbuilt history. Determining whether the site is fulfilling its intended purpose will help a team to know if further improvements to the site must be made and what those specific improvements should be. We highly recommend the next team conduct usability studies on the finished site, as the team could then use this information to alter the site design and continue to improve it even further.

Exhibits

The exhibits that we constructed for this website mirror the buildings researched and discussed in the previous Unbuilt WPI IQP project. These buildings are Atwater Kent, Boynton Hall, the Campus Center, Goddard Hall, Proposed Administrative Buildings, Proposed Humanities Buildings on Boynton lot, and Gordon Library. The majority of these buildings are ones that were in fact constructed and still stand on WPI's campus today, but in a different architectural design than what they had originally been planned. We collected images of these plans and blueprints and compiled them into a consistent format that is easy to view and learn from, as well as accompanying easy to read descriptions of the history of these buildings and their uses. When designing each exhibit page, we had to keep in mind the interface design characteristics that we discussed above: audience, layout, links, font sizes, and color.

Atwater Kent
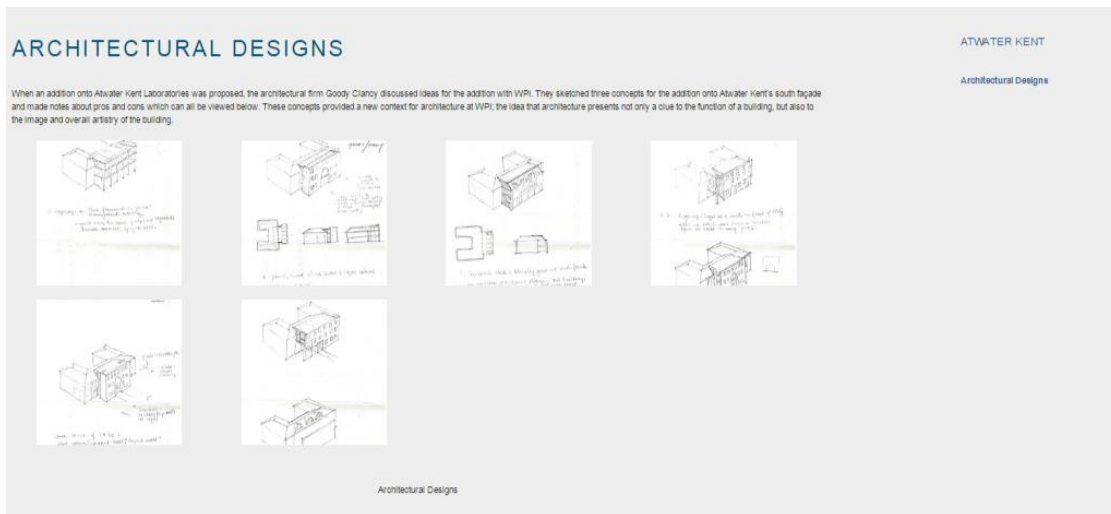
Figure 3: Atwater Kent Exhibit Page on Unbuilt WPI Site

When designing the page for Atwater Kent, there was a lack of historical text associated with each individual sketch. For this reason, we decided to make the sketch images the main

focus of this exhibit page and leave the text blocks to a minimum. We included general introductory information about the building at the top of the page to inform anyone coming to the site, not just those already familiar with the building. The links for this page only consist of the link to the design pages, since those images contain their own captions when clicked. We decided that having a linkable page for each of the design sketches would be too cumbersome to the user. The font and color scheme of this exhibit follow the same guidelines mentioned earlier, where darker, bolded, text is used to draw the user's attention to the links. Otherwise, we used dark blue and black fonts on the light grey background to allow easy reading for the users.

