

The Lienzo de Quauhquechollan

A map that tells a story

Giancarlo Ibárgüen S., president Universidad Francisco Marroquín

gis@ufm.edu

www.lienzo.ufm.edu (as of July 1, 2009)

Abstract

The *Lienzo de Quauhquechollan* is the first known map of Guatemala. It is also the only firsthand indigenous account of the conquest of Guatemala. Painted on cotton cloth circa 1530–1540 by the Quauhquecholteca of central Mexico, it tells the story of how the Quauhquecholteca conquered Guatemala in alliance with the Spanish.

The *Lienzo* belongs to the genre of *historical cartography*. For the peoples of Mesoamerica, geography did not exist independently of history. Unlike contemporary European or modern day maps, the *Lienzo* was not intended to be read in silence. It would be presented during community rituals and “read” by an experienced narrator. As such, it is a distant echo of what Michael Oakeshott refers to as “a conversation, begun in the primeval forests and extended and made more articulate in the course of centuries.”

Five hundred years of wear and tear made it difficult for the viewer to decipher the *Lienzo’s* iconography and to follow the story. In 2006, Universidad Francisco Marroquín undertook a project to digitally restore the *Lienzo de Quauhquechollan* to make it easier for all to understand and to encourage participation in this conversation.

Maps help us organize geographic and social information. Sometimes they are employed to pursue violent ends, like the Quauhquecholteca who used the *Lienzo* to justify war spoils to take the property of others by force. However, when maps are used to defend private property, promote trade, identify more efficient allocations of resources, and resolve conflicts, they are among the most important and innovative tools civilization has developed for the advancement of prosperity and peace.



Lienzo de Quauhquechollan

- **Date** circa 1530–1540

- **Material**

natural pigments on
handwoven cotton cloth

- **Dimensions**

height 8 feet 5 inches (2.45 meters)

width 10 feet 6 inches (3.20 meters)

- **Location of the original**

Museo Casa de Alfeñique
Puebla, Mexico

- **Digital restoration • Animation (2007)**

- **Exhibit • Catalogue • Monographs**

Explorations on History

Universidad Francisco Marroquín

Guatemala City, Guatemala

- **Co-sponsor**

Banco G&T Continental

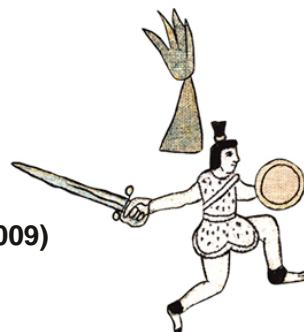
- **Dynamic web mapping (2009)**

Geosistec

Guatemala City, Guatemala

- **Interpretation**

The *Lienzo* was long thought to depict the Spanish conquest of an unidentified area in Central Mexico. Academic detective work by Dutch archaeologist Florine Asselbergs revealed a different story. Her doctoral dissertation was published by the University of Leiden as the book *Conquered Conquistadors*.



The *Lienzo de Quauhquechollan* is a Nahuatl painting on cotton cloth. It was created by the Quauhquecholteca of central Mexico to record the story of how they conquered and settled Guatemala in alliance with the Spanish in 1527–1530.

The *Lienzo de Quauhquechollan* is the first map of Guatemala. It is also the only firsthand indigenous account of the conquest of Guatemala, and presents the viewer with a new version of the conquest of Guatemala.

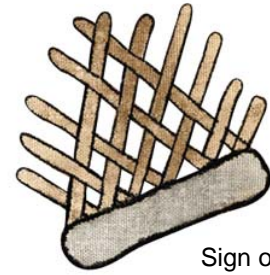
To communicate information, the Mesoamerican peoples developed a system that combined oral narrations with pictographic images. They used stylized symbols that were agreed upon and understood by members of different ethnic groups. Among existing indigenous paintings, the one from Quauhquechollan stands out because of its size and iconographic complexity.

