

# Dr. Jonathan Greer, Archaeology and the Old Testament, Session 2, Archaeological Methods

© 2024 Jonathan Greer and Ted Hildebrandt

This is Dr. Jonathan Greer in his teaching on archeology in the Old Testament. This is session 2, Archeological Methods.

Hello again. We're going to talk in this lecture about archeological methods. And before we actually put a shovel in the dirt, we need to remember, we need to zoom back out and remember the big picture of where we are, the geography of the land. Now, this is an entirely self-contained sub-discipline that we could do an entire lecture series on the practice of historical geography that involves philology, geography proper, hydrology, and understanding landscapes.

And so, we're only going to dip our foot into it with the big picture of why ancient Israel is in this land. So, if we think about Civilizations 101, you may remember this from junior high. You will have learned about river cultures and the rise of civilization in approximately 3000 BC.

And this took place in the ancient Near East in two places, in Egypt and in the Mesopotamian Valley. There's a third river culture, the Harappan Valley, that gave rise to the Eastern civilizations that stands outside of our scope. But for the Southern Levant, the two primary epicenters of river cultures are Egypt and Mesopotamia.

And the beauty of a river culture is that you can grow more food than you can eat. So, if you've got a surplus of food, that can be converted into power through two main mechanisms. So, one is you can trade your additional food for resources.

You can move toward a specialized economy if you can feed certain people and they don't have to spend their time gathering food. Or you can, on the violent end of things, feed an army to go steal things from other people. So, this is a reason that these river cultures have long histories.

So both Egypt and Mesopotamia, that's where we have our first evidence in these regions of civilization. And then they rise and fall many times throughout the big history of the land. We also have two natural geographic features that funnel any traffic between these river cultures.

And that would be the Eastern Desert, the Syrian Desert on the east, and the Mediterranean Sea on the west. So, this region has appropriately been dubbed by Jim Monson and many who follow him at Jerusalem University College as the land between, the land between. And I love that designation because it reminds us it's the

land between the superpowers, but it's also the land between the desert and the sea.

And so, the history that plays out in the Bible, the big picture is dictated, if we look at kind of the long duration of history, we see this ebb and flow of traffic that runs through this land between. We also call this region the Levant, but that, some will say, betrays a Western perspective. The Levant from rising, the rising of the sun is only the perspective from the east.

Others will speak of it in geological terms, as far as the plates and such, as Syria and Palestine. But in this land, the events of the Bible play out. So, you can see I've drawn arrows there that indicate we have lots of conflict in these lands.

That reminds us when we encounter these superpowers in the biblical story, the main reason that they are interested in these lands is related to these power dynamics, to expanding their influence, and ultimately to dominating these routes of trade and commerce. Because if you control the tollbooths and the hotels, you can make all the money of folks traveling through. So that's the big picture of the geography of the ancient Near East as it pertains to our story.

And then, within the land of the biblical lands, now Israel, Palestine, Jordan, bits of Lebanon, and Egypt, we have longitudinal zones. We have a coastal plain; we have central hill country, and in between them, in the south, a little buffer zone of low rolling hills of the Shephelah. And then we drop down to the Great Rift Valley, the Jordan Valley, and then up onto the Transjordanian Plateau.

We also see differences in climate and weather as we move from north to south. Generally, much more rainfall in the north and much less in the south the Negev that gets zero to two inches of rain per year. And every January is one of the annual trips that my wife and I lead.

We joke that we've been there often on the one day where all two of those inches fall at the very same time in January in the Negev. But when we look at geography, we notice that there are points of conflict between these empires, and they leave residue in the fact of destruction. We also have earthquakes.

We also have natural abandonments over time. These provide much of the locations where we will excavate and look for the material remains of humankind's past. So, what do we do in the field? What do we do in the field? Well, the first thing is to engage in regional surveys.

And there have been decades-long surveys that have taken place in biblical lands that basically walk through the entire land and pick up pottery from the surface. Not digging. Sometimes, they'll do just a single shovel.