Boynton Hall
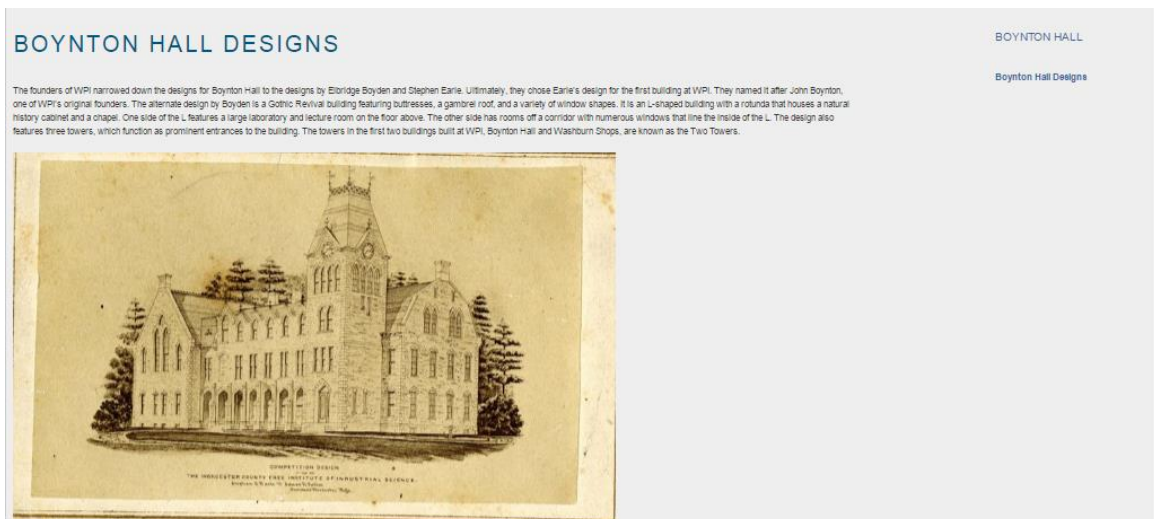
Figure 4: Boynton Hall Exhibit Page on Unbuilt WPI Site
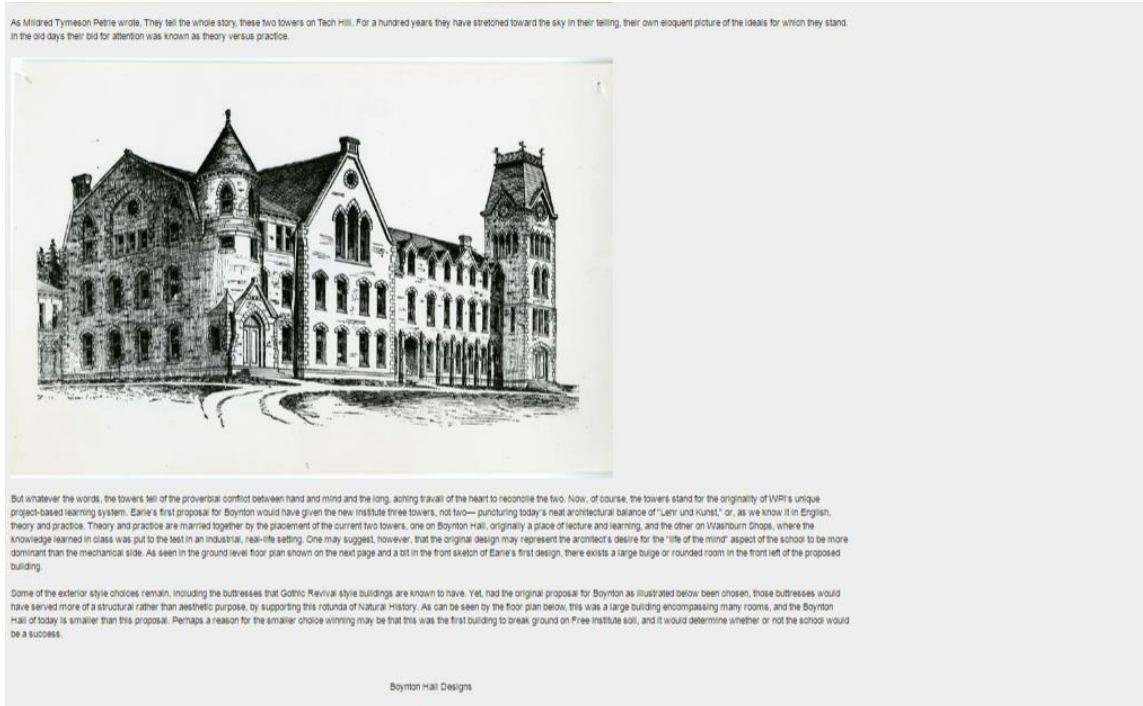
Figure 5: Boynton Hall Exhibit Page on Unbuilt WPI Site (Continued)