The *Lienzo de Quauhquechollan* is aesthetically rich and evocative. It is a story of great military adventure filled with color, exotic regalia, intense battles, espionage, ritual and rebellion. It leads us along the conquest route across familiar rivers and mountain ranges, through markets and towns, where the conquerors sometimes decided to settle. We recognize Chichicastenango, still one of the world's most colorful markets; a ball court where ritual games were once played that lies hidden under corn fields near the colonial city of Antigua; the warm waters of the Pacific and a long lost lake in the Valley of Almolonga. We can sense the power of geography and tradition in places like **Los Encuentros** and **Chimaltenango**, whose function as crossroads and commercial center haven't changed in 500 year.

Is it really a map?

To our eyes—trained in western cartography—the form of the *Lienzo de Quauhquechollan* seems strange. Amidst the symbols and pictographs, we recognize a sort of roadmap along which we can make out representations of rivers, trees, mountains, and settlements. We can make some sense of the circuitous path, marked with foot and hoof prints, which signal the routes traveled. But when the same town shows up more than once on the same map, we're thrown for a loop.

This is because the *Lienzo* is simultaneously a map and a story. In our world it belongs to the genre of historic cartography. In the pre-Hispanic world, it belongs to the Mesoamerica tradition of documenting stories of migrations and conquests within their



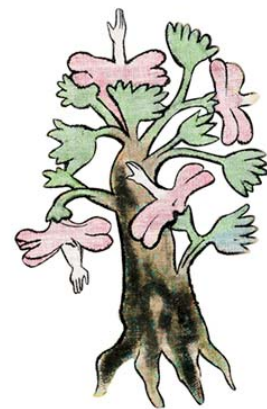
Sign of rebellion



Enemy warrior
Quauhquecholteca warrior



Market day in Chichicastenango



Monkey-hand tree

geographical contexts (known as codices). The principal difference with contemporary maps is that, in indigenous documents, geography does not exist without history; nor is history always linear. For the indigenous artists, what was important was to evoke a specific experience, not just to describe a territory. The narrative gave life to the map, not the other way around. For this reason, the *tlacuiloque* (artists) did not depict all of the cities the conquerors traveled to, only those considered significant to the story.

Another difference between the *Lienzo* and western maps and is that the “reading” of a *lienzo* was a unique experience. *Lienzos* were presented as part of a community ritual, perhaps stretched out on the ground in plazas or marketplace where members of the community could admire them and learn about the stories they told. Instead of being approached in silence, they were always accompanied by an oral narration told by a trained storyteller, who used the *lienzo* as a storyboard as he regaled the audience.

Digital restoration

The *Lienzo de Quauhquechollan* has been badly damaged by five centuries of wear and tear. Its images are faded and smudged and the cloth torn. The original (in Puebla, Mexico) is difficult even for the expert to decipher. In 2006, Universidad Francisco Marroquín undertook a project to digitally restore the *Lienzo de Quauhquechollan* to make it easier for all to understand, and create an exhibit that could travel around the country (and the world). Modern technology allowed us to restore the *Lienzo* to an extraordinary depth and level of precision that would have been impossible to achieve on the original without destroying the cloth in the process.

Our biggest challenge was how to use twenty-first century technology to restore the *Lienzo* without distorting the original. We assembled an extensive team of experts, in the fields of anthropology, archaeology, epigraphy, ethnobotany, digital technology, graphic design, history, lighting, photography, storytelling and textiles. They worked hand in hand with the digital restorers and animation programmers, to interpret the symbols, as well as define textures and colors, at each step in the process. The entire project—restoration, animation, narration, video and catalogue—took almost nine months.



Spanish soldier



Enemy trap



Town of Rabinal

For the restoration, the designers created four digital layers.

- In the first layer they cleaned or eliminated stains and blurs, and digitally reconstructed tears, thread by thread.
- In the second layer, they reproduced the textures of the *Lienzo*. The original canvas was constructed from fifteen rectangular panels of cotton cloth sewn together. The weave of each of these panels had to be replicated, along with the seams that joined them.
- In the third layer they restored the colors, which had lost their intensity or had run. Experts in natural dyes and textiles defined the color palette that would have been available to paint the *Lienzo*. This palette was applied to the pictograms, and the color values adjusted, under their guidance.
- In many scenes, the original lines of the pictures had become fuzzy or faint, often making the pictures look like stains. The solution (fourth layer) was to redraw the black outlines of each pictographic element in the *Lienzo*. Experts in pre-Columbian iconography and epigraphy guided this work.
- After all of the 15 sections had been restored, the last step was to match them perfectly in color, line, and texture, and put them back together.