That's all that's allowed, a shovel test pit. But just going over the surface of the land, this geography that we've talked about, and gathering pottery shards, bits of pottery. And we'll learn in a few bullet points here that pottery is our best indicator of relative dating because pottery changes in style over time.

So, by assessing the time period of the bits of pottery that are scattered on the surface of ancient sites, we can get some idea of when this site was occupied in the long history of time. Now, it sounds kind of funny, right, that how pottery makes its way up to the surface from each layer of civilization? But we find that much survey data, when we do, in fact, dig into the remains of the ancient town, we find very much that the surface pottery does represent, not in any kind of percentage of how long or how intense the occupation is, but it can give us a general sense of if there were people there in the late Bronze Age or the Iron Age or the Byzantine period, et cetera.

So, surface surveys have taken place over the past few decades in much of the land and can indicate when we have rises and falls in numbers of settlements. So, it says nothing of the intensity of settlement at the site, but it has a lot to say about comparing Iron Age sites to late Bronze Age sites. So, this will become important later in our discussion.

But it's the first step in kind of identifying where sites are and which sites are occupied in which period. We can take that then to the next step, which is site identification. This is the realm of historical geography proper that will take the Bible and other ancient records, such as Eusebius' Onomasticon, a list of place names from much later in time that can give some indication of the relative location of sites one to another at the time of writing.

We also have records from the superpowers that came in as far as orders of sites and their conquest lists, et cetera. Then we have rich biblical data, tribal boundaries, and administrative lists. Through this process and also identifying landmarks that are listed in these. And the very best, once in a while, such as at Tel Dan, you can get an inscription that actually mentions the name of the site that confirms the identification that you've pieced together through an analysis of ancient texts and geography.

Once a site is identified, and sometimes it's unidentified and we decide to dig anyway, we engage in tel excavation. Two L's in Hebrew and one L, sorry, one L in Hebrew and two L's in Arabic as we transliterate both into English. What is a tel? So, I've put together some very sophisticated animation for you to demonstrate what a tel is.

So, you can judge if I have a future that fails in biblical and if you've got an ancient city, and ancient cities in antiquity were first chosen for their geographical location. So, they are always, you want to think about water. So, there are ancient sites that are far from waterways where water has to be drawn from afar or piped in in later periods.

But most of our settlements, the biggest and most enduring settlements, have their own water source nearby. That could be water that's a natural well or natural spring or a well, or we also have cisterns, big caverns that are hewed out of the limestone to collect rainwater that can be imbibed throughout the year. But we have a water source, and so ancient peoples will settle near that water source, and then roads will connect these ancient settlements.

So, think of this as an ancient settlement where we have a terrible fire. Now, this is a gentle illustration. Everybody got out, and they were all fine, but the whole city went up in flames, and it left this big destroyed ash pile.

Now, we think in modern terms that if that ever happened, we would maybe clear the entire location, dig a new foundation, and begin to rebuild. Well, in ancient times, they would never do that. First of all, they're not going to leave because the water's there and the road's there, so they're going to want this location.

And then timber and stone, you've got stone blocks that are already hewn, already carved. And wood is very, very rare in these lands. The best woods were to the north in Phoenicia, now Lebanon.

And so, they would reuse any timbers that they could, any blocks that they could, any materials. So, they build, literally out of the ashes, they rebuild another city in exactly the same place. Exactly the same place.

Now we're on, this could be several years later, it could be a decade later. And then, let's say that there's an earthquake. And again, everybody made it out just fine, everybody's fine, but the city is in ruins and it left now another destroyed layer right on top of that first layer.

And guess what? They build another city out of the remains of that destroyed city, still near the water, still near the road. And this one was just abandoned over time, and so the sands move in, the dirt deposits move in, maybe they're near a flood valley, things are washed away. And we have residue from this city that's been abandoned right on time.

And guess what? They build another city right in the same place, and guess what? This one is also destroyed by fire. Everyone made it out, but it's just fire because I

thought that was the coolest automation that is in the slide transitions. But now we have this effect of different layers of civilization upon civilization.