Boyton Hall was the first building to be built by Worcester Polytechnic Institute in 1868, three years after the college was founded. This exhibit for contains two alternative designs for the building that were not used in the final build (Bernier). The division of this page layout was determined by the number of alternative designs the building had. We began the exhibit page with background information on the building itself to ensure that every user, regardless of their relationship to WPI, knew what building we were discussing. We then broke up the wall of text from the report by immediately describing the two alternative designs and including the images of both. The combined brief description of the alternative design and why it was unused under each associated image streamlined the readability and organization of the page. In this fashion, we were able to convey the multiple alternative designs to the users without overloading them with information. The links for this exhibit were concise, like the Atwater Kent exhibit, because all of the relevant information on the alternative building designs could be displayed on one

page. The font sizing and color followed the standard format that we decided for the entire site: standard size and dark font on a lighter background.
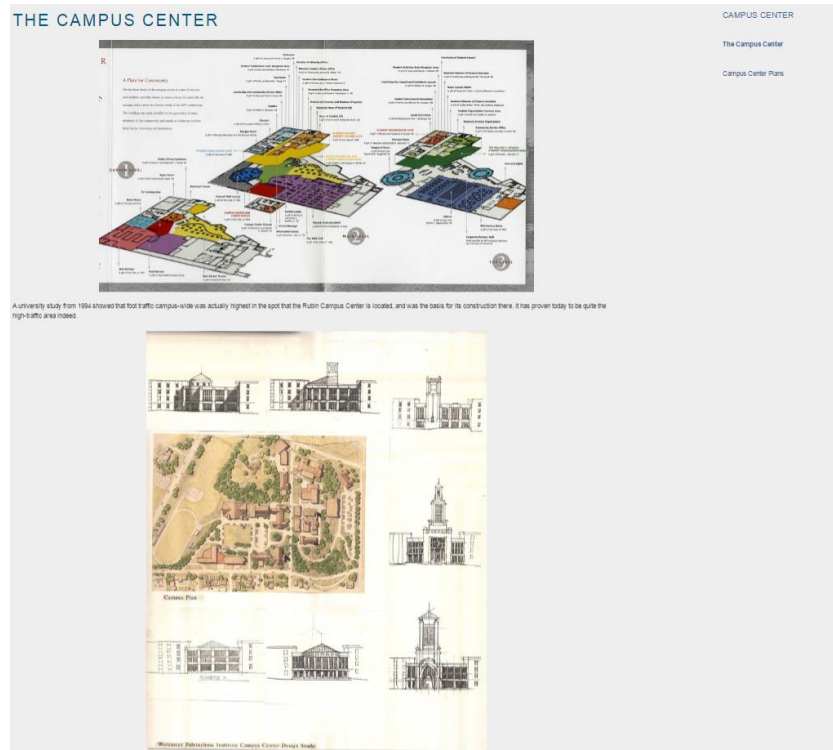
Campus Center

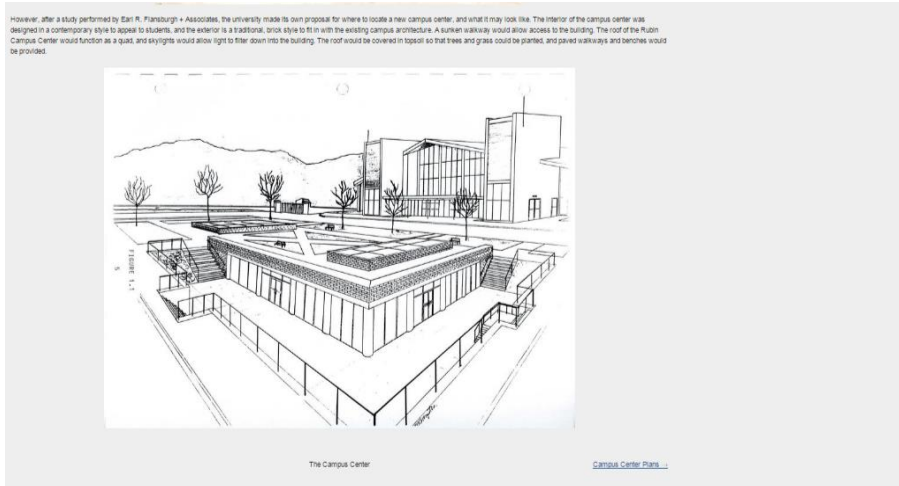Figure 6: Campus Center Exhibit Page on Unbuilt WPI Site

