Q&A Patrick McGovern  BY HEATHER A. DAVIS

Could chocolate come from as far away as Belgium or as nearby as Hershey? It can be white or dark. It can be whipped into a mousse, melted into a hot topping or broken off from a candy bar.

But years and years ago, it had a much different purpose: It was consumed as an alcoholic beverage. Analyses of pottery excavated from a site in Honduras has led Patrick McGovern, senior research scientist at the Penn Museum’s Applied Science Center for Archaeology, to conclude that ancient people were drinking fermented beverages made from the sweet pulp of the cacao fruit—the source of modern-day chocolate—somewhere between 1400 and 11 B.C.E.

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Reclaiming the riverfront

BY HEATHER A. DAVIS

The concrete pillars of I-95, desolate brownfields, high-rise condos and industrial warehouses dominate seven miles of waterfront along the Delaware River.

But according to the vision forwarded last month by the University’s faculty and student design clinic, Penn Praxis, Philadelphia’s riverfront doesn’t need to look that way.

Picture instead a pedestrian-friendly area, with the city grid extending all the way to the waterfront. Throw in public transit, mixed-use development and open space, including parks to help preserve the integrity of the river, and the city, says Penn Praxis, could be utterly transformed.

The Penn Praxis report, “Civic Vision for the Central Delaware,” outlines just this vision, which includes building the city back to the river, honoring the role the Delaware has played in the city’s history, planning development carefully and creating a livable and walkable community between Oregon and Allegheny Avenues, from the river to I-95.

Harris Steinberg, adjunct assistant professor in the School of Design and the director of Penn Praxis, says “the traditional development patterns in Philadelphia which have been negotiated, are on a parcel-by-parcel basis and have not had any sort of comprehensive plan behind them.” So the Penn Praxis report represents the first comprehensive plan for the city in nearly three decades.

In July of 2006, Councilman Frank DiCicco asked Penn Praxis to come up with a report on Philadelphia’s waterfront—on the condition that it was open to the public and transparent. Mayor Street signed an executive order authorizing the work, funding was provided by the William Penn Foundation and the report was released to a largely positive response last month.

“It was a big, open, sometimes contentious and ultimately rewarding process,” says Steinberg. “In the end, the vision has been extremely well-received.

Some in the development community are suspicious of some of the recommendations. It’s really a long-term conversation and it’s just the beginning.”

During the 15-month process, Steinberg and his Praxis team looked to New York, Chicago, Seattle, Barcelona, Rotterdam and other places to assess ways in which people balance ecological concerns with recreation, housing and entertainment.

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“Humans have always been attracted to fermented beverages, it seems.”

This is the earliest known use of cacao, dating to long before a drink made from the beans was served at special ceremonies and feasts of Mayan and Aztec kings. And McGovern, who has spent much of his career studying ancient food and drink, says this is an important finding. “My research suggests that these kinds of fermented beverage cultures were really right at the core of the development of human civilization.”

McGovern’s background is as unique as his field of choice. He was an English literature major who also studied brain research. He received a Ph.D. in Near Eastern Languages and Literature from Penn, and also got a fellowship in Penn’s radio-carbon lab for studying ancient food and beverages, McGovern says, allows him to enjoy both the sciences and humanities.

“I always had a lot of split interests about whether to go into the sciences or humanities,” he says. “As I was finishing work on my dissertation, I was also getting exposed to all these science-in-archaeology approaches. It has evolved into a highly interdisciplinary approach.”

Q: What were you looking for in the vessels uncovered in Honduras?
A: What we’re specifically interested in these very early vessels is to see if there are any additional additives to the cacao drink. The hypothesis was that the importance of fermentation and the use of yeast at the cacao tree was, at first, people were attracted to the very sweet fruit or pulp that surrounds the bean, which is about 10 percent sugar. You can make a fermented beverage from this, and they still do in parts of Latin America today. It comes out to be about 5 percent alcohol.

