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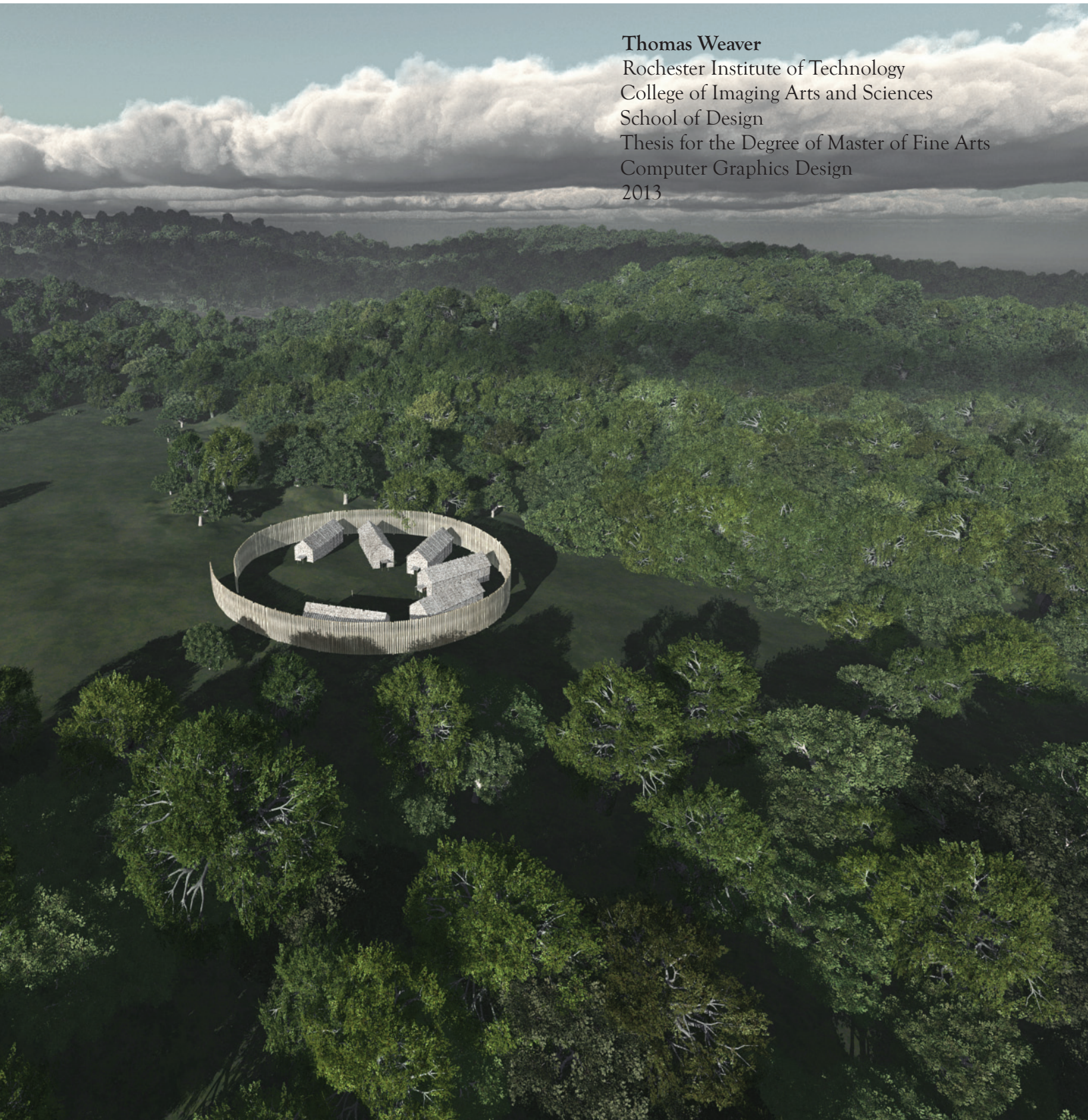
Under a Pale Grey Sky

An Interactive Timeline of Iroquoian Warfare and its Impact on the Acceleration of American Colonization

Thomas Weaver
Rochester Institute of Technology
College of Imaging Arts and Sciences
School of Design
Thesis for the Degree of Master of Fine Arts
Computer Graphics Design
2013



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Preface and Dedications

Thomas R. Weaver
3/13/2013
Rochester, New York

This Thesis was created to fulfill a passion I have for art and history. The combination of the two disciplines has led me down a path I never thought I would travel. My journey took me along a somber road that was charged with technical complications, artistic challenges, and historical fidelity. To correctly get all aspects of a project with this scope was a daunting and troublesome task, but one with high rewards. Without my ambition and interest in the subject, this Thesis would never have manifested itself.

I dedicate this to the many people who have pushed me to better myself and have been there to support me in my endeavors. Many thanks to Chris Jackson for teaching me that Flash is not my enemy and Dan DeLuna for pushing me harder than any other professor has. Thank you Marla Schwepe and Shaun Foster for helping me expand my knowledge of 3D and the compositional aspect of 3D design, Dr. Nystrom for helping me develop my interest in American history, Tom Jacobs who taught me about project management and drove me to succeed. Thanks to my Mother and Father who supported me throughout my life in all I aspired to be, and to my loving girlfriend, Deanna. Without her friendship, reassurance and dedication, I would not have finished this Thesis.

Anyone else I forgot, you know who you are.

Abstract

Early American settlers thought the Iroquois to be a violent, forceful and barbaric amalgamation of Native American Nations. Their organization of warfare, community, and politics allowed them to remain one of the most powerful nations for many years. Conflict with other tribes was a normal part of life for the Iroquois and the surrounding nations. However, as the American settlers began moving towards the frontier, Iroquois conflicts with the Algonquian begin to rise in frequency. This led to weakening of the Iroquois population and allowed the American settlers to usurp land from the Six Nations without considerable opposition.

Introduction

I am demonstrating through the use of interactive information design that Iroquoian inter-tribal warfare accelerated American colonization. By explaining the correlation of the two concepts and illustrating them, I will impart clarity and comprehension of why the Iroquois population diminished. This could be used as a teaching tool in museums and schools for 7th grade students and older with an interest in Pre-Revolution American History.

Survey of Literature

"The Causes of the Fourth Iroquois War." by Raoul Naroll (1969)
The article helps put emphasis on Native American conflicts and the stress it placed on the Native Americans. The article focuses on the lack of cross-cultural understanding and the notion of blood revenge giving prestige to a warrior. It is also noted that blood revenge was a custom amongst "primitive people" (p55). Exploits also helped elevate a young warriors status in his own tribe.

"Epidemics and Indian Middlemen: Rethinking the Wars of the Iroquois, 1609-1653" by Karl Schlesier (1976)
The Iroquois refusal to act as middlemen in European-Native American trade led to the hostilities towards the Iroquois from other tribes. As far as war was concerned, it came down to a matter of moral obligation. The tribe would kill or capture one or more members of the enemy tribe to help replace the loss of one of their own.

"Genocidal Warfare in Tribal Societies as a Result of European-Induced Culture Conflict." by Jeffrey Blick (1988)
Tribal warfare escalated since the introduction of European settlers in North America. Blood feuding and revenge were considered to be a matter of honor. If a member of a tribe was killed, that tribe would feel it a necessity to capture or kill someone of the perpetrating tribe. Sometimes this would escalate into a large-scale operation that had the purpose of killing one or more of the enemy without incurring a loss to themselves. The necessity of these blood feuds and raiding parties was not to increase territory, rather to settle the dispute between the tribes. However, we see that prior to the introduction of European settlers, intertribal war was much more infrequent than when the whites arrived. This is not saying intertribal warfare was non-existent, it is highlighting the fact that there was more stress placed on the Natives when the Europeans arrived.

"Interracial Warfare and Population Decline among the New England Indians." by Sherburne Cook (1973)

Without the documentation of the Native American wars, there are only estimations made by the colonials or the Native Americans at the time or shortly after. Given the estimates, we can postulate that in three major wars in the seventeenth century (the Pequot War, 1634, the Dutch War, 1643, and King Philip's War, 1675-1676) left the Native Americans with an 11% decline in population (roughly 3,700 people). Between the years 1620 to 1750, there was serious demographic devastation within the New England Tribes attributed soley to violence.

"The Ojibwa-Iroquois War: The War the Five Nations Did Not Win." by Leroy Eid (1979)

Most historical accoutns note the Iroquois were thought to be the military brawn in New York. Their enemies were known to be afraid of the Iroquois and to oppose them meant certain death. However, by the beginning of the 1700's, a part of the Algonquian nation managed to subdue the Iroquois. As one Ojibwa historian stated "as far as I am able to learn, our nation has never been conquered" (p297).

"The American Revolution" by John Fiske (1891)

This book contains good information about the American Revolution. The author states that when it came to colonies and the ease of settlement was concerned, it was New York that was met with most resistance. The British would focus most of their interests towards this central colony as a military stronghold. The Americans tried to invade Canada, but with little effect, and this left the whole country of New York open to invasions "from the bloodthirsty warriors of the Long House" (p188-189). The book had good descriptions of geography, locations, and layouts of villages.

Treaty with the Six Nations: 1784, by Oliver Wolcott, Richard Butler, and Arthur Lee. (1784)

This treaty established peace between the Six Nations and the United States of America. This established boundaries between the Six Nations and the United States. It gave land to the United States that was west of the Ohio River.

Treaty with the Six Nations: 1789, by Arthur St. Clair. (1789)
This treaty eastablished peace between the Six Nations and the United States of America. It redefined the boundaries between the Iroquois and the USA previously set by the treaty in 1784. This also put regulations on murder by both the Iroquois and United States. The USA tried and punished all people under an American court of law, and the Iroquois justice system was disregarded.

Treaty with the Six Nations: 1794, by United States Government (1794)
This treaty established peace between the Six Nations and the United States of America. This contracted the boundaries of the Iroquois land even further and allowed the United States to build a wagon road through Iroquois land for the purpose of undisturbed travel and transportation. This treaty also defined the duty of payment to the Iroquois to "promote the future welfare of the Six Nations" (article 6).

"Designing Philosophy" by David Sless (2007)
David Sless defines semantics (what the words mean), synctactics (grammatical rules we use to put words together) and pragmatics (the way we use the language). The author states that pragmatics are the most important of the three rules. He believes that without pragmatics, the other two have no existence. The author argues that "semantics or syntactic analysis is a pragmatic invention" (p107). The author explains how intangible semantics and synctactics are without the vehicle of language to define them. This leads to rules of definition and the application of the rules. When we start bending rules, we actually re-define them. Over time, people have performed certain tasks, done certain things in repetition; a situation that defines rules. This helps us stay consistent and act as a guide for our actions. Rules are a human invention "that follow practice" (p116). Design rules follow the same type of evolution. They are formed from a result of actual usage.

"Visual Metaphors in User Instructions" by Karel van der Waarde and Piet Westendorp (2007)

This article has excellent insight on metaphors and the wide range of interpretation metaphors have, and will continue to enjoy. The article begins by explaining how text-based instruction is starting to fade (to a point) because of portable devices and their shrinking displays. Designers are now turning to an icon or some visual signal to convey a message as opposed to a string of text. Article brings up a good point about humans thinking metaphorically and how we relate those thoughts to visual literature. Humans recognize shape, and a shape can tell us something in one instant that a line or two of text might.

"Deep Simplicity" by Alberto Cairo (2010)

When building graphics for anything, simplicity is key. When giving a reader too much to decipher, they will lose interest or you will lose the reader altogether. Complex graphics also require a reader to have previous experience or education in a subject. Creating stunning graphics and interfaces may initially look nice, but they become drab and boring. It requires too much thought, and it's just too much for a reader to deal with.

Articles of a Treaty

Concluded at Fort Stanwix, on the twenty second day of October, one thousand seven hundred and eighty four, Between Oliver Wolcott, Richard Butler & Arthur Lee Commissioners plenipotentiary from the United States of America on the one part and the Sachems & Warriors of the Six Nations on the other.

The United States of America give peace to the Senecas Mohawks Onondagas & Cayugas, and receive them into their protection upon the following Conditions.

1st Hostages shall be immediately delivered to the Commissioners by the said Nations to remain in possession of the United States till the prisoners White & Black which were taken by the said Senecas Mohawks, Onondagas & Cayugas, or by any of them, in the late War from a people of the United States shall be delivered up.

2nd The United States shall be entitled to the Lands on which they are settled and the Oneida and Tuscarora Nations shall be secured in the possession of the Lands on which they are settled

3rd The Boundary Line shall be drawn Beginning at the Mouth of a Creek about four Miles East of Niagara called Oyonwayea or Johnston's Landing a little above the Lake named by the Indians Oswego by us Ontario from thence Southerly in a direction always four Miles East of the carrying path between Lake Ontario & the Mouth of Schoseroron or Buffaloe Creek on Lake Erie thence South to the North Boundary of the State of Pennsylvania now West to the end of the said North Boundary thence Southerly in a direction always four Miles East of the carrying path to the Mouth of the Oyonwayea to the Ohio shall be the Western boundary of the Lands of the Six Nations, so that the Six Nations shall and do hereby cede to the United States all claims to the Country West of the said boundary, and then they shall be secured in the peaceful possession of the Lands they inhabit East & North of the same, reserving only Six Miles square round the Fort of Osbego to the United States for the support of the same.

