

Re: Copper Casting In America (Trevelyan)

Source: <http://sci.tech-archive.net/Archive/sci.archaeology/2004-06/2378.html>

From: Eric Stevens (*eric.stevens_at_sum.co.nz*)

Date: 06/26/04

Date: Sat, 26 Jun 2004 17:07:04 +1200

On Fri, 25 Jun 2004 19:24:15 -0500, Tom McDonald
<tmcdonald2672@charter.net> wrote:

>Eric Stevens wrote:

>

>> On Wed, 23 Jun 2004 23:46:01 -0500, Tom McDonald

>> <tmcdonald2672@charter.net> wrote:

>>

>>

>>>Eric Stevens wrote:

>>>

>>>

>>>>On Fri, 11 Jun 2004 22:57:04 GMT, ke4zv@bellsouth.net (Gary Coffman)

>>>>wrote:

>>>

>>><snip>

>>>

>>>>>Realize that casting is primarily a technique used for cheap mass

>>>>>produced items.

>>>>

>>>>

>>>>>With respect, that is nonsense. Casting is a technique which is used

>>>>>to make shapes and structures which cannot be easily made any other

>>>>>way.

>>>

>>>Eric,

>>>

>>> In the case of the copper artifacts in the upper Great Lakes

>>>area, all of the shapes and structures have been shown to have

>>>been made via cold and hot-working techniques.

>>

>>

>> This is not my understanding. Metallurgical examination has shown that

>> some of the artifacts have been cast.

>

>Eric,

>

> That could be. That's why I wrote the below.

sci.archaeology: Re: Copper Casting In America (Trevelyan)

>
> *My point here is that at least two researchers have done*
> *experiments using only cold and hot working, without casting,*
> *making all of the major types of artifacts found in the Great*
> *Lakes area. This is not to say that some might not have been*
> *cast. That's the issue. Contrary to what you write above, I*
> *have not yet completed my own look into whether some might have*
> *been cast. I'm not willing to take at face value reports of*
> *research the originals of which I haven't yet found.*

Fair enough. You may remember that some years ago I reported that I had tried to track down Mallery's papers (left to the Smithsonian on his death) to obtain copies of the originals upon which he relied, but all the papers seem to have vanished into a black hole. It might be worth another try.

>
>>
>>
>>>(Note that I am
>>>not saying that all the copper artifacts were so made; only that
>>>casting was not necessary.)
>>
>>
>> *That seems to be a different topic. Are you saying that even if they*
>> *were found to be cast, it wasn't necessary for them to be cast?*
>
> *It's the same topic. I was trying to avoid just this confusion*
> *by stating frankly that the research I mentioned does not rule*
> *out casting. And to your question, yes. I'm saying that it*
> *seems to me at this point that both casting and smithing could*
> *have produced the tools we find.*

Only if your assessment is based on simplistic visual examination. Appropriate metallurgical tests are unambiguous.

>*The issue is whether both*
> *techniques were used, and if so over what time period and what*
> *places within the region.*
>
>>
>>
>>>*As for whether certain types of*
>>>*tools and ornaments might be more easily made by casting, this*
>>>*is only true if the technology for casting has been developed.*
>>>*That is what is at issue.*
>>
>>
>> *I think you and I are approaching the question from opposite ends. You*
>> *seem to be saying that no artifacts can have been cast, in the absence*
>> *of direct evidence for casting techniques. I am saying that cast*
>> *artifacts are evidence for the existence of casting techniques, even*

sci.archaeology: Re: Copper Casting In America (Trevelyan)