In the earliest stages, they wouldn’t have started adding all of these exotic ingredients that they do later on when they’re working with the bean. In order to offset the bitterness of the bean, they would use things like honey and spike it up a little bit using chili, and add different kinds of aromas and flavors by putting actual flowers into the bean beverage. Our analyses showed that there weren’t any additional additives to the Early Neolithic cultures, but in California, Washington and Oregon, where back in the 1960’s a few enterprising souls after prohibition started to plant grapes out in Napa Valley.

Q: And chocolate?
A: For the Americas, chocolate plays an extremely important role with the Mayans and the Aztecs. It was the prerogative of the king to have lots of chocolate beverages. A cacao bean served as the currency. When Cortez came to the capital of Montezuma, he found out the storesrooms were piled high with something like a billion cacao beans. This was the standard of currency.

Q: Any idea how this tasted? You mentioned it is still consumed today. Have you tried it?
A: I’d like to go down to areas that still produce the beverage made from the bean, with the additives like honey and chillies and so forth in Mexico, and taste it. We often try to recreate the beverage to find out more about how it was made and to find out if the ingredients really work as a beverage. You want to also try to make something that’s drinkable, too.

We did an analysis of a tomb in central Turkey that is possibly the tomb of King Midas and then had a competition of microbiologists to try to replicate this beverage. The brewery that turned out best in my estimation was a place down in Delaware—Dogfish Head. [With Dogfish Head] we decided to do a version of the chocolate bean drink—the later drink, the drink of the Aztecs. What we did in this first trial run is to take some very fine dark chocolate from an area close to Honduras in southern Mexico and then mix it with some corn or maize, honey, and chili—a rather mild chili—and then an herb called achote, which gives a very intense red color to the beverage. The Aztecs actually equated the chocolate drink with blood. Right now, that’s fermenting, so we wanted to find out if it’s the first time that this kind of beverage has been prepared in the United States.

Q: These beverages led to the domestication of these plants—and eventually to chocolate. How did that happen?
A: Some people argue that the original domestication could have occurred in northern South America. Other people argue for Central America—especially the area where the site is located in Honduras. What does seem to be clear is that the Central American people really focused in on the beverage, especially when they started making it from the bean. … The ancients and Mayans didn’t just drink it, but they had special tools to ferment it, or they would pour it from one vessel to another and create a head and foam on top of the beverage.

If the Central American people are very interested in these beverages, and they seem so, more than South Americans, the argument would be that the ones that had the most to gain from domesticating

Q: How do you think your study of ancient beverages can illuminate the lives and practices of past cultures?
A: It shows us that humans are very attracted to high-sugar foods. We begin with, but in addition, it’s attuned to what’s happening in their brains, to mind altering substances that might open up a better understanding of what’s going on. They’re living in environments that are pretty challenging. The average age of death might be only 30 or 35. You’re going to look very carefully in your environment for anything that’s likely to help you to be more healthy, to cure disease, but also to perhaps gain an understanding of how this world is operating. People who were drinking fermented beverages tended to live longer and reproduce more.

In addition, the fermentation process itself seems otherworldly, because you see the bubbling of the carbon dioxide as the yeasts are working. When you drink the beverage you get some mind-altering effects. A lot of people have the same issues as a means to contact the gods who are basically controlling our destiny.

We’ve started to see how a lot of these herbs and spices that we detect in these ancient beverages also played a very important role in the primitive medical practice that existed. This is a practice that existed at Greek and Roman medicine—hippopocrates and so forth—they mainly talk about the advantages of wine in fighting off different illnesses that got us thinking that we should explore that avenue more. We started this project with the Abramson Cancer Center to test some ancient compounds for anticancer drugs.

Q: What compounds are you testing?
A: We’re very interested in a plant that we identified in our ancient Chinese beverage [Chaulian Jahu] that goes back to 7,000 B.C. Wormwood species … are some of the most bitter compounds known. We found out that people have already detected some anti-cancer effects and also it’s very good as an immuno- stimulant. There’s a set of compounds called terpenoids which we’re going to explore.

There’s quite a number of other types of plants that we could look at.