4th The Commissioners of the United States in consideration of the present circumstances of the Six Nations and in execution of the humane and liberal views of the United States, upon the signing of the above Articles will order Goods to be delivered to the said Six Nations for their use and comfort.

Oliver Wolcott

Richard Butler

Arthur Lee

Tegonendaheji — his mark

Saiqhnatgon — his mark

Chiadanighton — his mark

Shenderondgon — his mark

Tayagonendagehti — his mark

Ionwaeaghrigagi — his mark

Atyadoneighti — his mark

Dagahari — his mark

Oraghyaenendagon — his mark

Onongsaenghte — his mark

Sharendongon — his mark

Witness to the Signing of the Indians

Wm Maclay

Wm Johnston

Alexander Campbell

Jas Kirkland

James Dean

Jam Montgomery

Derick Lane Capt

John Mercer Lieut

William Brown Interpreter

Wm Ford Interpreter

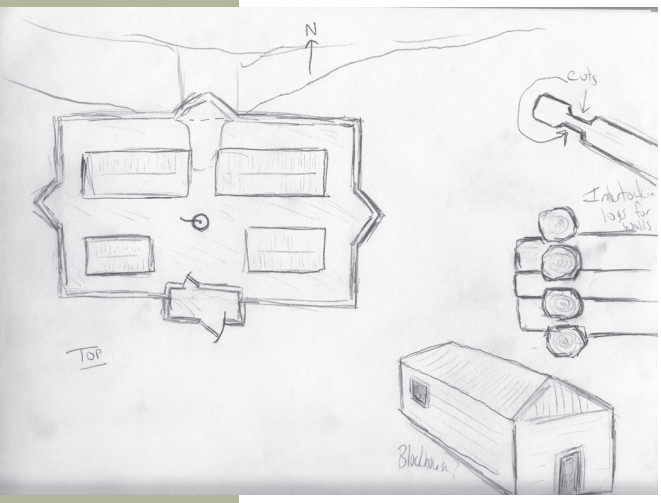
Hugh Peebles

Process

The project is primarily 3D with Flash controlling the playback of the animation and interactivity with objects in the scene. Maya was used for the modeling, lighting, animation, texturing, and rendering. Autodesk Composite was used to composite the render passes with minor color corrections. After Effects was used to make the movie files small enough for Flash to handle, and Flash created the interactivity. The project was built at 1024px X 768px for use on projectors and computer monitors.

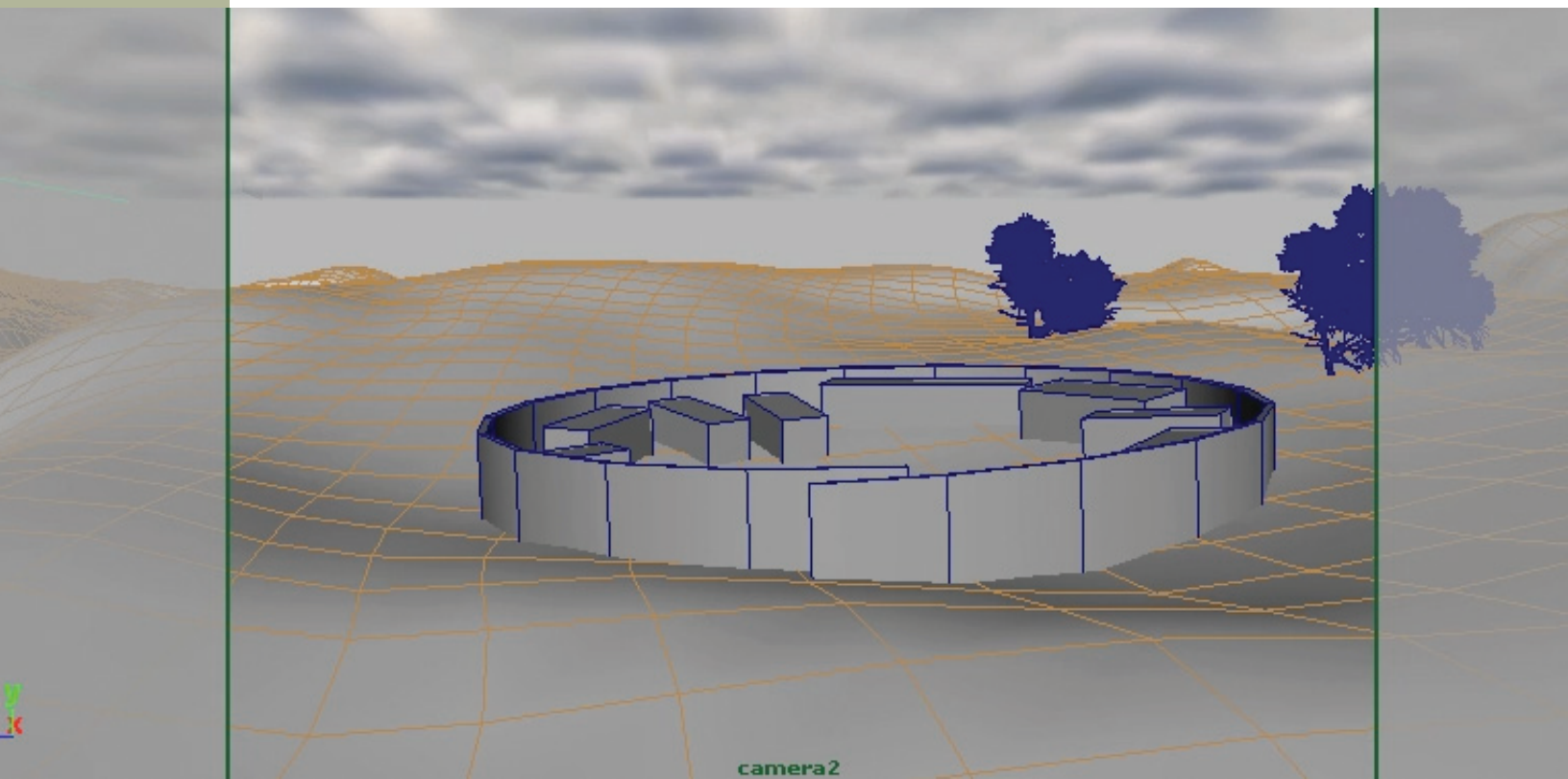
Modeling and Texturing

Figure 1: Sketches



The project started out as pencil sketches. Initial research helped me visualize what the area should have looked like and allowed artistic liberties in position, placement, and distance (figure 1). I scanned the sketches and used them as image planes in Maya as reference templates. The references helped me in positioning, shape, form, direction, and negative space between objects. Working from the templates, I started modeling the geometry with low resolution models that had low polygon counts (figure 2). The modeling was done with a combination of polygons and non-uniform rational B-spline (NURBS). Polygonal modeling deals with objects that are made up of multi-sided parts, each adjacent to each other that forms a larger object. NURBS surfaces are based on mathematical models that represent angles, curves, and other surfaces. The pros of NURBS over polygons is that you get

Figure 2: Low-polygonal models



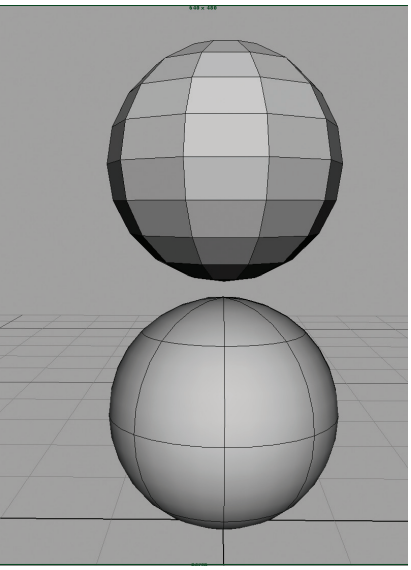


Figure 3:
Top sphere is polugonal and the bottom sphere is a NURBS surface.

smoother edges. If you examine a sphere created with polygons vs NURBS, the NURBS sphere will have a smooth radius, while the polygonal sphere will have defined flat edges that make up a sphere (figure 3). The cons to NURBS compared to polygons are that I have had better luck controlling textures and the positioning of the images on the models. With a mix of both polygons and NURBS, I was able to get results that were believable and looked interesting, engaging, and accurate in my interpretation.

To organize the project requirements, I broke the project into three main parts: The Iroquois village, the fort, and the Colonial home. I made low-polygonal models first to block out the shapes. Once the layout and positioning were completed, I added faces and edge loops to the polygonal models, and isoparms to the NURBS surfaces for more detail. I built the clouds using a 3D fluid effect and kept adjusting the settings until the desired effect was achieved. The amount of detail I used in the modeling was dependent on distance from camera and point of interest. If an object was a piece of scenery or a background object, less detail was added to help improve render time. If the object was of interest, more detail was added at the expense of the render time.

The texturing of any and all objects were combinations of image maps and procedural shaders. An image map is a file where the texture is an image. I was able to paint the textures in Photoshop to give them the correct repeating patterns such as shingles or bark covered palisades. The only caveat with image texturing is that the image isn't infinitely scalable as you get closer to the camera. Getting too close reveals pixilation unless the image is extremely high resolution. Procedural texturing is a mathematical method that is infinitely scalable. No matter how close you get to the camera, the procedural texture will always be high-res. Creating a shading network with a combination of both styles, I was able to achieve good looking results that were easy to achieve (figure 3). Using an image for color and

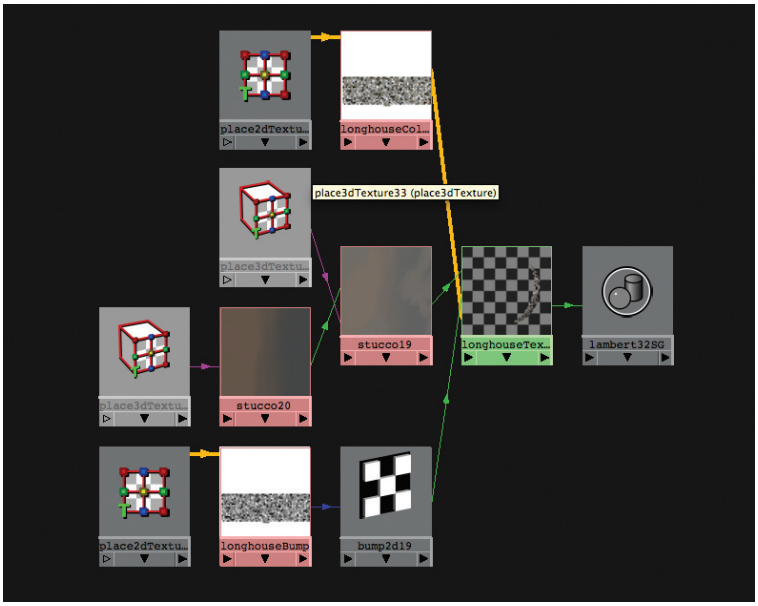


Figure 3:
Shading network containing image maps for the color and bump nodes, and procedural textures plugged into the ambient color node.

bump helped give the main look and some depth. Adding procedural patterns to the diffuse and ambient color channels of the shading networks helped add the variations in color or light diffusing to help the believability of the project. The shading network is the texture applied to the object. It contains the color, bump, transparency, ambient color, diffuse, and a variety of other nodes to help control the look and feel of an object. The ambient color is an extra splash of color that is mixed with the main color of the object so you get a nice variation of color in the texture. The ambient color can be amplified if you add an ambient light to the scene. The diffuse node is how sensitive the object is to light. If the diffuse is set to white, it will allow the color to come through without any variation. If the diffuse is set to black, the object will absorb the light, and the object will appear black because the light cannot bounce off of the object and back to the camera. The whole concept of using them together was to add variations in the color and way light was reflected to break up the repetition and uniformity of the textures making them more believable. Adding these variations made the models look like they were weathered, dirty, clean in spots, worn, and more realistic.

The Village

The village was populated with eight longhouses, a random couple of trees, and a warpost. The main longhouse contained more polygons than the others in the village because of proximity to the camera. The longhouses in the background only needed to be simple shapes that were textured to give the illusion of more detail. Inside the main longhouse, there were beds, pots, and other various items to help populate the interior. More detail and polygons were added to these items because they would be directly in the camera's view. Many of the interior items were constructed of wood, so I used a procedural texture to make it look realistic. The shader consisted of Maya's built in wood texture with different stucco patterns inside the vein color node of the wood to help add variation to the grain (figure 4). I added a noise pattern and stucco pattern in the diffuse node of the shader to make the wood objects look worn and handled to again help sell the realism of the object.

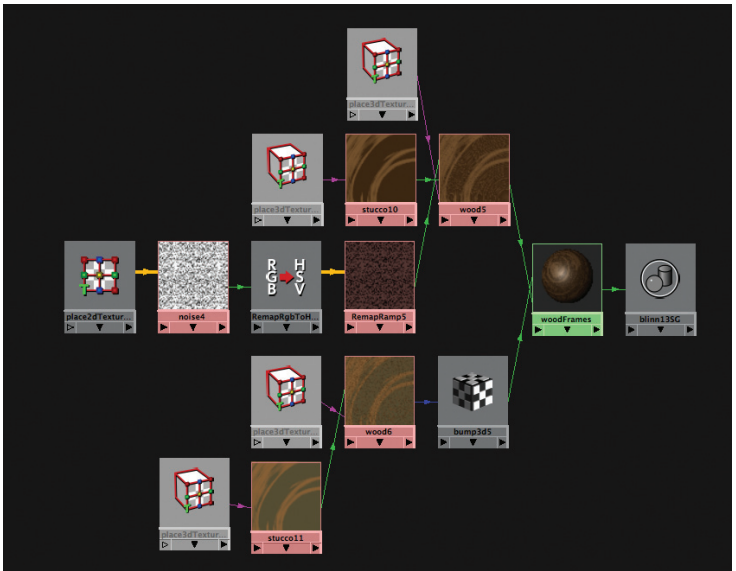


Figure 4:
Procedural shadding was mainly contained to wooden, handmade objects such as, but not limited to, chairs, longhouse bedding, and tables. I used a combination of noise, stuco and color remap nodes pluged into both vein color nodes and the grain color in the wood texture to help add realism.