However, after a study performed by Earl R. Flansburgh + Associates, the university made its own proposal for where to locate a new campus center, and what it may look like. The interior of the campus center was designed in a contemporary style to appeal to students, and the exterior is a traditional, brick style to fit in with the existing campus architecture. A sunken walkway would allow access to the building. The roof of the Rubin Campus Center would function as a quad, and skylights would allow light to filter down into the building. The roof would be covered in topsoil so that trees and grass could be planted, and paved walkways and benches would be provided.

The Campus Center   Campus Center Plans →

Figure 7: Campus Center Exhibit Page on Unbuilt WPI Site (Continued)

In the exhibit for the Campus Center, many different plans for the building design are pictured and the logic behind their designs and locations are discussed. The amount of alternative designs played a large role in the overall layout of this exhibit. Having every design displayed on one page would be too overwhelming for a user, so instead our team opted for a multi-page layout. Firstly, there is a general page about the Campus Center's history which also describes the reasons for why there were so many alternative designs. Then there is a separate page solely dedicated to displaying each image of the alternative designs. By breaking up the information on the building designs in this manner, our team hoped to avoid a clutter of information that could confuse or deter users. The historical page that the user first arrives at in this exhibit is friendly to a large audience; it does not assume the users know the history of the building, and instead uses this page to fill them in. Once again, this exhibit followed the standard format we chose for our website when it came to link, font, and color design.

Goddard Hall

Figure 8: Goddard Hall Exhibit Page on Unbuilt WPI Site

Goddard Hall today is much less like this design. It instead represents several decades of maturity for the school in terms of architectural design, unlike the proposal for the building would. As we know it now, Goddard is more of a jagged L-shaped building, placed further down the hill than the proposed building. When walking by Olin Hall, the building seems to go on forever-- it's just a very long, thin building. Adding another building of a same shape and size onto the end of that would make that side of, what technically is West Street, very awkward and somewhat unwelcoming. When rounding the corner from Higgins Laboratories, all that would be seen is an endless mass of brick and small windows—not a pleasant sight. With Goddard Hall as it currently stands, it breaks up the monotony of brick and stone, allowing for a more interesting view. Goddard Hall's shape and exterior also serve as a sort of segue from traditional college campus architecture to the early stages of more modern architecture. The interesting shape of the building also fits better as it goes down into the hill towards Salisbury Street, creating an organic closure to the existing walking path as it reaches the edge of campus.
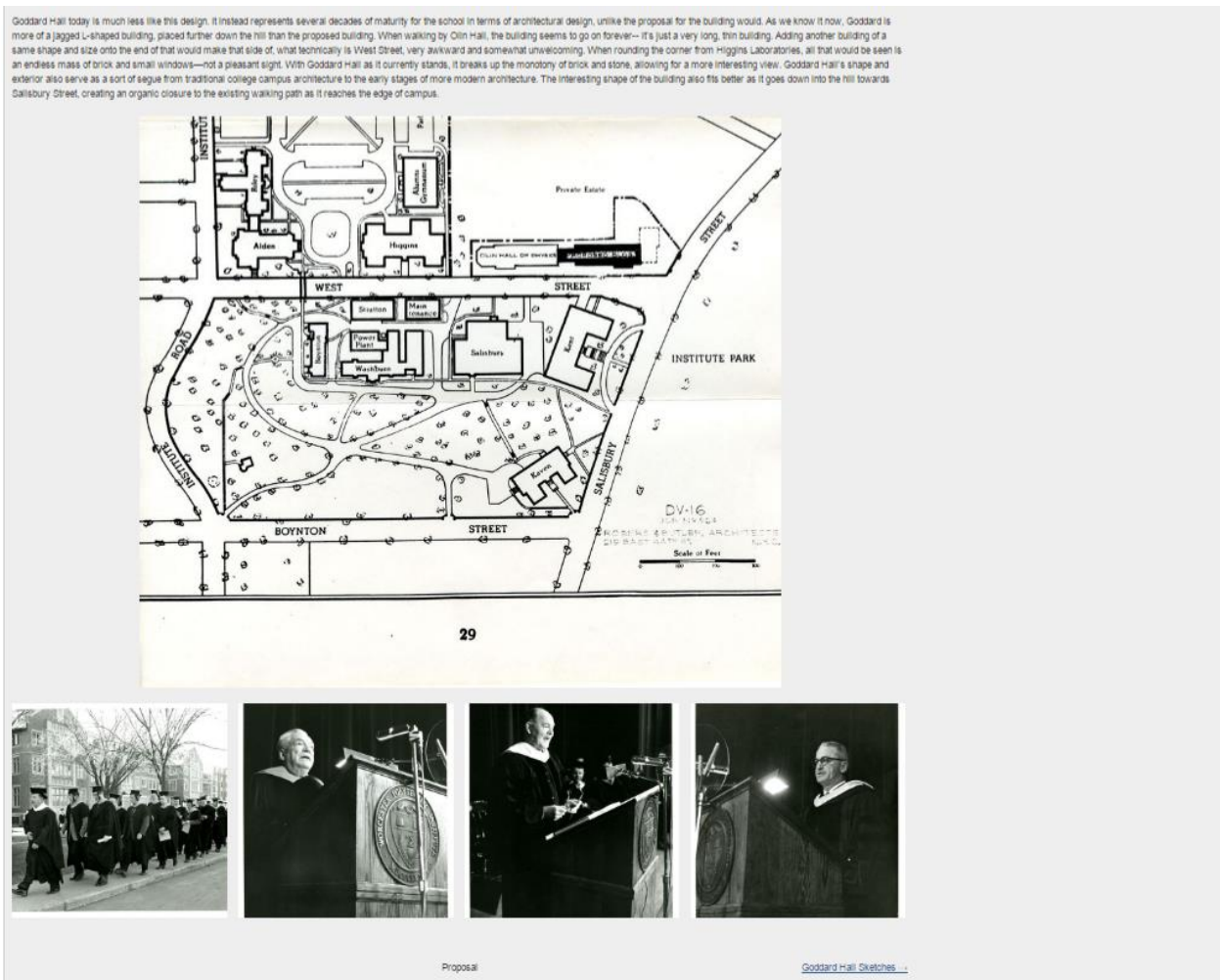
Figure 9: Goddard Hall Exhibit Page on Unbuilt WPI Site (Continued)