The next challenge was how to migrate the restored images into the world of movement. How to animate the story and narrate it as it might have been told by a Quauhquecholteca storyteller 500 years ago. Writers developed a script and each symbol and scene had to be “cut out” so that it could be manipulated independently and choreographed with an original musical score and sound effects arranged to enhance each segment of the story.

The project culminated in an exhibit that has attracted 18,000 Guatemalan school children, and tourists from around the world. The exhibit catalogue will soon be complemented by a series of monographs that analyze the glyphs used to name the places that appear in the *Lienzo*, the costumes worn by the people depicted, and the ethnobotany of the plants represented. All of this was made possible thanks to the generous backing of the Guatemalan bank G&T Continental.



Web mapmaking meets history telling

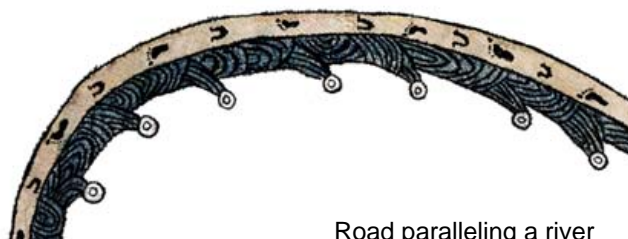
The most recent step in applying technology to the *Lienzo de Quauhquechollan* has been to integrate all of the visual and informational pieces gathered so far into an experience everyone can access on the Web. The challenges were both conceptual and technical. The solutions that the Guatemalan firm Geosistec, distributor of ESRI software, came up with are innovative.

Luis Fernández, founder of Geosistec, describes how they used ESRI software to get the job done:

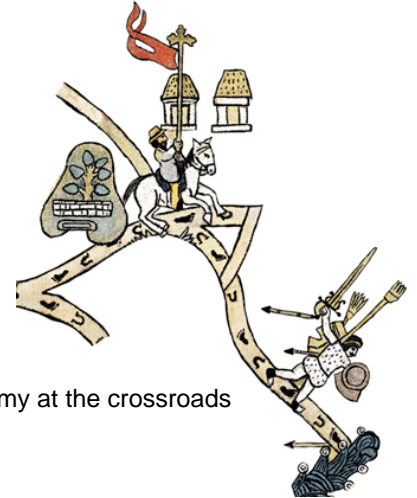
Our goal was to find a way to merge modern cartographic tools with the concept of “living geography” through which the Mesoamerican peoples communicated stories, legends, and traditions based on collective experience, and which had a narrator as a key component.

With this vision in mind, we set out to create a web mapping application that would not only relate the places identified on the Quauhquechollan canvas with an actual geographic location, but also with the events that took place. In addition to the *Lienzo* itself, we wanted to incorporate the detailed information Universidad Francisco Marroquín had compiled for a future monograph series on the places, symbols, clothing and plants depicted in the *Lienzo*. Our solution was to develop a timeline tool that assumes the role of the “narrator,” and allows the user to relate historic events with geographic places—enriched by information—by navigating on the *Lienzo*.

Our first challenge was immediate. Although the *Lienzo* is, in essence, a map that identifies specific towns, routes and events, it provides no spatial reference. It presents a continuous path that weaves through time and place, but does not include geographic locations. We first had to pair up geographic places on a modern map with the historic places located on the *Lienzo*. Tying together the locations in each provided out spatial framework.