Ruined city upon ruined city. This is what we call a tell, an artificial mound that is representative of ruined city upon ruined city. Any travel in the ancient Near East, you will see these dotting the landscape.

They're very similar to landfills in the United States, but those are usually hidden behind trees. But here you can see these mounds throughout the ancient Near East. Now, how do we go about understanding and dating a tell? Well, the secret lies in the material artifacts that are associated with each destruction layer.

So here I've put little silhouettes of a bowl, a jug, and a bird's eye view of an oil lamp where they would put the wick out here, a little oil, and these were the lights of the ancient world. So, let's say in this first level the bowls look like this, the jugs look like that, and the oil lamps look like that. Well, then, in the next level, we can notice that there's a stylistic change in each of these vessels.

A modern example we might think of would be the Coca-Cola container. So in the 60s, you have these Coca-Cola bottles, glass bottles, and still used in certain parts of the world today, but brought back, recycled, and refilled with Coca-Cola. Then, in the 70s, they brought in this aluminum can that had these very dangerous pull tabs, very thick, hard sides, and then in the 80s, they moved to a thinner aluminum and then to a tapered top to a safer pull tab that didn't come all the way off.

And then, in the 90s, plastic bottles, and so you could dig in the ground and find a Coca-Cola container, and you very well could probably tell me the decade that this deposit was made because of the change in style of the Coca-Cola vessel. And then you have some complications, of course, because during Christmas time, they might bring back the traditional Coke bottles, and so on and so forth. A collector might keep a stash that then, if that's in a deposit it might get confusing.

We have those sorts of things in archaeology as well. But you get the idea. Over time, vessel style changes.

This can give us an idea of relative chronology—this change in vessel style. Now, how do we date the layers? So relative dating, we can say this level is before, is earlier in time than this level.

Simple superposition, a term we can borrow from geology that says the earlier stuff is deeper than the more recent stuff. But we know it's far from that simple. So, we all like the layer cake effect, and that gives you the idea of how this plays out.

But in reality, folks are digging trenches, foundations, graves. They're reusing material from later time periods and putting it in later layers. Or when they're digging a pit, they're putting that earlier material on top of more recent material.

In practice, it's far more complicated. But in general, we display relative chronology based on its depth in relation to other material. So that's relative dating.

Now for absolute dating, we have different methods that can try to put chronological anchors in particular layers, or the archaeological term is strata. So, a stratum is an individual layer of material, architectural remains and material remains from a particular time period. So, we can look at the various strata and try to peg chronological anchors to help put a date with our relative chronology.

Now, our best hard science anchor that's being used more and more in the archaeology of the Southern Levant is that of radiocarbon dating, which looks at the half-life of particular elements that are then calibrated against tree rings and going back in time to be able to peg in history years as we think of years. Now, even that, there's a lot of wiggle room that can be easily 50 to 75, if not more, range of error that has produced some great complications in one of the debates that rage in so-called biblical archaeology pertaining to the 10th century and the existence of a so-called united monarchy. So, we'll talk about that in the future, but radiocarbon dating and the more samples we have that can be plotted and clustered, we can get a better idea of the absolute date of each of these layers.

And then what we can do is compare the layers from one site to the layers from other sites. So, we can begin to combine this then with data that we've gathered from surface surveys and begin to reconstruct occupation during certain times. We can also trace trends of change in civilization.

Were there a lot of people, fewer people? Do we see population shifts? Can we connect these with historical military campaigns from foreign powers? So on and so forth. All of this, again, is incredibly complicated, but you get the idea of how one goes about asking these questions. Aside from hard scientific data, we can also use epigraphic remains and written remains when we have them.

So, in later periods, we can use coins that have the date. Well, they don't have the date, but the particular ruler that then we've reconstructed with chronologies to get back to a particular date based on king lists that we can coordinate. We also have Egyptian scarabs functioning, the shape of a beetle with an inscription on the bottom that will often mention a particular pharaoh.

