The Mayan empire existed in South America long before Columbus discovered the Americas. In fact they had pyramids that rivalled the ancient Egyptians.

When the ruins were first discovered the had lost their covering of plaster. In fact all of these buildings were once covered with brilliant white plaster. It is now thought that a major reason that this empire went down was due to a major environmental disaster caused by the loss of trees and accompanied climate change. Let's see how this occurred:

Making plaster by making cement from limestone:

Limestone is just CaCO$_3$ and can used to make quicklime, CaO by the following reaction:

$$\text{CaCO}_3(s) + 175 \text{kJ} \rightleftharpoons \text{CaO}(s) + \text{CO}_2(g)$$

30.

a) Should high temperature or low temperature be used to get the greatest yield?

b) Should high or low pressure be used to get the highest yield of CaO? How would you do this in real life?
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\[ \text{Low Pressure} \rightarrow \text{products} \]

\[ \text{High Pressure} \rightarrow \text{products} \]

So how did the production of quicklime lead to the downfall of the Mayan empire?

Answer:

All public building had to be covered in plaster (a dazzling white color) in order to be pleasing to their gods. Soon all building had to be covered in plaster. This resulted in a major need for wood to heat the limestone, which led to deforestation, loss of habitat, climate change and major reduction of food production and eventual starvation and of course population decline.

Sounds familiar?