Goddard Hall was different than our other building exhibits due to the fact that it contained different media than the other pages. The exhibit displays images of not only building designs, but of newspapers and a reports as well. In order to format this particular exhibit in a comprehensible manner, our team had to be especially precise in grouping these particular images. There were overall three types of images for this exhibit: the newspaper images of the building, the report images related to the building, and the actual design sketches of the building's alternative form. Our team chose the newspaper report images as what the general users would first be greeted by when clicking this exhibit. We reasoned that the audience of a

newspaper is relatively as comprehending as the potential audience of this website; thus it would be an easy format to immediately convey information. For this reason, we felt the newspaper articles were most relevant to the general audience and would make it easier to introduce the other sets of images. We decided to place the images from the building report at the bottom of the main page. This is because although they are interesting to look at, they are not as relevant to the building designs as the other images placed earlier on the page. Finally, we placed the actual alternative building designs on their own linked page. This is so the user can view them in greater detail without the main exhibit page being cluttered and extended longer than is appealing. In accordance with the other exhibits, the fonts and colors adhered to the general format we decided on for our website.

Proposed Administrative Buildings

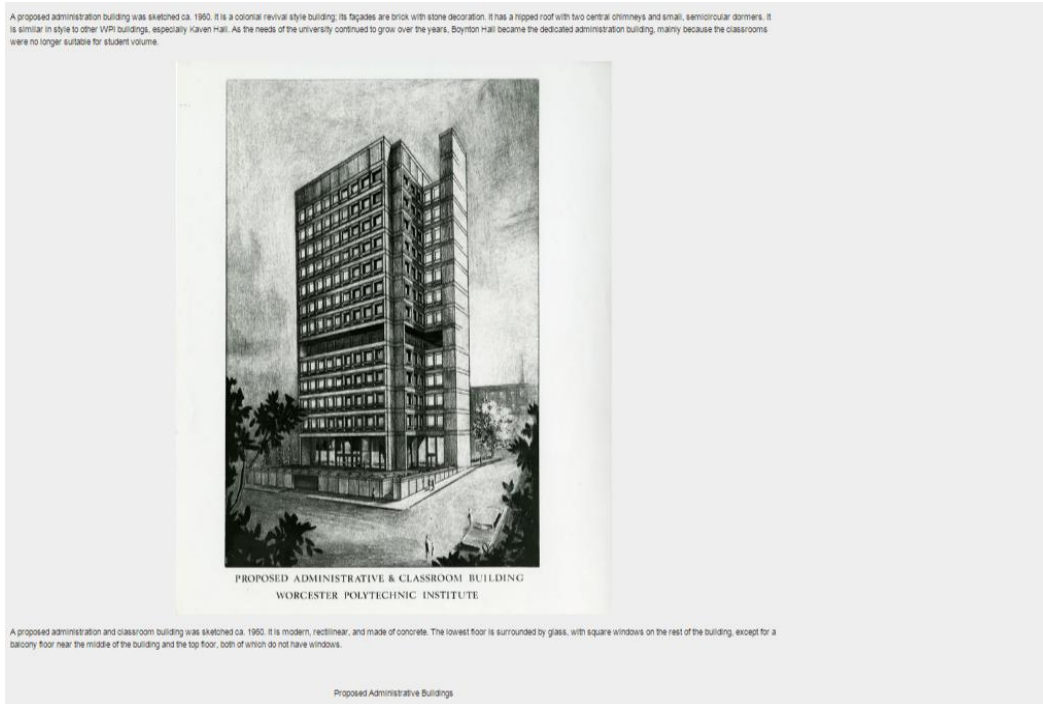Figure 10: Proposed Administration Building Exhibit Page on Unbuilt
WPI Site

A proposed administration building was sketched ca. 1960. It is a colonial revival style building; its façades are brick with stone decoration. It has a hipped roof with two central chimneys and small, semicircular dormers. It is similar in style to other WPI buildings, especially Kaven Hall. As the needs of the university continued to grow over the years, Boynton Hall became the dedicated administration building, mainly because the classrooms were no longer suitable for student volume.

PROPOSED ADMINISTRATIVE & CLASSROOM BUILDING
WORCESTER POLYTECHNIC INSTITUTE