These can be complicated, though, because they were kept around sometimes for generations. They're quite cool looking and exotic for someone from the Levant if they've been received secondarily. So, these can sometimes go on.

So, they can only help us in one direction of the dating. So, we have certain things that we can apply to try to peg absolute dates and coordinate that with our data for relative dating. So that's a bit on what a tell is and how we would date remains from that tell.

The next thing when we've got the tells is to begin to excavate down through the tell. Sometimes, this is done with a large trench here from Tell Rehov, where I was in 2007 as a volunteer. And you can see even within the trench, there are designations of different spaces.

You can see architectural features, a stone foundation. You can see evidence of mud brick architecture in the slide and different installations of stone. At the very bottom here in the Late Bronze Age level, we discovered a melting installation for metallurgy.

So, you can see the layers that coordinate to the different time periods. The Late Bronze Age remains here, Iron I and Iron II further up the slope. But in general, the way we begin on a piece of ground is to map out a 5 by 5-meter square and then to begin to slowly go down layer by layer, leaving a 1-meter bulk, which is a retaining wall essentially to define the squares.

But it also gives us some control on identifying the different stratigraphic layers, because archaeology is a destructive science. You're removing material, cataloging it, but you can't put it back just like you found it. So it's a destructive science.

Once you've removed that information, you can't go back. And so what becomes very important in excavation is recording, recording methods. So, as we go down layer by layer within these 5-meter squares, some people will do 10 by 10-meter squares.

There are different excavation techniques. But we go down very carefully. So sometimes, if there's a lot of topsoil from a modern agricultural activity, et cetera, we might go more quickly and use larger tools.

But as we get down into material remains, we go very carefully with our primary tool of the trowel, the mason's trowel, scraping as we go down just millimeters at a time, sweeping with brushes, and then with the soil that we've gathered, when it's done most carefully, this would be put through a screen or a sieve of different varying sizes to isolate any pottery fragments, any animal bone remains, or any objects, artifacts. We will also take some of that soil, put it in a bucket, add water, and organic material will float to the surface that then can be examined under a microscope to identify different plant species that were present. So, there are a number of other archaeological methods that we could apply at that time.

But it becomes very important to record everything that we dig up. So, this is done through the use of computers has greatly enhanced our recording techniques. From mapping structures even before we dig through ground penetrating radar, to identifying sites from the air through satellite imagery or aerial imagery from planes, to documenting when we usually would dig.

Traditionally, these were sketched, and the different strata were drawn by an artist. Now, we use high-resolution digital photography and even techniques in the realm of photogrammetry that will layer photographs with sketches that are pegged to GPS to map particular precise locations in space and time, both photographically and to link them spatially through GPS data, to create 3D models as you go down layer by layer. We will also use drones for local aerial footage to get a site-wise view.

So recording is very, very important. Some are even using video as we're engaging right now. As you're going down, you're getting a moving picture of the process.

So recording is very, very important. The next step is analysis of the stones, the bones, the pots, the material, and organic remains. As I've mentioned, this has become quite sophisticated in the application of hard sciences to botanical remains, zooarchaeological remains, DNA studies, and isotope studies.

We will also can then take particular artifacts or large groups of data and explore how these might take on meaning through an ethnographic lens based on the principle of analogy. If we find an artifact, what was that artifact used for? I'm often reminded of that scene from *The Little Mermaid* where the heroine collects different things from the surface, and she has a fork. And I forget what she calls it, but she twiddles her hair with the fork, thinking it was something for a beauty hair product of a fork.

But we all know that's not how you use a fork. So sometimes our guesses can be wrong. But what we do there, sometimes that can help us, is by looking at traditional societies today that many times use some of the same technologies that were present in the ancient world.

And these can be in terms of big picture structures, social structures, to particulars of how a certain kind of clay pot is made and fired. So, on the principle of analogy, this is sometimes called ethnoarchaeology. It can sometimes involve an experimental component.