Road paralleling a river



Army at the crossroads



Town of Tecpán



Town of Tecpán



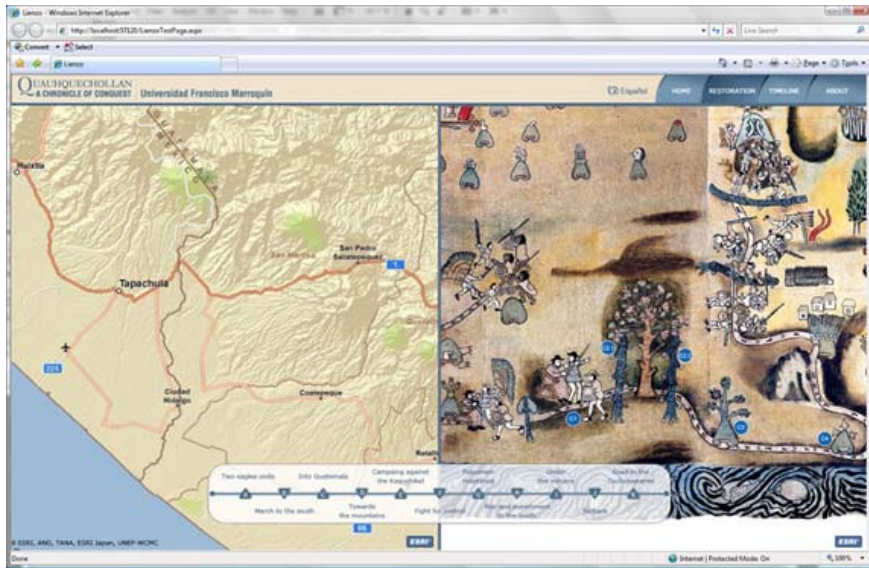
Caravan of merchants crossing a river

The narration of the story would have been presented in as a straightforward, one way, uninterrupted sequence in time. This created another challenge for us because some of the events depicted in the *Lienzo* took place in the same town, but at different times. Because for the Quauhquecholteca what was most important was the storyline, they depicted the place every time it came up, which made for multiple appearances of a single town within the *Lienzo*. We had to reference such locations to a single geographic position. The result is that, as viewers move along the timeline, sometimes as they are moving forward on the *Lienzo*, they will be moving backwards on the modern map.

In order to load the *Lienzo* to a map service and generate caching tiles for it, we had to give the *Lienzo* a spatial reference; for that we used as an arbitrarily defined space in the Geoweb Mercator Projection.



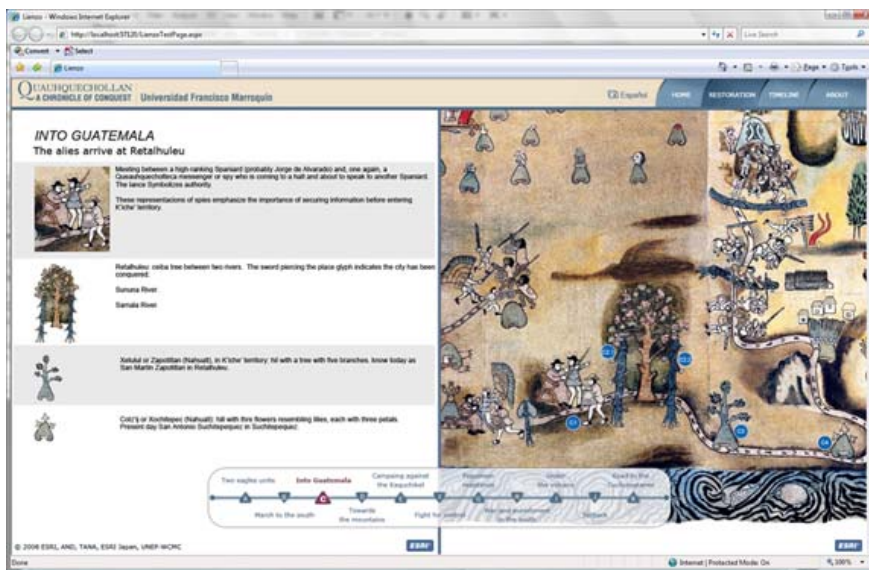
The above image shows the juxtaposition of the modern geographic map and the *Lienzo* map, where history takes place.



By navigating on the timeline (above), both the modern map and the *Lienzo* map will zoom in to the precise location where the story of the conquest is taking place. The user will be able to navigate and access other mapping elements and locations, as well as descriptive information about them through map tips and context windows.

Technology used

- ArcInfo GIS 9.3.1
- ArcGIS Server 9.3.1
- ESRI-API for Microsoft Silverlight



Building on the Silverlight API, we were able to “flip” the geographic map viewer to offer the user details and a scene-by-scene description of the events unfolding in the *Lienzo*, without having to leave or add new windows to the interface.