The warpost had a tomahawk buried in it that was a combination of polygons and NURBS surfaces. The NURBS were used to make the wrapping of the handle and the polygons made up the blade and hilt of the tomahawk.

The longhouse textures were image maps. I layed out the UV's and painted the textures in Photoshop. I took photos of trees, wood, and other vegetation for reference and used the real photos stitched together to create the final image map. I used a grey scale version of the image to use as a bump map and added a stucco node to the ambient color input to give the longhouses a believable texture. All image files had an alpha channel to give the impression of more geometry.

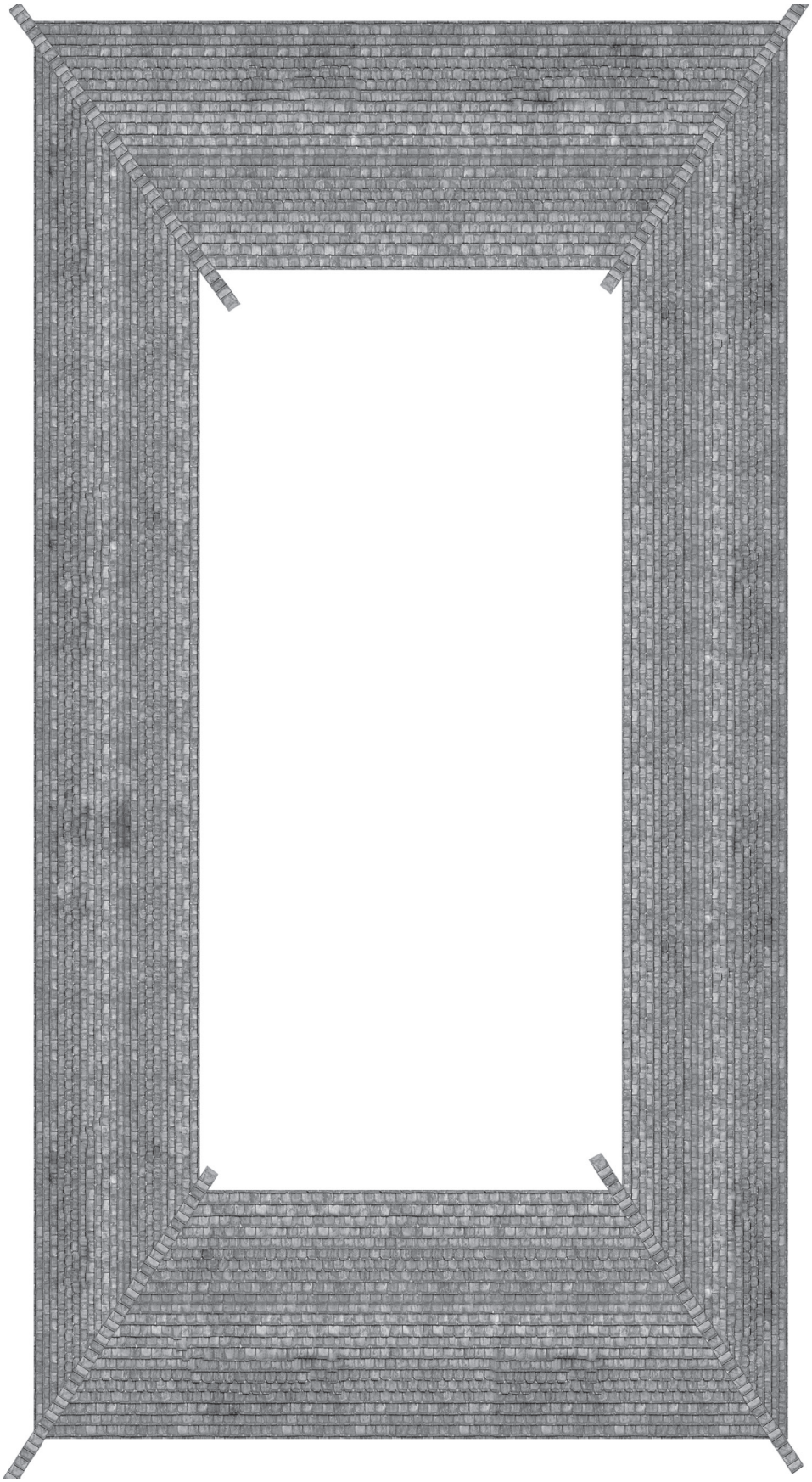
The Fort

The Fort was approached the same way as the village: start with sketches, then make low poly models for placement and add detail where necessary. The interior of the officer's quarters in the fort was populated with bedding, a desk, fireplace, writing utensils, rifle, and a treaty. The building structure, bedding, desk, fireplace, rifle, and treaty were made of polygons while the writing utensils where made of NURBS surfaces. The forts textures for mostly images unless procedural shaders were needed for more control over wooden objects with high levels of detail. UV texturing was used again to apply the images accurately on the models. Some objects such as the wood flooring was a combination of both images and procedural shading. I used and image for the wood grain and used a fractal noise in black and white for the diffuse. It helped give the impression of high traffic spots in the officers quarters and made it look less than perfect.

The House

The House was much simpler. It was a high-poly model that had no need for interior models. The texturing was the main tool to help sell the realism of the model. I layed out UV's and used my reference photos to paint in the textures in the right spots. To help add realism, I added dirt and grime to the texture map to give variations in color, saturation, and color density. The roof of the house contained cedar shingles, dirt, and other bits of grime so it did not appear to be perfect (figure 5).

Figure 5: Image map of the house roof



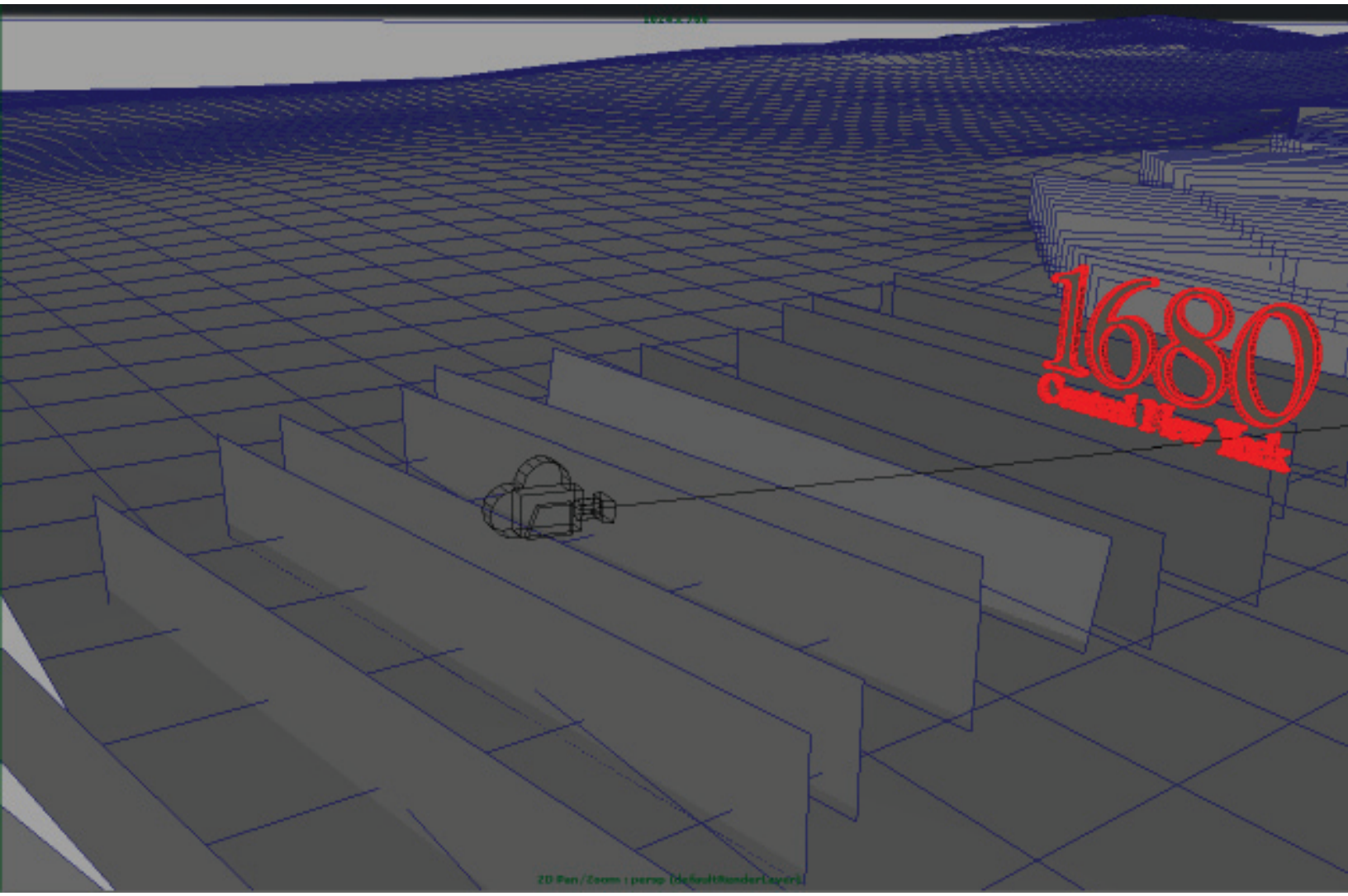
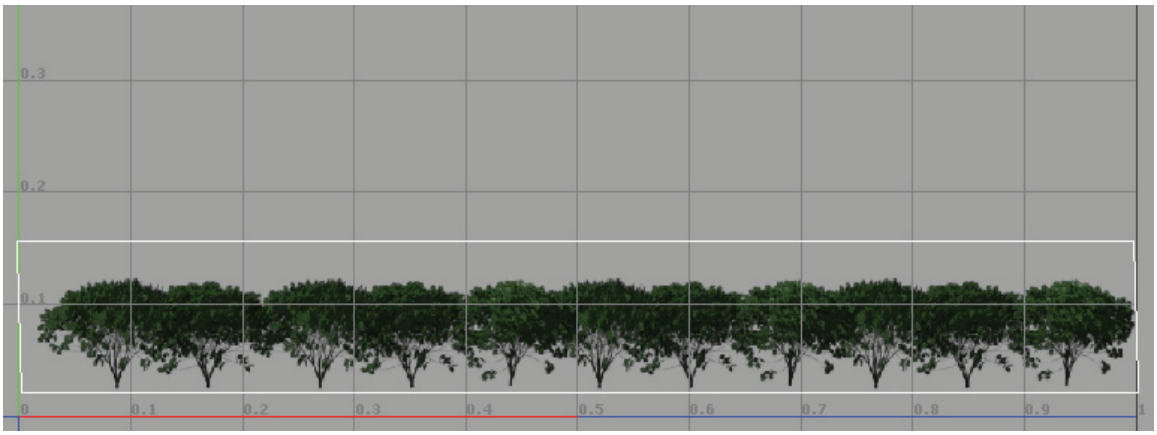


Figure 6: The instanced geometry placed for camera angle and athestics.

Figure 7: Trees mapped to geometry UV's



The Environment

I began with a simple ground plane that I sculpted to look like Central New York based on photos I took and personal knowledge of the terrain in the area. I used a repeatable image map for the grass color and added a slight fractal in the ambient color of the shader to try and break up the flatness of the ground plane. Where there was an object of interest intersecting with the ground plane, I added some paint effects vegetation to the intersecting areas to make it look less like a toy model, and more like a real environment. This helped anchor the objects on to the ground plane and create more cohesion of the composition. For the background trees, I rendered different orthogonal camera angles of paint effects trees to make tree images. In Photoshop, I made one long image with the different tree renders. I saved the image as a .PNG with an alpha channel and used that to texture a very wide rectangle. I duplicated the rectangle and layered them in the background to give depth to the scene and added some variation in color, shape, and size of the trees (figure 6 and 7 on p15).