As I mentioned, I work with animal bones. I have received whole animals and large chunks of meat from butchers, farmers, and hunters, and I can engage in certain butchering practices to see what cut marks are left on the bone or to compare particular cuts of meat to different iconographic representations of cuts of meat in



wall representations, and so on. So, there are many different tools at our disposal at the analysis phase.

The final phase, and in many ways, the most important phase and one that many of us in our field have a problem with, is the publication phase. And that all of this data that has been gathered by the archaeologists is only known by a few until that is published. Published in print or more and more published digitally and when it's done best, published digitally as open-source data so that folks can look and see what are the results that have been gathered from this massive amount of data and been synthesized by those most familiar with it in its context but then to make it freely available for the interpretive community of the world.

So, publication becomes an essential end part of the process. That's a little bit about the big picture, geography, and then zeroing in on what we actually do in the field. And then there's one more important piece that again could be just like historical geography, which we could do a whole lecture series on.

But here, just to mention it very briefly, another tool at our disposal when we're aiming to reconstruct the historical, cultural, and social worlds, the ancient world to read the biblical texts in that context is the incorporation of data from ancient Near Eastern texts and images. Ancient Near Eastern texts and images. So, this, just like archaeology, is a very recent endeavor because many of these languages have only been deciphered relatively recently.

So, if you think of Egyptian, you all are familiar I'm sure with the famous Rosetta Stone that includes two forms of Egyptian and one form of Greek and one of the forms of Egyptian, so one is Demotic, the cursive form, and the other is Egyptian hieroglyphs. Now hieroglyphic writing was lost in the first few centuries of our era. People stopped writing in hieroglyphic script.

And this language was lost to the world. Now, Greeks kept going, so by comparing the Greek, particularly the names in Greek, to names that were isolated in the Egyptians by the cartouche, by a circle, they were able to work backward using the spoken language of Coptic to help them with particular sounds and vocabulary to finally crack hieroglyphic script. When this was done, thousands and thousands of texts that were previously unreadable are now at the disposal of scholars across the world.

So, this only happened with Champollion in 1822. So, the Rosetta Stone was found by Napoleon and lost to the British in their conflict in Egypt in 1799, and then this race to decipher it, most would give credit to Champollion in 1822, though there are others involved. A few decades later, Sir Henry Rawlinson did the same with the Mesopotamian languages, dangling on a rope at the Behistun inscription and jotting

down and making a connection between Old Persian and the cuneiform script that's used for Akkadian.

And once the cuneiform script is cracked, then we have the Akkadian language, the Akkadian, whether it's Assyrian or Babylonian. Later, we have Hittite, which uses a cuneiform script, but it's a very different language, an Indo-European language, in fact. But now you have this explosion of huge archives, inscriptions on walls from the ancient world.

We also have images from Egyptian imagery from tombs and palaces. Likewise, Mesopotamian, this is all hand-in-hand with this explosion of archaeology in the middle of the 19th century. So, there's this rush and this explosion of data.

We could add to it. I've mentioned Hittite, but also Northwest Semitic, different Northwest Semitic languages and dialects. So Phoenician, Moabite, Hebrew, Aramaic, and Ugaritic use a cuneiform script, but it's an alphabetic language just to the north of ancient Israel with texts from the 13th century BC that mention figures like Baal and Asherah and engages with mythic motifs that we see interaction within the biblical texts. So, we have all of these texts, this flood of texts in the late 1800s and on into the early 1900s.

When we seek to engage the history, culture, and social structures of the ancient world, we have archaeology, but it's framed by discoveries in archaeological investigations, such as these inscriptions. So, we've now provided a brief introduction, and then in this lecture, we've talked about methodologies employed in our engagement of the ancient world. And now, we're going to turn to the story of ancient Israel in its context.

So, when we have these tools at our disposal, when we're looking with the archaeological lens in particular and understanding what the Bible is, what archaeology is, how do these things go together in our grid of the three C's of complementing, clarifying, and complicating? So, that's where we'll turn to next.

This is Dr. Jonathan Greer in his teaching on archeology in the Old Testament. This is session 2, Archeological Methods.