Who were the Quauhquecholteca?

Mesoamerica was conquered in the name of the king of Spain during the first half of the 16th century. Historical records tell us that it was at the hands of a few bold and daring Spanish captains that this titanic clash between two worlds ended with the subjugation of the entire region. The *Lienzo de Quauhquechollan* brings us a different story; one in which the Spaniards have a powerful ally, in the form of an indigenous army.

The word conquest evokes violent images of war and destruction. However, for some Mesoamerican communities, conquest was also synonymous with opportunity. The opportunity to become conquistadors themselves.

The domain of Quauhquechollan was established approximately in the year AD 1093 (near modern day Puebla) by a Nahuatl speaking group that migrated to the area from the north, after the fall of Tula. Prior to the arrival of the Spaniards in 1520, Quauhquechollan was the scene of intermittent warfare, until it was finally subdued by the Mexica Empire, whose capital of Tenochtitlan is present-day Mexico City.

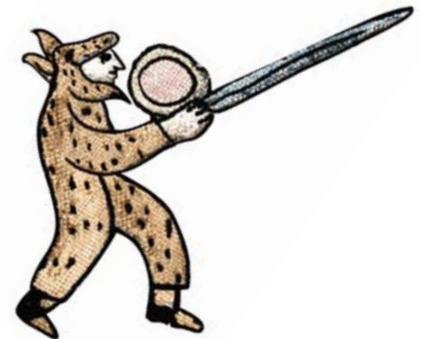
The geographic location of Quauhquechollan ensured it a powerful position politically. With the unstoppable expansion of the Mexica, Quauhquechollan became the frontier between rivals Tenochtitlan and Tlaxcala, the two most powerful allied forces of the day. It was also situated at the crossroads of the region's key trade routes that extended as far as Veracruz and Central America.

For a conquered domain, like Quauhquechollan, incorporation into the Mexica Empire meant a loss of wealth and status for the local nobility. However, there were ways of obtaining privileges. In return for supporting their new rulers in battle, local princes could receive lands, tribute and—most importantly—the status of conquerors instead of conquered. Management of such power relationships was more important than force and territorial control in determining the dominion and influence of the Mexica.

When the Spaniards arrived, establishing alliances was the order of the day. So, too, was switching allies. What was important was that an alliance offer the opportunity for advancement. In the face of Mexica oppression, the Quauhquecholteca embraced the idea of joining with the Spanish in an alliance of equals, in which both would be winners.



Symbol of the alliance



Quauhquecholteca noble in jaguar skin



San Juan Epatlán (Mexico)

The Quauhquecholteca painted the *Lienzo* to document their role in the conquest of Guatemala, and their right to hold a privileged position as co-conquerors in the new political system that was being formed in the conquered lands. And like humans everywhere, they wanted their bravery and victory to be remembered by their descendants and the descendants of those they had conquered.

Mapmakers as peace makers

Maps define for us where things are. And, perhaps even more importantly, they help us define property rights, who owns what. What are property rights? Economists define property rights as the exclusive authority to determine how a resource is used; the exclusive right to the services of the resource; and the right to exchange the resource at mutually agreeable terms. If I am not allowed to buy certain rights from you, as a consequence you are prevented from selling certain rights to me; and both of us have our private property rights reduced.

The ethics and economics of private property are based on a tradition that goes back to Aristotle, Roman law, St. Augustine, St. Thomas Aquinas and the Spanish scholastics. In contrast to Plato's communist utopia, Aristotle, in *Politics*, clearly stated the advantages of private property:

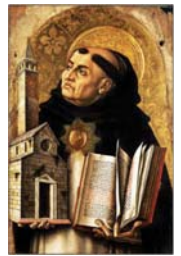
What is common to the greatest number gets the least amount of care. Men pay most attention to what is their own; they care less for what is common; or at any rate they care for it only to the extent to which each is individually concerned. Even when there is no other cause for inattention, men are more prone to neglect their duty when they think that another is attending to it.

St. Thomas Aquinas, in his *Summa Theologica* fifteen hundred years later, builds on the Aristotelian position:

Every man is more careful to procure what is for himself alone than that which is common to many or to all since each one would shirk the labor and leave to another that which concerns the community.