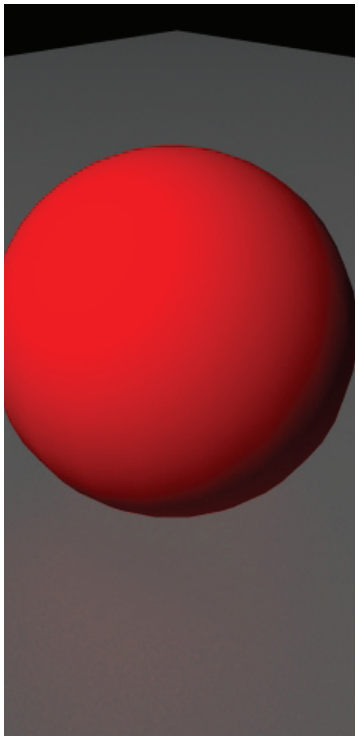


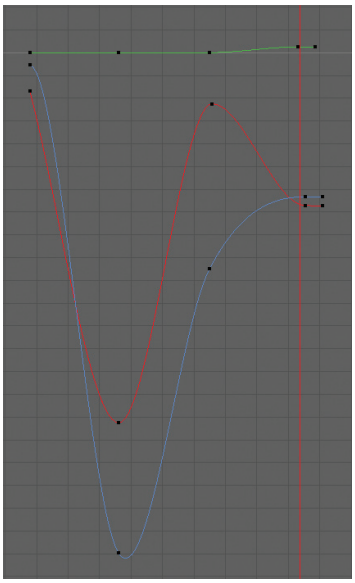
Figure 8: Color spilling on the ground plane using Final Gather

Lighting

The lighting was very simple. As the clouds were very gray and the tone of the overall piece was to be based on an overcast day, I used one simple directional light for the whole scene. The single directional light acted as the sun, and cast soft shadows similar to a cloudy day. When the interiors of objects were viewed, I used some small area lights to help illuminate the interior scene better. Some of the text needed ambient lights linked to them to help bring up the brightness. Initial renders were too dark and it became hard to read the text, so I animated an ambient light on the same path I had the text and the camera on so there would be no flickering or changes in light intensity throughout the camera shot. Final Gather was a large factor in the lighting. Final Gather are photons fired from the camera lens upon render that bounce back and help bring the illumination of the scene up in intensity and realism. Final Gather will help with bounce lighting when you have two objects near each other. Photons will bounce from one object and hit the adjacent object illuminating that object as well. It helps bring out details in shadow areas and also transfers some color from one object to the next, mimicking what happens in real life with certain objects (figure 8). When I rendered the scene with final gather, the final gather map was recomputing on each frame. Re-computing data was taxing on the render time, so I decided on freezing the final gather map. Freezing the final gather map means that you compute the final gather photons once and then you can re-use them as needed. Not having to re-compute the final gather points every frame greatly decreases render time. However, this technique only works well when there is no animation in the scene and only the camera moves slightly. As my project only had camera

movements and very minimal text animation, reusing final gather data was possible. I exported three .fgmap files that let me reuse the data for each section: Village, Fort, and Home. One I built the data, I was able to import the correct file into the scene I was working with, greatly improving my render time.

Figure 9: F–curve for camera movement on X, Y, and Z axis.



Animation

The whole animation was broken into smaller scenes to help with the rendering time and organization. All camera movements had their own file, so if data were corrupted, I wouldn't be starting the project over. It also gave the computer much less information to deal with. When the focus was on the longhouse, I removed all geometry, shaders, and keyframes from the scene. The only 3D animation was the camera movement, text movement, and the dependent ambient lights where applicable. I set the key frames in Maya for the camera positions and started adjusting the f–curve to control the easing for the camera when it started moving and came to rest (figure 9). The f-curve is the function of the x, y, and z coordinates that the animation obeys. If an object on the x-axis moved 3 units, the f-curve would be the mathematical formula it used to move the object from one coordinate to another. By adjusting these curves, I was able to make the camera movements smoother and more organic. The smoother and organic camera movements helped convey a sense of seriousness in the project that set the tone for the historical content.

Animating the Flash transitions was all controlled with ActionScript 3 (AS3) and the use of simple graphics to fade in and out using Flash Tween Class. The AS3 tween classes have ample easing functions that were similar to the easing functions I used in Maya to create the organic movements. In the easeOut command listed in the figure bellow, the transparency of the object was taken from 100% opaque to completely transparent and the animation lasted .5 seconds (figure 10). It was fast enough so the user isn't waiting for the animation to complete, but slow enough to keep the feel of the project consistent.

Figure 10: Tweening

```
function closeLHWindow(e:MouseEvent):void
{
    var longhouseWindowFade:Tween = new Tween(longhouse_mc, "alpha", Regular.easeOut, 1, 0, .5, true);
    longhouseWindowFade.addEventListener(TweenEvent.MOTION_FINISH, longhouseTweenComplete);
}

function longhouseTweenComplete(e:TweenEvent):void
{
    removeChild(longhouse_mc);
    play();
}
```

Rendering

Rendering was a challenge because of the time. I set up two different render layers that let me organize my objects in the scene. I had a main render layer and an Ambient Occlusion (AO) layer. The ambient occlusion is a lighting technique that helps ambient lighting by sending out photons from a hemisphere rather than a point. It is a global method of lighting that approximates lighting in the real world. I would have used one render layer and just used render passes, but some of the trees and grass in the scene were paint effects and I was not able find a solution to add an AO pass to paint effects. The problem was very clear when I converted my trees to polygons and did a test render with the AO. The leaves which are normally images with an alpha channel for the transparency, did not keep the alpha information. The outcome was a tree with white cards hanging off the end of the branches, so I rendered layers and composited them later. To further help with render time, I decided to remove some of the geometry and textures from the file and scene that were not visible in the camera shot. Once I got all of the files cleaned out, textures adjusted, and lights consistent from scene to scene, the rendering time dropped without having to compute objects that are not on camera.

My initial renders with the Mental Ray renderer took nearly three hours per frame to complete. There were color consistency issues in the first render, but because of something that was most likely user error: the frames were useless. I noticed a color shift from shot to shot. My first guess was that it was the render farm doing something wrong. I had very little experience with the render farm, so I guessed I didn't set it up right. I moved the project to a single machine render and the problems with the color shifts persisted. My initial thought about the render farm causing the problems was wrong. After some help from my professors and going through the help docs and rendering tutorials available from Autodesk and RIT, I thought I finally figured out that it was being caused by the light and final gather settings. After the problem was discovered, I was able to re–render the whole project without the lights and shadows: the AO, motion vector and shadow passes were already completed. The beauty pass I re–rendered only took two minutes per frame to complete, and I was able to composite them together with the original AO, motion vector, and shadow passes. However, the color shift was still present. The final gather settings were not consistent from scene to scene, so I froze the final gather map, exported the data and the light setup from one of the shots that had the best output. Once I imported the light and final gather map, I was able to render the project again. The final renders took about two hours with final gather, an AO, motion vector, and shadow pass. Using a final gather map helped reduce some of the render time, but the bulk of the time was spent computing shadows from a directional light in the scene with ambient occlusion.

The motion vector pass is a 32-bit floating point file that tells the compositing program which direction an object is moving based on pixel velocity it sees when it compares sequenced frames. The term floating point refers to the approximation of real numbers that can support a wide range of values. When computing a motion vector pass, the more data allows the compositing program to know which direction a pixel is moving based on camera position. If a floating point number is not used and you end up with a decimal value, the computer will automatically round to the nearest integer. The use of a floating point number allows for more data to be drive the motion blur.

Autodesk Composite: Compositing

The compositing was done with Autodesk Composite. A single frame was used to create a template for all of the scene's settings. I took the frame, and stated adding color correction, motion vector, blend and composite nodes, and my final output. The blend and composite node allows users to adjust the input, color, and blending modes to desired results. I used the multiply blending mode for the AO pass, and used the overlay and screen blending modes to help achieve a believable result. Upon my initial render, some output errors occurred and some render passes did not have an alpha channel. Composite was able to pull some alpha data from one render node and pass it into the node with the missing transparency. This helped fix some of the alpha channels in some shots, but the other scenes with the color shift needed to be rendered again. Even with color correcting, I couldn't match all the colors from each shot with the problems from the missing alpha channels being present. When I looked further into the missing alpha channels, I noticed on the files with no alpha, the colors were off again. So my attempt to pull alpha data from one render pass to another made the sky shift from light grey, to dark blue: It broke the continuity of the project and all the shots. I looked back at Maya and realized the problem was with the previously mentioned final gather map and light.

The motion vector pass failed and I was unable to use it. I tried adjusting the feathering and alpha gain thinking that was the problem. The more I looked at working references of motion vectors, I realized mine didn't look right. When I looked at the motion vector pass in composite and turned on the direction arrows. They pointed in so many different directions I knew right then something was severely wrong. When I looked back into Maya, I discovered that the frame buffer

was not set to a Four-Channel, 32-bit floating point number, so the motion vector made the blur move in the wrong directions. I scrapped the motion vector pass and decided After Effects was the way to handle the motion blur.

After Effects was used to do some minor color corrections, masking, adjust the motion blur, and output the final FLV movie for Flash. Most of the color corrections were taken care of by composite, but some minor tweaking was required to ensure there was no flickering of colors from shot to shot. Once the color was perfect, I added the motion blur using the CC motion blur filter in After Effects. The CC motion blur uses pixel velocity to create the blur. It isn't as accurate as the motion vector, but the results were very acceptable. Once I had the motion blur and color corrections completed, all of the shots were edited together and a seamless camera shot was built from the small pieces. Some minor masking was required when I would notice small errors or problems with a few pixels.

Illustrator and Photoshop were used to create the interface assets and the textures. My first attempt at the interface was a failure. The icons were not clear enough, the visual cues needed for interaction were non-existent, and there was no way to go back. I thought about why people were overlooking the interactivity, and I noticed everybody was overwhelmed with too much content in a short amount of time. When I redesigned the interface, I was able to trim back on design elements that didn't really need to be in the scene at the moment, if at all. So I recreated the interface with much better results from users (figure 11).

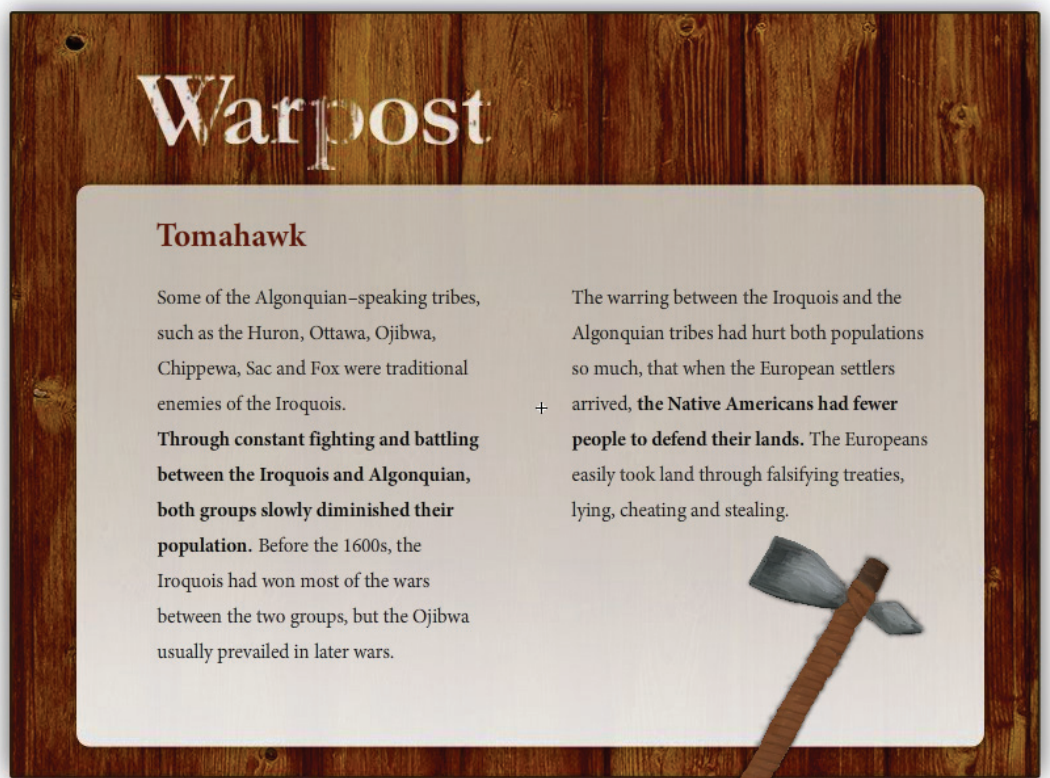


Figure 11: Redesigned content pane

My original design for the content panes were far too complex. There was too much information being presented at one time and no visual relief was given to the user. I settled on a simple background graphic with an illustration and a simple two column text layout. The two simple design ideas helped the reader get through the content in an orderly and efficient manner.

The Flash component was set up with an initial layer containing the whole project animation that I playblasted from Maya. As I completed the playblasts, I put them into their corresponding layer in After Effects. I made a whole movie from After Effects and put that FLV into Flash. When I began to render out different camera shots and get them composited, I put the final sequence into the main After Effects file and output a new FLV. While this may seem redundant, it gave me the ability to tweak and polish color and the motion blur in smaller pieces, so when the final was ready to replace playblasts, I had a final output template I was working from. As the final renders completed and were composited, I replaced the low resolution playblasts with the final shots.

While my final renders were computing, I was able to work on the coding and interface inside Flash. I started by doing some simple test to control movie playing, the introduction screen, and the animation of the content windows. When the user started the application, the movie clip waited for a user interaction on the start screen. Once the start button was pressed, the movie clip in the timeline began to play. It only stopped on specific keyframes that triggered events such as adding the glows around objects, modal windows, and overlays. Once the playhead was halted, code would be placed on the specific keyframe that contained the interaction code. It was easy for flash to compile the project this way because it didn't have to run all of the code at once. Because of this method, however, I was not able to re-use certain functions because not all functions were loaded in the first frame of the timeline. This did make coding slightly more difficult because I had to keep track of many variables and instance names (figure 12). A better practice would have been to declare all of my variables in the beginning of the movie and reused them as needed.