>> *if direct evidence for such techniques is not known.*
>
> *You mistake my meaning. I am saying that casting and smithing*
>*both could have been used. If there are artifacts that were*
>*cast, then that fact should inform future archaeological work.*
>
> *I'm not sure that you know this, but the main copper–using*
>*cultures of the upper Great Lakes areas are very poorly*
>*represented by habitation sites. In Wisconsin and the UP of*
>*Michigan, there are only a few such sites that have been found*
>*and studied from this period (Late Archaic to the transition to*
>*Early Woodland—ca. 3–4000 to ca. 100 BC).*
>
> *There are a great many sites with copper artifacts, but they*
>*are mostly either surface finds, or are in mortuary contexts;*
>*not where the ancient smiths/foundryfolk might have been*
>*expected to ply their trades*
>
> *I am less sanguine than you that old reports for which we have*
>*only second–hand sources, and for which we don't know the*
>*caveats and limitations of the researchers, can be accepted*
>*uncritically in the face of nearly unanimous statement from*
>*those who have studied the copper artifacts intensively that*
>*they haven't found convincing evidence of casting. However, I*
>*take offense at the suggestion that I've ruled out casting when*
>*I am actually looking into the issue with an open mind.*

I didn't say, or even imply, that you have unconditionally ruled out the possibility of cast artifacts.

>
>>
>>>>
>>>>>*It allows relatively low skilled workers to produce*
>>>>>*large numbers of relatively complex identical items.*
>>>>
>>>>
>>>>>*You do them a disservice to describe them as "low skilled". The work*
>>>>>*is difficult and dangerous, and it took centuries to develop the*
>>>>>*techniques.*
>>>>
>>>> *Yes, especially wrt copper (see Gary's discussion of copper*
>>>>*casting problems below). So far as I can see at this point,*
>>>>*there isn't good evidence for such a period of development in*
>>>>*the archaeological record.*
>>>>
>>>> *OTOH, at least for the Old Copper and Red Ochre complexes in*
>>>>*the Upper Great Lakes region, there don't seem to be many*
>>>>*well–documented sites from that period (ca. 3000–1000 BC); and*
>>>>*stratified sites are even more rare. Most of the copper*
>>>>*artifacts were surface finds, and many came from collectors*
>>>>*whose documentation of their finds generally ranged from fair to*

>>>*non-existent.*

>>>

>>>

>>>>

>>>>>*Cold working is*

>>>>>>*a much more challenging, and artistically unique, way to produce*

>>>>>>*intricate copper ceremonial items. The smith has to have a higher*

>>>>>>*level of skill than the foundryman to produce equally complex work.*

>>>>

>>>>

>>>>>*Which is why the people who know how to melt and cast copper use that*

>>>>>>*technique rather than straight smith-work.*

>>>>

>>>> *Again, I don't know that that is true wrt copper, given the*

>>>>>*difficulty the technique appears to have in creating strong,*

>>>>>>*high-quality results. OTOH, cold and hot working were known by*

>>>>>>>*the Native peoples in the Great Lakes area to produce that very*

>>>>>>>>*strong, high-quality result.*

>>>>

>>>><snip>

>>>>

>>>>>>>*But that said, casting pure copper is a bitch.*

>>>>>

>>>>>

>>>>>>>*This from the guy who has just written that the task can be undertaken*

>>>>>>>>*by low-skilled workers?*

>>>>>

>>>>> *Eric, I read that to mean that casting, in general (as with*

>>>>>>*iron, silver, bronze, gold, etc.) can be done by folks with*

>>>>>>>*fewer skills than smiths. However, copper appears to present*

>>>>>>>>*particular problems with casting that are not so pronounced with*

>>>>>>>>>*other metals, and which require higher skill levels than would*

>>>>>>>>>>*be required by those who cast other metals.*

>>>>

>>>>

>>>>> *I don't read 'low skilled' as meaning 'lower skilled'.*

>>>>>

>

> *Read it again. No mention of 'low skilled'.*

Gary Coffman originally wrote of casting "It allows relatively low skilled workers to produce ... " and it was to this which I originally responded. My point was that casting is not a low skilled technique.

>*Merely that a*

>*smith needs 'higher level of skill' than a foundryman. A*

>*neurosurgeon may need a 'higher level of skill' than a*

>*dermatologist. Does this make the dermatologist 'low skilled'?q*

But is the fundamental proposition correct, that a dermatologist is necessarily of lower skill than a neurosurgeon? My observation is that

while the disciplines are different, the skill levels are equally high in each.