A proposed administration and classroom building was sketched ca. 1960. It is modern, rectilinear, and made of concrete. The lowest floor is surrounded by glass, with square windows on the rest of the building, except for a balcony floor near the middle of the building and the top floor, both of which do not have windows.

Proposed Administrative Buildings.

Figure 11: Proposed Administration Building Exhibit Page on Unbuilt WPI Site (Continued)

This exhibit for an Administration Building includes the most radically different designs, none of which were ever constructed. For this exhibit, there is not a particular history that could encompass all of the designs because each building was an independent design on its own, resulting in variously different styles of a general administration building. Consequently, this exhibit is relatively short in comparison to the rest of the exhibits. Its overall format simply displays the two alternative administration building designs and gives a brief description for each. The text is separated by the two images to avoid any long paragraphs, and the audience is addressed in a general manner to avoid the assumption that they are already familiar with the history of WPI's campus. The font and colors are the standard ones chosen for the overall website. The only linkable page in the exhibit is the original page with the design information.
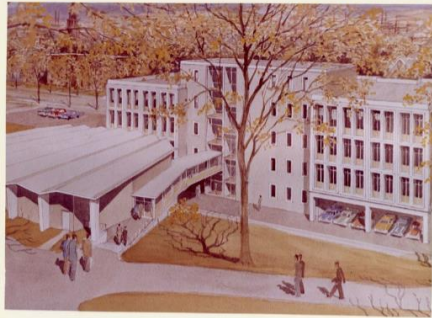
Proposed Humanities Building on Boynton Lot

Figure 12: Proposed Humanities Building Exhibit Page on Website (WPI Site)

Figure 13: Proposed Humanities Building Exhibit Page on Website (WPI Site) (Continued)

Like the Administration Building exhibit, this exhibit displays a building that was never built on WPI's campus and thus does not have any associated current-building history to accompany the designs. The exhibit displays realistic renderings of two proposed designs for the humanities building. We continued to display consistent fonts and color schemes in this exhibit to tie it to the others on the website. The layout is structured much like the Administration Building exhibit, where the image of the proposed design is displayed first, and is accompanied by the description and background of the design. Since there were only two proposed designs for this unbuilt building, our team decided that it would be simplest to convey all the information on one page. This removes the confusion of having to search through multiple pages for small portions of information.