Aristotle by Raphael



St. Thomas by Carlo Crivelli

Property makes people responsible. I would add that property makes justice possible. In his book *The Noblest Triumph: Prosperity and Property Through the Ages*, Tom Bethell, a British journalist specializing in economics, reframes the idea expressed by David Hume in the eighteenth century:

[T]he great blessing of private property . . . is that people can benefit from their own industry and insulate themselves from the negative effects of others' actions . . . The industrious will reap the benefits of their industry, the frugal the consequences of their frugality; the improvident and the profligate likewise. *Private property institutionalizes justice.*

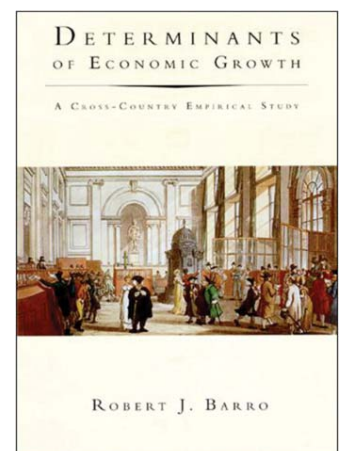
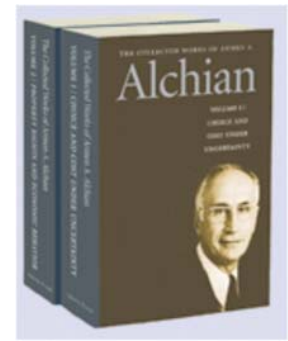
Private property prevents conflict and promotes peace. In a world of scarcity, conflicts of interest over the use of scarce resources are inevitable. How do you coordinate people who participate in the market place competing for scarce resources? The choices boil down to two: decentralized coordination through voluntary contracts, or centralized coordination through command and control. The first implies peaceful cooperation; the second, the use of force. As American economist Armen Alchian stated, "Well-defined and well-protected property rights replace competition by violence with competition by peaceful means."

And what about poverty? The only sure remedy for poverty is economic growth. So the question becomes how is wealth created? What conditions will encourage economic growth? The engine of economic growth, as Adam Smith first pointed out in 1776, is the accumulation of capital. To be more precise, the engine of economic growth is the accumulation of capital per capita.

Many recent studies show that market friendly policies work best to generate capital. In 1997, the renowned Harvard economist Robert Barro performed a multivariate cross country study of 100 countries observed from 1960 to 1995. Barro's empirical research unequivocally points to property rights and the rule of law as key determinants of economic growth, together with free markets, reliable enforcement of contracts, low taxes, and low public spending.

A thriving market economy requires, among other things, institutions that provide secure individual rights—rights that insure that individuals, and the firms they create, can best advance their interests by being as productive as possible and engaging in mutually beneficial trade. The incentives to save, to invest, and to produce depend particularly upon individual rights to marketable assets—on property rights.

Mancur Olson, unpublished paper (1991)



Those involved in mapping are engaged, however tangentially, in maintaining this cornerstone of civilization. They supply all of us with powerful tools to defend what is ours, to discover how best to allocate scarce resources, to resolve conflicts, and to innovate. This is a good moment to mention what we do at Universidad Francisco Marroquín. Our mission is to teach and disseminate the ethical, legal and economic ideas of a society of free and responsible persons. Like the scholars I have quoted here, we believe private property to be indispensable to peace and prosperity.

Conclusion

I close with a quote to guide the efforts of all of us engaged in this conference; of those who are reading this paper, of those in the audience, of those at Universidad Francisco Marroquín, of Jack Dangermond and his colleagues at ESRI:

As civilized human beings, we are the inheritors, neither of an inquiry about ourselves and the world, nor of an accumulating body of information, but of a conversation, begun in the primeval forests and extended and made more articulate in the course of centuries. It is a conversation which goes on both in public and within each of ourselves. Education, properly speaking, is an initiation into the skill and partnership of this conversation . . . in which we acquire the intellectual and moral habits appropriate to conversation.

Michael Oakeshott, "Poetry as a Voice in the Conversation of Mankind," in Oakeshott, *Rationalism in Politics* (Liberty Fund)