>

>>

>>> *This should be taken into consideration along with the fact that Great Lakes copper, and drift copper, don't need to be smelted to use. In other areas, where smelting ore _is_ required, the technology for melting metal is a given; here, it isn't.*

>>

>>

>> *There is a difference between 'smelted' as in refining and 'melted' as for casting. I am not aware of evidence for the former in NA but there may be evidence for the latter in the form of cast artifacts.*

>

> *Of course smelting ore and melting for casting are different.*

> *However, if one needs and has the technology for smelting,*

> *melting for casting is not a technological leap. If one does*

> *not need to smelt ore, then melting it for casting requires that*

> *technological leap. The issue is whether that leap was made in*

> *this case.*

The discovery of either smelting or melting would initially be accidental. I could think of circumstances in which melting could still occur when working with pure meteoric copper.

> *If cast artifacts are found, then looking for*

> *evidence of the development of that technology would be a higher*

> *archaeological priority than it is now.*

I do not share your certainty. Cast artifacts do seem to have been found. I am not aware that the reports cited by Mallery have been followed up in any way. As far as I can tell, nobody has even followed them up for the purpose of showing that they were wrong or that Mallery has misinterpreted them. The whole subject seems to have been treated as a non-issue.

>

>>

>>

>>>>

>>>>> *Porosity is the enemy,*

>>>>> *even for modern copper founders. They charge a hefty premium for*

>>>>> *low porosity castings. Alloying the copper to make bronze improves*

>>>>> *matters *enormously*, and production of such alloys was a huge*

>>>>> *technological leap forward for the casting industry.*

>>>>>

>>>>> **If* the Native Americans of millenia past made the technological*

>>>>> *leap of producing bronze alloy, it would be a significant achievement*

>>>>> *(as it was when Old World artisans did it). But I've seen no evidence*

>>>>> *produced in this thread that the ancient Native Americans made*

>>>>> *such a technological leap forward.*

>>>>>

>>>>> *The artifacts described appear to all be relatively pure native copper.*

>>>>> *As such, the *intelligent* way of working the material would have*

>>>>> *been smithing rather than casting. So if the motive were to make*

>>>>> *ancient Native Americans appear stupid, then claiming that they*

>>>>> *used open casting techniques would be the method of choice to do*

>>>>> *so. Now ask yourself which side of the argument is making that*

>>>>> *claim.*

>>>>

>>>>

>>>> *Neither. The claim merely is that some copper items have been cast.*

>>>>

>>> *Eric, Yuri was making the claim that to say Indians of the*

>>> *Great Lakes area didn't cast copper was to express bigotry*

>>> *towards the First Nations of the area. Gary's argument flows*

>>>

>>> *from Yuri's standard 'mainstreamers are racists' rap, with its*

>>>

>>> *particular application in the cast vs. worked copper issue.*

>>>>

>>>> *I'm still agnostic, and am reading up on the archaeological*

>>>> *references I can find. If you, or other folks, have suggestions*

>>>> *for reading, I'm all eyes.*

>>>>

>>>> *BTW, I've just gotten Mallery's book (the 1979 version, revised*

>>>> *and extended by Mary Roberts Harrison). I've only skimmed a bit*

>>>> *of it, so I don't have an informed opinion on it yet. Will advise.*

>>>>

>>>>

>>> *Very much the curate's egg.*

>>>

>>> *I'm not familiar with that. Will you explain for me?*

>>>

A 19th century 'Punch' cartoon. The very new curate is having breakfast with his bishop and finds the boiled egg he has been served is rotten. The curate lacks the courage to complain about the bishop's breakfast fodder but the expression on his face alerts the bishop to the fact that all is not well. The bishop then asks '... and how is your egg?' The curate still too nervous to say the egg is rotten replies "Parts of it are excellent, my lord". That last is the comment I applied to Mallery's book.

Eric Stevens