The final code I ended up using was written before the renders were complete, so I was able to spend more time adjusting easing properties instead of worrying about the interaction functioning correctly. Once all of my renders completed and inserted into the timeline, Flash was ready to output the project, I adjusted and optimized the Flash publish settings to make sure there would be no performance issues when using the application on a slower computer or device. The final file size of the outputted .SWF file was 16mb. I currently have it available for use on my personal website and there have been no performance issues encountered yet.

Figure 12: Declaration of variables

```
var bed_mc:bed = new bed();
var knife_mc:knife = new knife();
var arrowOut:arrowHead = new arrowHead();

var bedGlowTween:Tween = new Tween(bedGlow_mc, "alpha", Regular.easeOut, 0, 1, .5, true);
var knifeGlowTween:Tween = new Tween(knifeGlow_mc, "alpha", Regular.easeOut, 0, 1, .5, true);
bedGlow_mc.buttonMode=true;
bedGlow_mc.addEventListener(MouseEvent.CLICK, beddingInfo);
knifeGlow_mc.buttonMode=true;
knifeGlow_mc.addEventListener(MouseEvent.CLICK, knifeInfo);

arrowOut.y=285;
arrowOut.rotation=180;
addChild(arrowOut);

arrowOut.buttonMode=true;
arrowOut.addEventListener(MouseEvent.CLICK, goBack);
```

Technical Issues

The main problems encountered were within Maya. Environmental modeling, texturing, and rendering in Maya is a very large task for Maya. Any computer I used had a hard time dealing with the cloud layer, instanced geometry, trees, shadows, image maps, and final gather. My initial attempt at creating trees using particles crashed, the idea of painting them on with paint effects was futile, and rendering a scene with too many particles and paint effects will only keep the render or software from working properly. Even using instanced geometry that was very simple would crash Maya or the render would fail.

Secondary issues were the color shifting when compositing, motion vector not computing due to me not using a 32-bit floating point number, missing alpha channels, and ActionScript programming errors caused by poor code formatting.

Tertiary issues would be the code formatting and the problems I created when declaring variables that did not apply to the whole project. Flash had a hard time finding variables and instances that were not yet created dynamically.

Summary & User Feedback

The user feedback on the initial was extremely consistent from all people: The interface was hard to understand. People were clicking around on the screen with no direction trying to understand what they were supposed to do. Most users wanted an interactive timeline somewhere so they could jump back to a different section to review the material. After I added that functionality, it solved user requests. There was also some ambiguity about what was clickable in the scenes. I initially relied on people reading the instructions, but that turned out to be fruitless. I made the interactive objects glow in the scene, and that attracted the attention.

The design feedback was extremely helpful. Professors, design students, and user reaction all had significant input on how to make a project of this size look consistent, cohesive, and interesting. My original ideas would have been far too busy, so changes were made to reflect the feedback I thought made the most sense. My camera motions were too jerky in the first attempt, but with some help and guidance from Professor DeLuna and other visual examples, I was able to smooth the motion paths, control the easing, and frame the scene better. The transitions from content to animation was well received, but the timeline I was using on the top of the window was too busy. I settled on a simple bar that had text acting as the visual cue to jump around in the timeline.

Design Feedback

Under a Pale Grey Sky

An Interactive Timeline of Iroquoian Warfare and its Impact on the Acceleration of American Colonization

Thomas Weaver
Rochester Institute of Technology
Thesis for the Degree of Master of Fine Arts

Feedback?

Please leave any constructive criticism in the space provided.

I accidently clicked while reading could not figure out how to go back without starting over

nice 3D graphics

would have like to know more about the shapes of the secured areas.

This is minor = Windows had shutters on both sides to enable to close the shutters to keep out cold winds etc so the 2 ground floor 1 shutter winds seems inaccurate.

really would like to "go back"

Design Feedback

Under a Pale Grey Sky

An Interactive Timeline of Iroquoian Warfare and its Impact on the Acceleration of American Colonization

Thomas Weaver
Rochester Institute of Technology
Thesis for the Degree of Master of Fine Arts

Feedback?

Please leave any constructive criticism in the space provided.

Very fun way to learn - I can see kids getting into

Only thing I would suggest is slowing down transitions (where you fly over & into scenes) = a bit dizzying (for me) :)

Design Feedback

Under a Pale Grey Sky

An Interactive Timeline of Iroquoian Warfare and its Impact on the Acceleration of American Colonization

Thomas Weaver
Rochester Institute of Technology
Thesis for the Degree of Master of Fine Arts

Feedback?

Please leave any constructive criticism in the space provided.

Jerky Camera Animation
Protective Wall - Very Flat
Interior of Longhouse Lighting Same as outside

I like the Style of the images ~~add~~ on the Click Screen

House: Reflection on windows

Very Linear → that's ok I like the top bar that allows me to jump around

Design Feedback

Under a Pale Grey Sky

An Interactive Timeline of Iroquoian Warfare and its Impact on the Acceleration of American Colonization

Thomas Weaver
Rochester Institute of Technology
Thesis for the Degree of Master of Fine Arts

Feedback?

Please leave any constructive criticism in the space provided.

1st screen No paragraph space between 2nd + 3rd sentence. (will give bottom start more

Fort - can you move picture to the left some so its not going off screen

Firearms → and, ←?

I like the program
Ways to make more education: Overall map, pronunciation key for ~~Native~~ American words, quiz...

Start over - should go back to the intro screen?

Thesis Proposal Defense Feedback:

- Need to revisit the interactive aspect. Does it make sense to have interactivity restricted to only forward and backward navigation?

Possible Solutions:

- Create clickable hotspots to reveal more information instead of presenting all information at once with too much scrolling.

- Create a movie clip with a narrative (how much render time will this create?).

- Navigable map with hotspots.

Solution:
Hotspots on 3D rendered images to create points of interest. Upon click, the 3D image will be covered with a content window and information will be displayed. This will also minimize the amount of text and visual information displayed at one time so the background graphics do not interfere with the content being taught. It will help develop a more interesting and engaging experience without sacrificing any content or historical information.

- Need to revisit the problem statement. Some ambiguity arises with current wording (11/3/10).

- Problem statement fixed on 11/7/10.

Feedback from Dr. Nystrom:

- Include a content level. Make sure this is in line with the standards of historical teachings for a 7th grader and up. If they don't have a solid foundation, the project will be ineffective.

- Take key terms and refine them consistently to use throughout. (Indian -vs- Native American, Race -vs- Culture or Nation -vs- Tribe).

- Go to Ganandagan. Get a sense for the look and feel and check how they word and refer to Nations.

Conclusion

The project was daunting, troublesome, frustrating, and most importantly, rewarding. The process of planning the project from idea into something tangible was something I thought would never happen. It was important for me to learn quickly how to set realistic, measurable goals in order to achieve the desired outcome. My initial plans were far more robust and verbose: That idea was quickly abandoned. If I were to re-visit the project, I would have blocked out the scene and set up the cameras as I did, but then addressed objects based on a foreground, mid-ground, background manner. Dealing with the three subsections may have yielded higher quality results and given more control over certain details such as color saturation at a distance, compositing, and rendering.

Having conversations with the local historical society, Ganondagan historical site, and going through the Publications of the Rochester Historical Society gave me the interest, ideas, and conviction to make this project.

I learned what it means to have different cultures and ideologies. Throughout history, newcomers to any culture looked into a cross section of people and would pass premature classifications: this is not reality. The truth can only be revealed when you look further into any culture and realize that cultures can be unique based on, but not limited to, geography, climate, isolation, or socialization.

Appendix

Abstract

The Iroquois were thought to be a violent, forceful and barbaric amalgamation of Native American Nations. Their organization of warfare, community, and politics allowed them to remain as one of the most powerful nations for many years. Conflict with other tribes was a normal part of life for the Iroquois and the surrounding nations. However, as the American settlers began moving towards the frontier, the Iroquois conflicts with the Algonquian begin to rise in frequency. This led to the weakening of the Iroquois demography and allowed the Americans to usurp land from the Six Nations without considerable opposition.

Situation Analysis

The topic of the thesis will be illustrating American and Native American History through interactive 3D computer graphics.

The topic is important and relevant because there is a lack of visual representation on the subject. The written component of the issue has been well documented, but there has always been a visual element missing. With that in mind, I aim to develop and design the missing piece of the subject.

The scope is Iroquoian warfare with other tribes of Native Americans and the role it played in American colonization.

Problem Statement

I am demonstrating through the use of interactive information design that Iroquoian inter-tribal warfare accelerated American Colonization. By explaining the correlation of the two concepts and illustrating them, I will impart clarity and comprehension of why the Iroquois demographics diminished. This will be used as a teaching tool in museums and schools for 7th grade students and older with an interest in Pre-Revolution American History.

Survey of Literature

"The Causes of the Fourth Iroquois War." by Raoul Naroll (1969)
The article helps put emphasis on Native American conflicts and the stress it placed on the Native Americans. The article focuses on the lack of cross-cultural understanding and the notion of blood revenge giving prestige to a warrior. It is also noted that blood revenge was a custom amongst "primitive people" (p55). Exploits also helped elevate a young warriors status in his own tribe.

"Epidemics and Indian Middlemen: Rethinking the Wars of the Iroquois, 1609-1653" by Karl Schlesier (1976)
The Iroquois refusal to act as middlemen in European-Native American trade led to the hostilities towards the Iroquois from other tribes. As far as war was concerned, it came down to a matter of moral obligation. The tribe would kill or capture one or more members of the enemy tribe to help replace the loss of one of their own.

"Genocidal Warfare in Tribal Societies as a Result of European-Induced Culture Conflict." by Jeffrey Blick (1988)
Tribal warfare escalated since the introduction of European settlers in North America. Blood feuding and revenge were considered to be a matter of honor. If a member of a tribe was killed, that tribe would feel it a necessity to capture or kill someone of the perpetrating tribe. Sometimes this would escalate into a large-scale operation that had the purpose of killing one or more of the enemy without incurring a loss to themselves. The necessity of these blood feuds and raiding parties was not to increase territory, rather to settle the dispute between the tribes. However, we see that prior to the introduction of European settlers, intertribal war was much more infrequent than when the Europeans arrived. This is not saying intertribal warfare was non-existent, it is highlighting the fact that there was more stress placed on the Natives when the Europeans arrived.

"Interracial Warfare and Population Decline among the New England Indians." by Sherburne Cook (1973)
Without the documentation of the Native American wars, there are only estimations made by the colonials or the Native Americans at the time or shortly after. Given the estimates, we can postulate that in three major wars in the seventeenth century (the Pequot War, 1634, the Dutch War, 1643, and King Philip's War, 1675-1676) left the Native Americans with an 11% decline in population (roughly 3,700 people). Between the years 1620 to 1750, there was serious demographic devastation within the New England Tribes attributed solely to violence.

"The Ojibwa-Iroquois War: The War the Five Nations Did Not Win." by Leroy Eid (1979)

Most historical accounts note the Iroquois were thought to be the military brawn in New York. Their enemies were known to be afraid of the Iroquois and to oppose them meant certain death. However, by the beginning of the 1700's, a part of the Algonquian nation managed to subdue the Iroquois. As one Ojibwa historian stated "as far as I am able to learn, our nation has never been conquered" (p297).

"The American Revolution" by John Fiske (1891)

This book contains good information about the American Revolution. The author states that when it came to colonies and the ease of settlement was concerned, it was New York that was met with most resistance. The British would focus most of their interests towards this central colony as a military stronghold. The Americans tried to invade Canada, but with little effect, and this left the whole country of New York open to invasions "from the bloodthirsty warriors of the Long House" (p188-189). The book had good descriptions of geography, locations, and layouts of villages.

Treaty with the Six Nations: 1784, by Oliver Wolcott, Richard Butler, and Arthur Lee. (1784)

This treaty established peace between the Six Nations and the United States of America. This established boundaries between the Six Nations and the United States. It gave land to the United States that was west of the Ohio River.

Treaty with the Six Nations: 1789, by Arthur St. Clair. (1789)

This treaty established peace between the Six Nations and the United States of America. It redefined the boundaries between the Iroquois and the USA previously set by the treaty in 1784. This also put regulations on murder by both the Iroquois and United States. The USA tried and punished all people under an American court of law, and the Iroquois justice system was disregarded.

Treaty with the Six Nations: 1794, by United States Government (1794)

This treaty established peace between the Six Nations and the United States of America. This contracted the boundaries of the Iroquois land even further and allowed the United States to build a wagon road through Iroquois land for the purpose of undisturbed travel and transportation. This treaty also defined the duty of payment to the Iroquois to "promote the future welfare of the Six Nations" (article 6).

"Designing Philosophy" by David Sless (2007)

David Sless defines semantics (what the words mean), synctactics (grammatical rules we use to put words together) and pragmatics (the way we use the language). The author states that pragmatics are the most important of the three rules. He believes that without pragmatics, the other two have no existence. The author argues that "semantics or syntactic analysis is a pragmatic invention" (p107). The author explains how intangible semantics and synctactics are without the vehicle of language to define them. This leads to rules of definition and the application of the rules. When we start bending rules, we actually re-define them. Over time, people have performed certain tasks, done certain things in repetition; a situation that defines rules. This helps us stay consistent and act as a guide for our actions. Rules are a human invention "that follow practice" (p116). Design rules follow the same type of evolution. They are formed from a result of actual usage.