Gordon Library

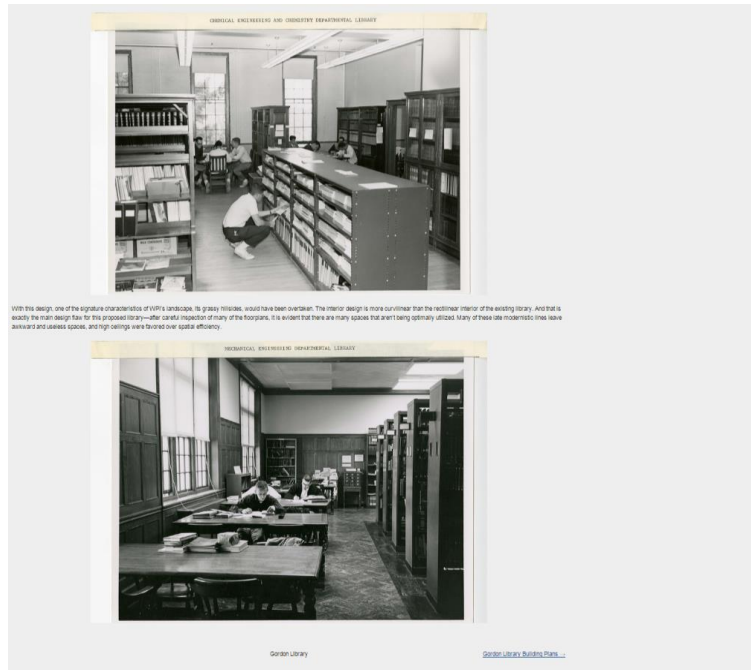Figure 14: Gordon Library Exhibit Page on Unbuilt WPI Site

Figure 15: Gordon Library Exhibit Page on Unbuilt WPI Site

The exhibit for the Gordon Library explores the plans for an alternative library design that included many features, such as departmental libraries. This particular exhibit focused on only one alternative design and was supplemented by a rich amount of historical information. The large history associated with the design, as well as the numerous sketches of the alternative design available to us, naturally encouraged a particular display format. This was to format the information in the following order: historical, main, design-oriented, and supplemental. We combined this information into two pages to simplify the browsing experience, rather than having users click through multiple pages. The font and color schemes continued in parallel with the overall themes of the website in order to keep a pleasing consistency for the users. We designed the historical page to have smaller paragraphs broken up by interesting historical photos of Gordon Library to keep the user's attention. The design page mainly consisted of images with their own captions, thus it was not necessary for us to add much textual information.

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Conclusion

On the surface, our primary goal for this "Unbuilt WPI" project was to continue and organize the work done by the previous IQP team into a more accessible and publicized platform. We did this through organizing, converting, and displaying information in a way that is informative, interactive, and accessible to the public. Throughout the project however, we learned the importance of what we were accomplishing. Being given the opportunity to research and shed light on the history of our school is a rare one, given that WPI has surpassed 150 years of education and has become a leader in technological education. There is a myriad of information and secrets about the history of the school that is hidden in the archives, however few know of this and even fewer go to the trouble of trying to access it. Our duty to bring this information forward is important because it connects students to their institution, sparking their interest to discover more and become involved in making a mark on its history. Thus we not only wanted to just create a platform of knowledge, but to convey this knowledge in a way that excites students, faculty, and others about the importance that lies in the history of the school. We believe that in our creating of an interactive and enticing website, we have accomplished the primary step on the path to succeeding in this goal. Our project is also important in the sense that it connects history to the present day, utilizing the technology that this history helped to bring about.

However, our goal for this project also includes the acknowledgement of this website from the public eye. Thus we are setting up this IQP to be continued in a third chapter that will include the publicizing and perfecting of our website, in the hopes that it will reach the broader audience that it deserves.

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