"Visual Metaphors in User Instructions" by Karel van der Waarde and Piet Westendorp (2007)

This article has excellent insight on metaphors and the wide range of interpretation metaphors have, and will continue to enjoy. The article begins by explaining how text-based instruction is starting to fade (to a point) because of portable devices and their shrinking displays. Designers are now turning to an icon or some visual signal to convey a message as opposed to a string of text. Article brings up a good point about humans thinking metaphorically and how we relate those thoughts to visual literature. Humans recognize shape, and a shape can tell us something in one instant that a line or two of text might.

"Deep Simplicity" by Alberto Cairo (2010)

When building graphics for anything, simplicity is key. When giving a reader too much to decipher, they will lose interest or you will lose the reader altogether. Complex graphics also require a reader to have previous experience or education in a subject. Creating stunning graphics and interfaces may initially look nice, but they become drab and boring. It requires too much thought, and it's just too much for a reader to deal with. The literature reviewed has given a better insight to why the Native Americans (specifically the Iroquois) had no chance of survival during American Colonization. My previous research has given me the foundation to build a solid argument and enforce it with specific evidence illustrating the issues discussed.

The design of the project will be a basis for me to develop my current skills, allow me room for growth, and enrich my current knowledge of Computer Graphics Design while learning from others that have been the standard in information design, design theory, and design implementation.

Design Ideation

3D elements will help me reinforce the idea. As no photographs exist from this time frame, the project will help give a visual representation of what the seventeenth century would appear like with Native American camps and wooden military installations.

The design component will be primarily 3D with a supplement of 2D animation, typography and simple visual elements as a vehicle for information. Use of legible text, a simple color palette, and clear graphics will be integral to the clarity and strength of the message.

Methodological Design

The project will be a 3D animated, interactive teaching tool. The main focus of the project will be in 3D. The purpose is to give a better sense of what the United States looked like before the constitution was ratified. How did people live, and what were their surroundings? The interactive aspect will be the control of the application and dictate which direction a user goes to find different information.

The look and feel is going to have an Earth tone color palette that reflects Native American and American frontier lifestyle. The text will be set in an easy-to-read font over the top of the image/models in a modal window; putting emphasis on content without covering the 3D models. The overall layout will be a clean, uncomplicated delivery of image and type to help convey a clear and concise story. The 3D images will have one to two hotspots or points of interest on them (depending on the amount of information available for the specific section). When clicked, the 3D image will transition through a zoom effect to a closer view of the 3D model. A modal window and text will be added to the stage to convey the proper information. The user can back out and pick another hotspot or transition straight to the next part of the story (see storyboards for visual example). There will also be a timeline on the top of the stage so a user can jump to different sections if they desire.

The target audience is going to be students in 7th grade and older with an interest in pre-revolution American History.

Technical Specifications

Dimensions: 1024x768 for large displays.

Objects to Model:

Main Objects

- Longhouse
- Tomahawk and War post
- Map of Iroquois land claims
- Fort Stanwix
- Treaty, pen, ink bottle
- Log Cabin

Secondary Objects

- Forrest and foliage (Use Cards where applicable)
- Interior of a room where treaty is signed
- Table
- Fence

Interactive

- Use Flash to control scene switches, activate narration, and animate text

Technical Requirements

- Software required:
- Autodesk Maya
- Autodesk Composite
- Adobe Creative Suite
- Hardware required:
- Computer (school and personal)

To model objects, I will build them with Maya using the experience and technical knowledge I have. Textures will be applied by using high resolution photos and UV mapping them onto the objects.

Implementation Strategies

The project will be built in Maya, composited and controlled with Flash.
Given the scope of the project, it will take refinements to bring it into a manageable piece of work that can be completed by the projected Thesis Defense date.

With my current abilities in design and my knowledge of history, I will be able to expand my knowledge of the subject matter and design. My design experience is a solid foundation that will allow me to learn and grow as a designer and gain valuable new technical skills that will help visualize my thesis in a clear and concise manner.

Dissemination

I will get the Thesis to museums by utilizing local contacts in Rochester and sending the abstract of the project to larger museums and science centers in the United States.
Include plans for submission to competitions, conferences, publication, etc.

Evaluation Plan

The usability testing will be disseminated through junior high school students. I can utilize current contacts in the Rochester City School District and neighboring School Districts.

The feedback will be both qualitative and quantitative. I am looking for users to provide information on the usability, accuracy of the information, and the way information is distributed throughout the whole project.

Questions to ask:

- Is the information presented clear and concise?
- Is the information displayed in an interesting manner?
- Does the information stimulate your interest to know more about the subject?
- Does the project meet the content standards for a 7th grade minimum?

The amount and type of feedback will dictate what will be implemented based on level of importance. If there is erroneous information, that will be addressed first. Problems with user navigation will be researched as to why there is uncertainty. Animation problems will be corrected as they arise.

Budget

The current budget is set at $500

- Storage Media: $100
- Binding for Thesis Proposal: $100
- Binding for Thesis: $100

Search: Iroquois Algonquian War on RIT Databases and Google Books
Downloaded:

- An explanation for the Oneida-Colonial alliance in the American Revolution
- Causes of the Forth Iroquois War
- Epidemics and Indian Middlemen
- Huron vs Iroquois
- Interracial Warfare and Population…
- Nineteenth century arrow wounds…
- Ojibwa-Iroquois war
- Sixteenth Century Depopulation
- The Indians Old World
- The Iroquois and the Western Fur trade
- Trade and Tribal warfare on the St. Lawrence
- War Among the Northeastern Woodland Indians
- War and Culture
- We are All the Sachems from East to West.

Inspiration

http://www.forwardmotionstudios.com/
Website of Heather Montgomery. Her elegant use of 3D and interactive design is a good example of how clean and simple design can be when used together with tasteful execution.

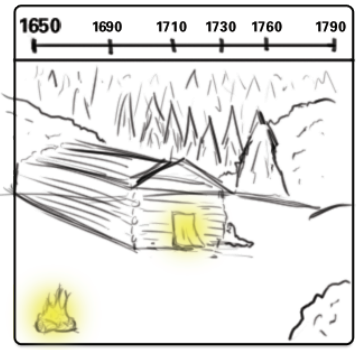
http://designreviver.com/
This website illustrates information design and the organization of type, information, and images working simultaneously.

http://www.parehua.co.nz/
This is an interesting example of information design that has been compacted to a small area. The headers and sub-headers define good hierarchy within the site and help draw the reader around the page.

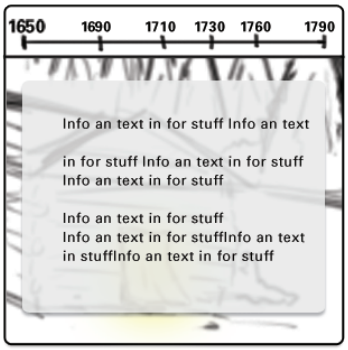
http://www.stage5studio.com/
Implementing interesting thought bubbles, the designer has been successful into breaking content into two columns that help bring the user to different sections.

http://www.madebygiant.com/
The designer has taken in interesting spin on navigation using large, robust buttons. They easily draw the user's eye to give the viewer more control of screen content. On the home page, the designer has counterbalanced the strength of the navigation with large white text that competes with the buttons, but does not interfere with the visual message of the site.

Storyboard Concepts and Color Palette

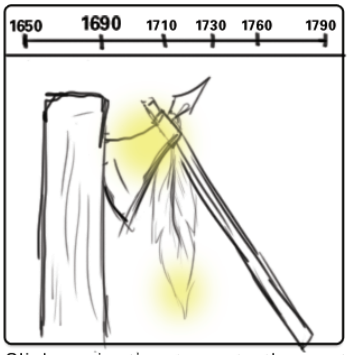


Iroquois longhouse. Hotspots to show points of interest

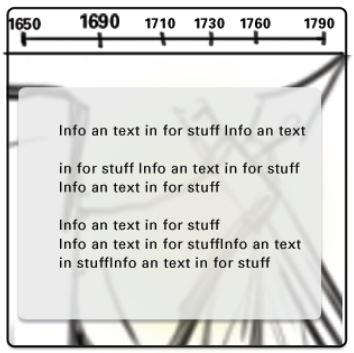


Zoom in towards clicked hotspot. Modal window adds to stage to convey information.

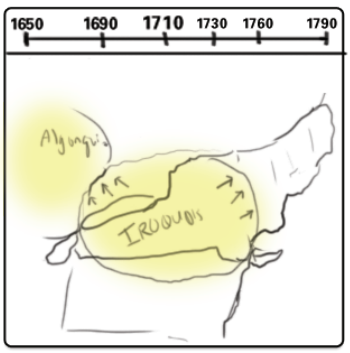
Navigating to next part of information. User pulls back from here or goes to next section of information.



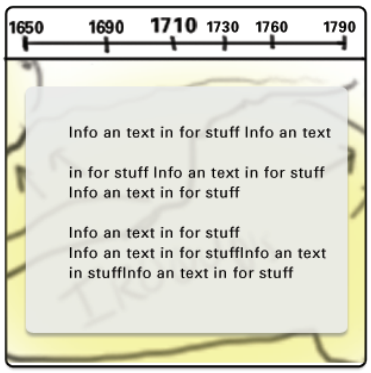
Click navigation to go to the next point in the timeline.



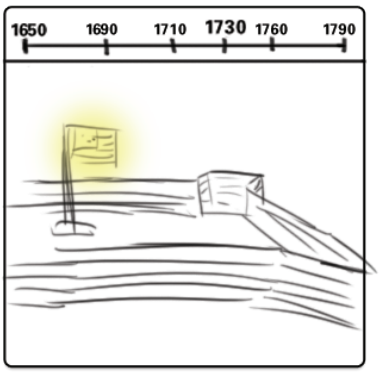
User dives into the frame. Text added to the stage.



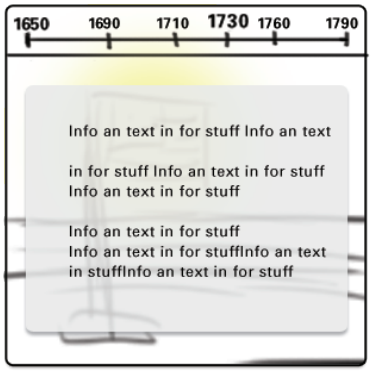
Transition to the map of Iroquois Algonquian territories.



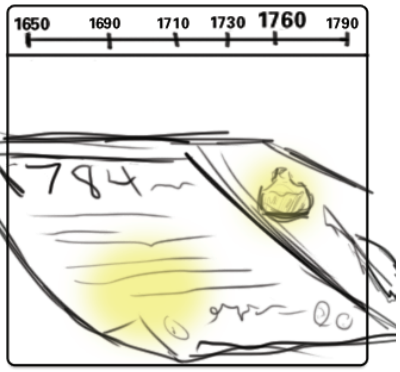
Zoom on map. Information added to stage.m



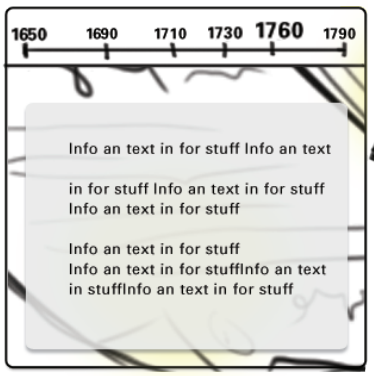
Transition to Fort Stanwix.



Zoom into American Flag. Modal window opens with info.

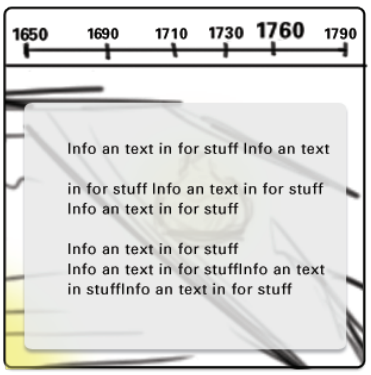


Transition to treaty on Desk.

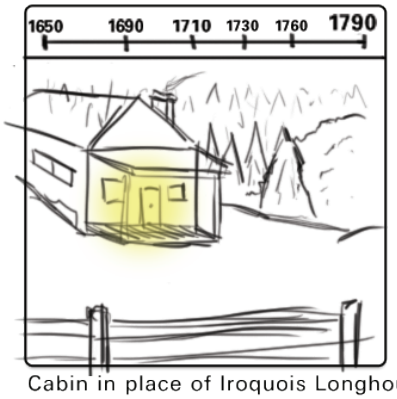


Zoom into treaty with signatures.

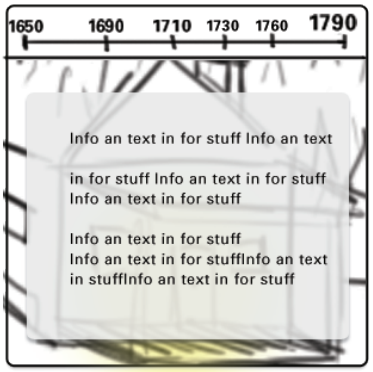
Switch back and forth



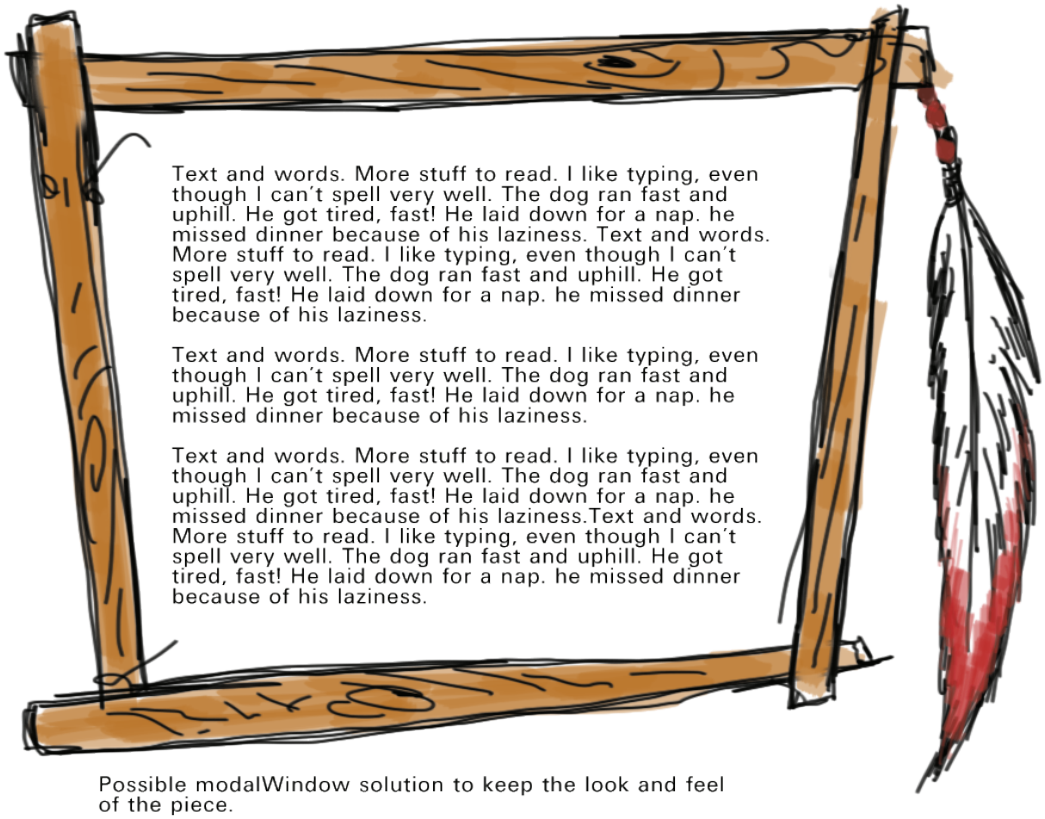
Zoom into treaty with signatures.



Cabin in place of Iroquois Longhouse.

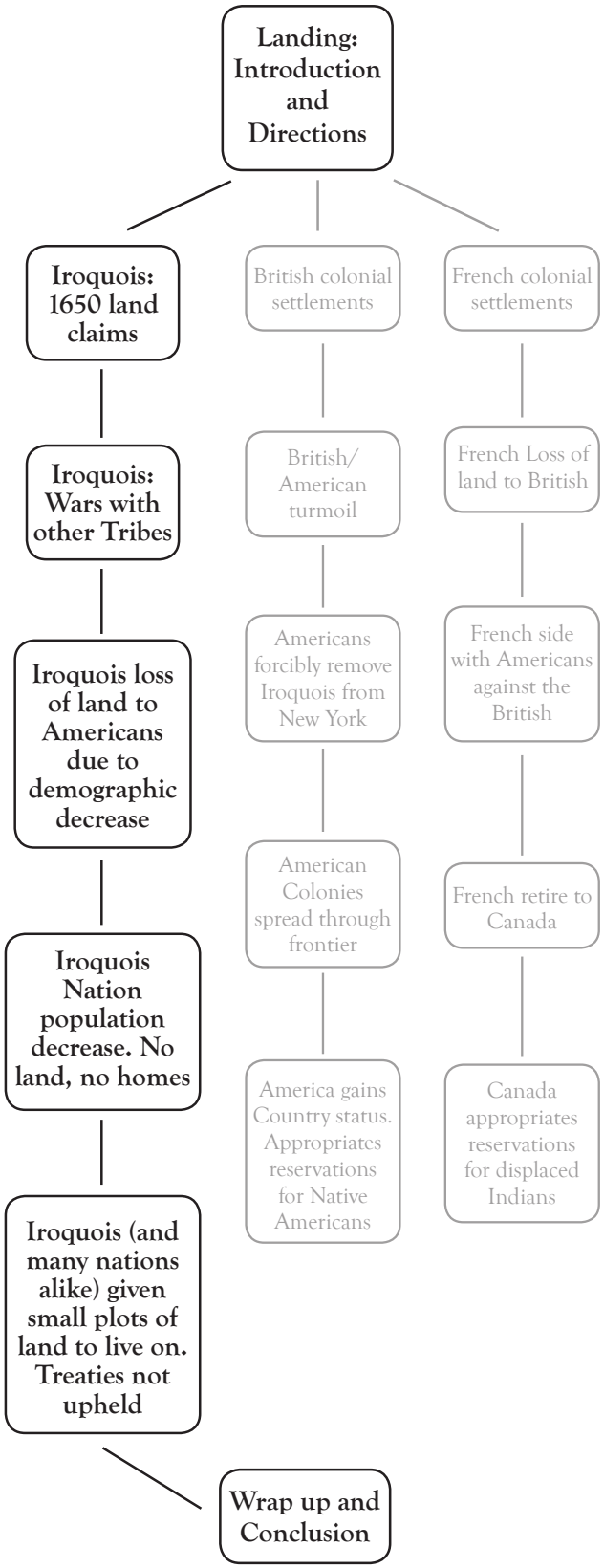


Another Modal window. Finishing the story of the Iroquois decline and American advancement.



Possible modalWindow solution to keep the look and feel of the piece.

Flowchart

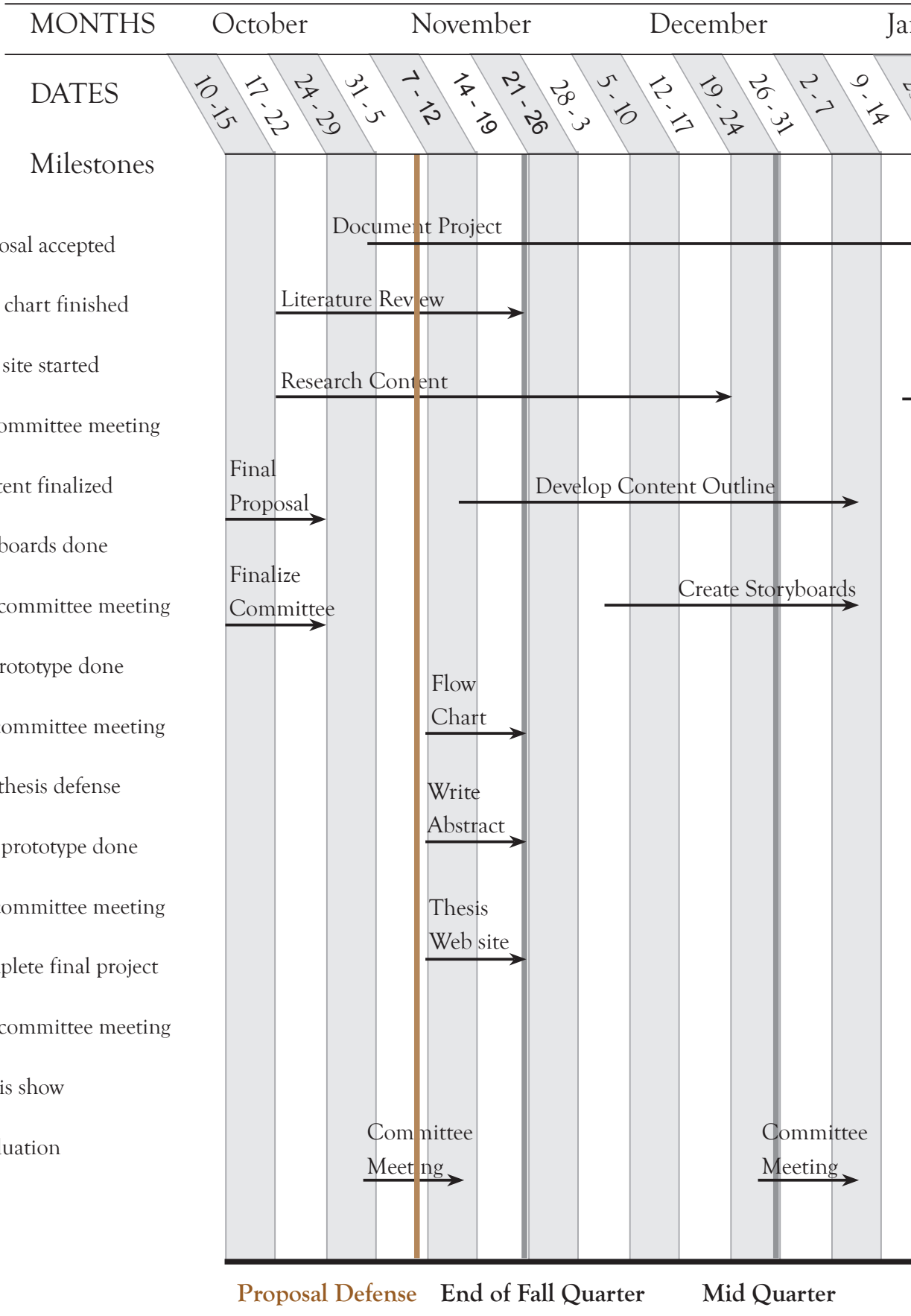


* This branch of the flowchart will be the focus of the Thesis. The other two branches will be not included in the prototype.

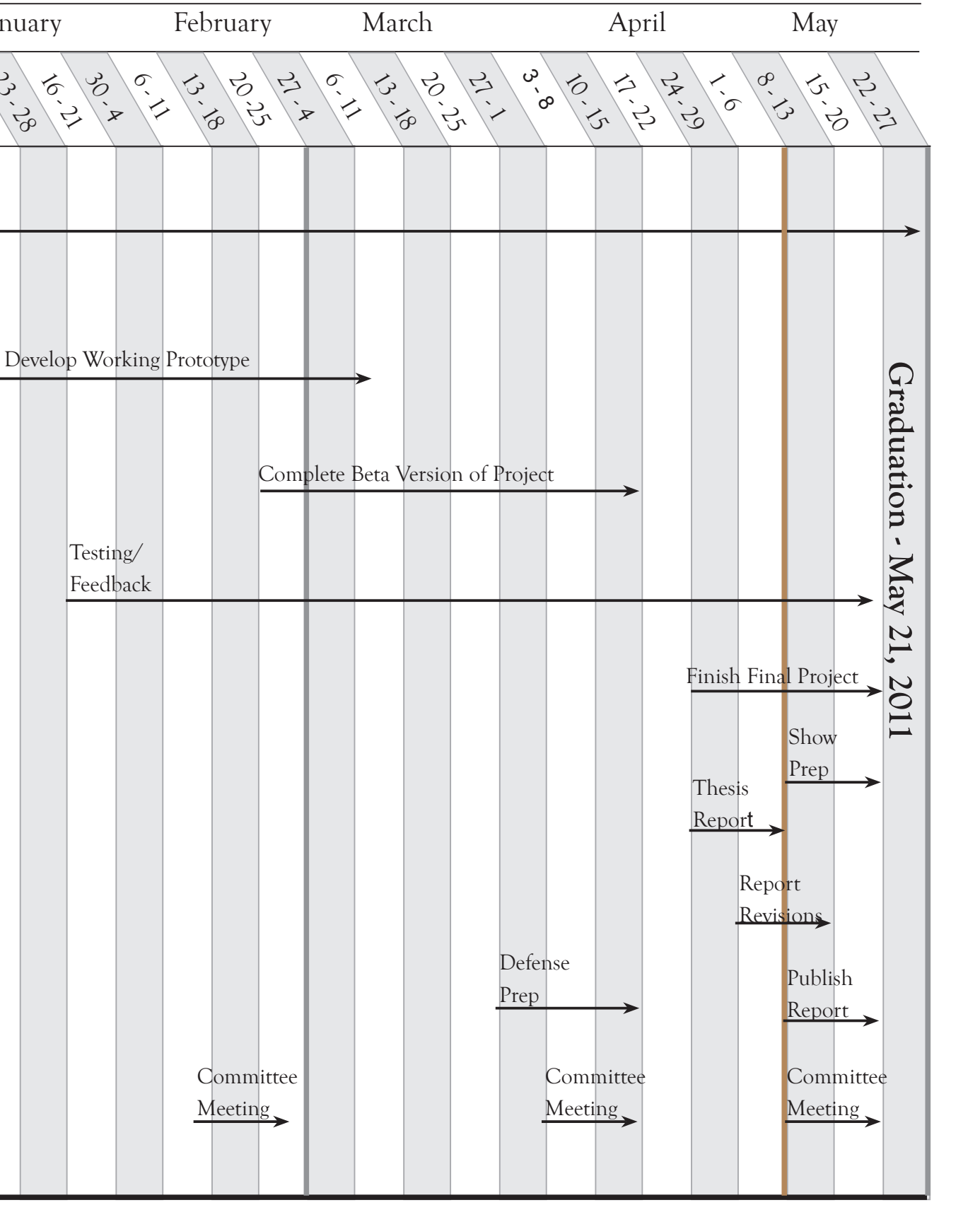
Thesis Timeline

by Thomas Weaver

Under a Pale Grey Sky: An Interactive Timeline of



Iroquoian Warfare and its Impact on the Acceleration of American Colonization



The Story

The Iroquois

At the time of European contact,the Iroquois was a confederacy of five Native American Nations along the northern and southern shores of Lake Ontario. The league consisted of the Onondaga, Mohawk, Seneca, Oneida, and Cayuga nations. The Iroquois were the keepers of the land, and had a stable society that required little movement of villages. Cadwallader Colden, a British Loyalist, would compare their personal value on life and death to the people of the Roman empire. The Iroquois were thought to be a proud culture with great love for their country:

> *The Five Nations are a poor, and generally called, barbarous People, bred under the darkest Ignorance; and yet a bright and noble Genius shines through these black Clouds. None of the greatest Roman Heroes have discovered a greater Love to their Country, or a greater Contempt of Death, than these People called Barbarians have done, when Liberty came in Competition. Indeed, I think our Indians have outdone the Romans in this particular; some of the greatest of those have we know murdered themselves to avoid Shame or Torments; but our Indians have refused to die meanly, or but little Pain, when they thought their Countries Honour would be at stake by it; but have given their bodies, willingly, to the most cruel Torments of their Enemies, to show, as they said, that the Five Nations consisted of Men, whose Courage and Resolution could not be shaken*[1*]

They were viewed as having "an amazing talent for organization"[2] and their idea of a structured society contradicted European settlers notion about the savages of the new world.

The location of the Five Nations was crucial to their survival. Their lands on the high grounds had waterways leading in all directions that allowed them to move quickly in and out of the area. This also allowed them to develop a political and military organization that was admired for strength and of which they were justly

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1 Cadwallader Colden. The History of the Five Indian Nations of Canada which are Dependent on the Province of New York, and are a Barrier Between the English and the French in that Part of the World. Vol. 1. New York: A.S. Barnes and Company, 1904. Dedication section, ppX-XI
* The book does not give the date when the letter was written.

2 W N. Fenton, "Cultural Stability and Change in American Indian Societies." The Journal of the Royal Anthropological Institute of Great Britain and Ireland 83, no. 2 (1953): 169-174. http://www.jstor.org/stable/2844029 (accessed August 20, 2008). pp172

proud. This location granted good access to the Hudson River, which allowed the trade to flow freely. The Seneca Nation illustrates the extent of Iroquois land claims. The 1687 expedition against the Senecas by the Marquis de Denonville peaked with the burning of four abandoned villages. His campaign was an overall failure and that proves the Seneca stronghold on their homes.[3] This evidence points to the strength the Iroquois Nation possessed.

War was in their Hearts

Blood revenge, covering the dead and status change were a few acceptable reasons for a tribe to engage in war. Blood feuding and revenge were considered to be a matter of honor. When a warrior was killed, that tribe would feel it a necessity to capture or kill a member of the perpetrating tribe. Many times, this would escalate into a large-scale operation that had the purpose of killing one or more of the enemy without incurring a loss to the attacking party. The intent of these blood feuds and raiding parties was not to increase territory, rather, to settle the dispute between the tribes. The blood revenge was used a system to police the tribe. It placed accountability on the actions of individuals and made Nations apply pressure to restrain its warriors. This also provided a level of security to warriors. With the power of the collective tribe behind him, a warrior could count on communal support when blood revenge was necessary.

Covering the dead was similar to a blood feud, whereas when a person of a tribe was killed, a mourning family member would seek out something to heal the gap left by the fallen. The tribe would kill or capture one or more members of the enemy tribe to help replace the loss of one of their own.[4] This helped heal the hearts of the grieving tribe, and put an end to the battles between the Nations. On other occasions, a young warrior would head out on a war party to increase their tribal status. Exploits helped elevate a young warriors status in their own tribe.[5] A returning tribe would enjoy the prestige gained by a successful battle, thus raising the status of a young warrior.

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3 Frederick Houghton. "The Migration of the Seneca Nation." American Anthropologist, New Series 29, no. 2 (April 1927): 241-250. http://www.jstor.org/stable/661461 (accessed August 20, 2008).

4 Schlesier, Karl H. "Epidemics and Indian Middlemen: Rethinking the Wars of the Iroquois, 1609-1653." Ethnohistory 23, no. 2 (Spring 1976): 129-145. http://www.jstor.org/stable/481513. (Accessed September 19, 2010).

5 Naroll, Raoul. "The Causes of the Fourth Iroquois War." Ethnohistory 16, no. 1 (Winter 1969): 51-81. http://www.jstor.org/stable/480943. (Accessed September 19, 2010). pp55

Between the blood feuds and battles arose a bigger problem: the European contact. Prior to the introduction of settlers, intertribal war was far more infrequent than when the Europeans arrived; a stress that accelerated a demographic decline.[6] The problem the Iroquois now faced was how to deal with pressure from Europeans and the neighboring tribes at the same time? A sobering question that presented the Iroquois with ambiguous outcomes.

Northeastern Tribes

The way it seemed the Iroquois would murder, destroy, and take what they wanted through whatever means they deemed fit instilled fear into all Northeastern Native Americans long before the European arrival. The Iroquois, more specifically the Mohawk, had been running small raiding parties into Connecticut, killing people and burning their villages. The shear terror inspired by the Iroquois was a fact of life for all Northeastern Native Americans.[7] In 1656, the Iroquois were warring with the Ottawa, and the Iroquois were dealt a crushing defeat. The next year, the Iroquois were plotting revenge against the Ottawa. Meanwhile, the Iroquois were making peace with the French who were strong supporters of the Ottawa Nation. The French alignment with the Ottawa put even more stress on the Iroquois struggle against neighboring tribes. How were the Iroquois to deal with people who were strengthened by their allies?[8] The Five Nations were presented with an unusual situation. On one hand, the Iroquois were warring with their Algonquian neighbors. On the other, they had a pact with the French (clearly Algonquian supporters) of non-aggression. The Iroquois did not view the hostilities with the Algonquians as a breach of faith with the French, but not all terms are understood the same. In 1663, the Mohawks came to Montreal to reaffirm their peace with the French. The Mohawks left four of its group with the French as hostages and good faith that they would return with a "celebrated orator" to aid in the peace talks.[9] The French took the four and, in an amazing erratum, gave lodging to the

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6 Blick, Jeffrey P. "Genocidal Warfare in Tribal Societies as a Result of European-Induced Culture Conflict." Man, New Series 23, no. 4 (December 1988): 654-670. http://www.jastor.org/stable/ 2802598. (Accessed September 19, 2010).

7 Cook, Sherburne F. "Interracial Warfare and Population Decline among the New England Indians." Ethnohistory 20, no. 1 (Winter 1973): 1-24. http://www.jstor.org/stable/48123. (Accessed September 20, 2010).

8 Naroll, Raoul. "The Causes of the Fourth Iroquois War." Ethnohistory 16, no. 1 (Winter 1969): 51-81. http://www.jstor.org/stable/480943. (Accessed September 19, 2010).

9 Naroll, Raoul. "The Causes of the Fourth Iroquois War." Ethnohistory 16, no. 1 (Winter 1969): 51-81. http://www.jstor.org/stable/480943. (Accessed September 19, 2010). pp71

Mohawks with Hurons: an ancient enemy of the Iroquois. The Mohawks struck, killing four and made off with three others as prisoners. The French viewed this as an act of perfidy, but in reality, the Mohawks were negotiating with the French, not the Huron. The Iroquois believed they had kept their word in good faith as far as the French were concerned.

By the beginning of the 1700's, the Algonquian-speaking Ojibwa/Chippewa, Ottawa and Huron nations finally managed to subdue the Iroquois. In the time before that, the Ojibwa have accounts of the Iroquois being a constant bother. By the time the 1700th century began, the Ojibwas had turned the tables. As one Ojibwa historian stated, "as far as I am able to learn, our nation has never been conquered."[10]
The Iroquois may have subdued the Ojibwa many times before, but one can propose that the Iroquois were not the formidable opponents they once were.

Viewing Native American population as it appears throughout New England, (even without the documentation of the Native American wars, we can postulate based on given evidence that in three major wars in the seventeenth century) the Pequot War, 1634, the Dutch War, 1643, and King Philip's War, 1675-1676) the Native Americans suffered an 11% decline in population (roughly 3,700 people). Between the years 1620 to 1750, there was serious demographic devastation within the New England Tribes.[11]

As the Iroquois numbers dwindled, the American colonies were at war with their sovereign: England. The Americans were growing tired of the British imposed taxes and regulations were restricting their freedom.

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10 Eid, Leroy V. "The Ojibwa-Iroquois War: The War the Five Nations Did Not Win." Ethnohistory 26, no. 4 (Fall 1979): 297-324. http://www.jstor.org/stable/481363. (Accessed September 21, 2010).

11 Cook, Sherburne F. "Interracial Warfare and Population Decline among the New England Indians." Ethnohistory 20, no. 1 (Winter 1973): 1-24. http://www.jstor.org/stable/48123. (Accessed September 20, 2010).

American Advancement

The British would focus most of their interests towards New York as a military stronghold. The Americans tried to invade Canada, but with little effect, and this left the whole country of New York open to invasions "from the bloodthirsty warriors of the Long House."[12] Those warriors were the Iroquois, and their foothold in New York was tenacious. All over the colonies, Americans were leaving their indentured service and settling along the frontier: the only place for poor people at the time. The problem that the frontier settlers had was the population of Natives already living on the lands. Along the frontier skirmishes and battles between Native and American colonists led to constant bloodshed and anger between the two groups. The fighting was fueled by the constant settlement and development of Native lands, and the Native Americans wanted nothing more than to keep what was theirs in the first place. But when Americans are forced to provide for themselves, people take their own actions and create a more desirable future. The Americans slowly kept moving further and further into lands occupied by Native Americans. Whether it was through treaties or purchasing, the settlers kept coming.

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12 Fiske, John. The American Revolution. Vol. 1. Boston and New York: Houghton, Mifflin and Company,1891.http://books.google.com/books?id=PqAQerR9kbsC&dq=American%20Revolution&pg=PR1#v=onepage&q&f=false (accessed October 27, 2010).

The Treaties and Land Claims

Treaties were a passage to peace between the Americans and Native Americans. and the documents defined boundaries and were intended to be a legally binding contract. However, every few years, the treaties made with the Six Nations were broken or rewritten to suit the American cause. The first significant treaty between the Iroquois and the United States was in 1784 that established the territories belonging to the United States west of the Ohio River.[13] In 1789, a new treaty was drawn up reducing the land claims of the Iroquois as well as imparting the United States justice system upon the Iroquois regarding white/Native American interaction.[14] In 1794, the Iroquois were presented with another treaty and the effect was the same: reduce the Native American lands, and grant more land to the United States. However, this treaty had greater impact on the Iroquois as it allowed the United States to build a wagon road through Iroquois land for the purpose of undisturbed travel and transportation. This treaty also defines the duty of payment to the Iroquois to "promote the future welfare of the Six Nations." The Iroquois lands were diminishing, and their compensation was inadequate at $4,500 per year to help atone for the lands they once occupied.[15]

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13 United States of America. Treaty with the Six Nations: 1784, by Oliver Wolcott, Richard Butler, and Arthur Lee. Treaties 2. United States Congress, 1784. http://avalon.law.yale.edu/18th_century/six1784.asp (accessed October 27, 2010).

14 United States of America. Treaty with the Six Nations: 1789, by Arthur St. Clair. Treaties 2. United States Congress, 1789. http://avalon.law.yale.edu/18th_century/six1789.asp (accessed October 27, 2010).

15 United States of America. Treaty with the Six Nations: 1794, by United States of America. Treaties 2. United States Congress, 1794. http://avalon.law.yale.edu/18th_century/six1794.asp (accessed October 27, 2010). (Article 6)

The End of a Society

The Iroquois had lived for many years in and around present New York State. Their initial lands were vast and covered many miles of wooded area. Their warring with other tribes was limited to blood revenge and ancient qualms. As the Europeans started arriving, the Iroquois enemies became stronger through allegiances with the French; increasing stress for the Iroquois. More and more, the Six Nations became entrenched in skirmishes and larger battles with an enemy that had been equipped and reinforced by the white settlers. As time elapsed, the Iroquois slowly lost ground and population. By the time the United States Constitution was ratified, their long time enemies, the Algonquian, had subdued the Iroquois. The Six Nations land claims had been usurped by the United States, the Native Americans were left with very little of their original homeland, and their future looked gray. They were forced to live on small plots of land that would not interfere with American expansion. The fierce Iroquois of the past had now become a part of history, only to be remembered by treaties that were never upheld.

As like most tribes thorout history, The United States had suffocated the Six Nations. The only thing the Iroquois could do is try to preserve their culture by passing it to a dwindling population. Even today, the Iroquois work to maintain a tradition looming on the edge of extinction.

"Obscured by the sun
Apocalyptic clash
Cities fall in ruin
Why must we die?

Obliteration of mankind
Under a pale grey sky
We shall arise..."

Max Cavallera

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