The Stone Age did not end because we ran out of stones; we transitioned to better solutions. The same opportunity lies before us with energy efficiency and clean energy.

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Energy in Everyday Life

Conservation

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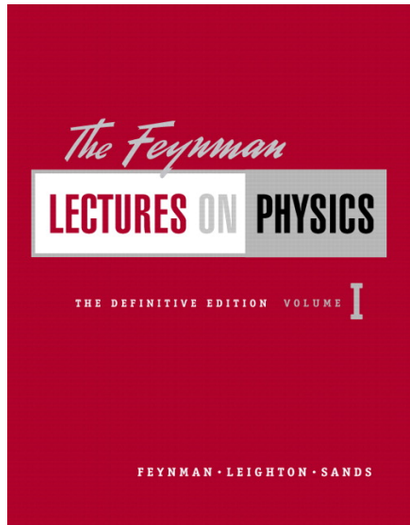
The word “conservation” is generally understood to mean to prevent wasteful use of a resource, to save, to protect. If we were speaking casually, we could use one of these meanings and each would know what the other meant.

“Conservation” has a different meaning when used in a technical sense - the total value of a quantity is a constant.

There is a fact, or if you wish, a law, governing all natural phenomena that are known to date. There is no known exception to this law - it is exact so far as we know.

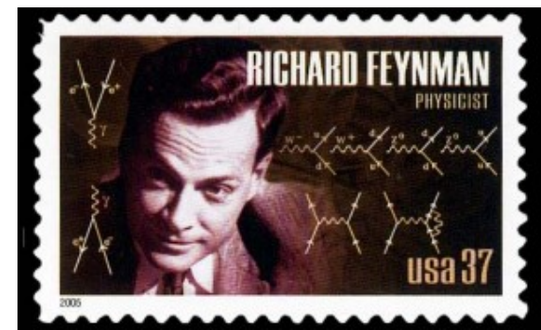
The law is called the conservation of energy.

It states that there is a certain quantity, which we call energy, that does not change within the manifold changes which nature undergoes.

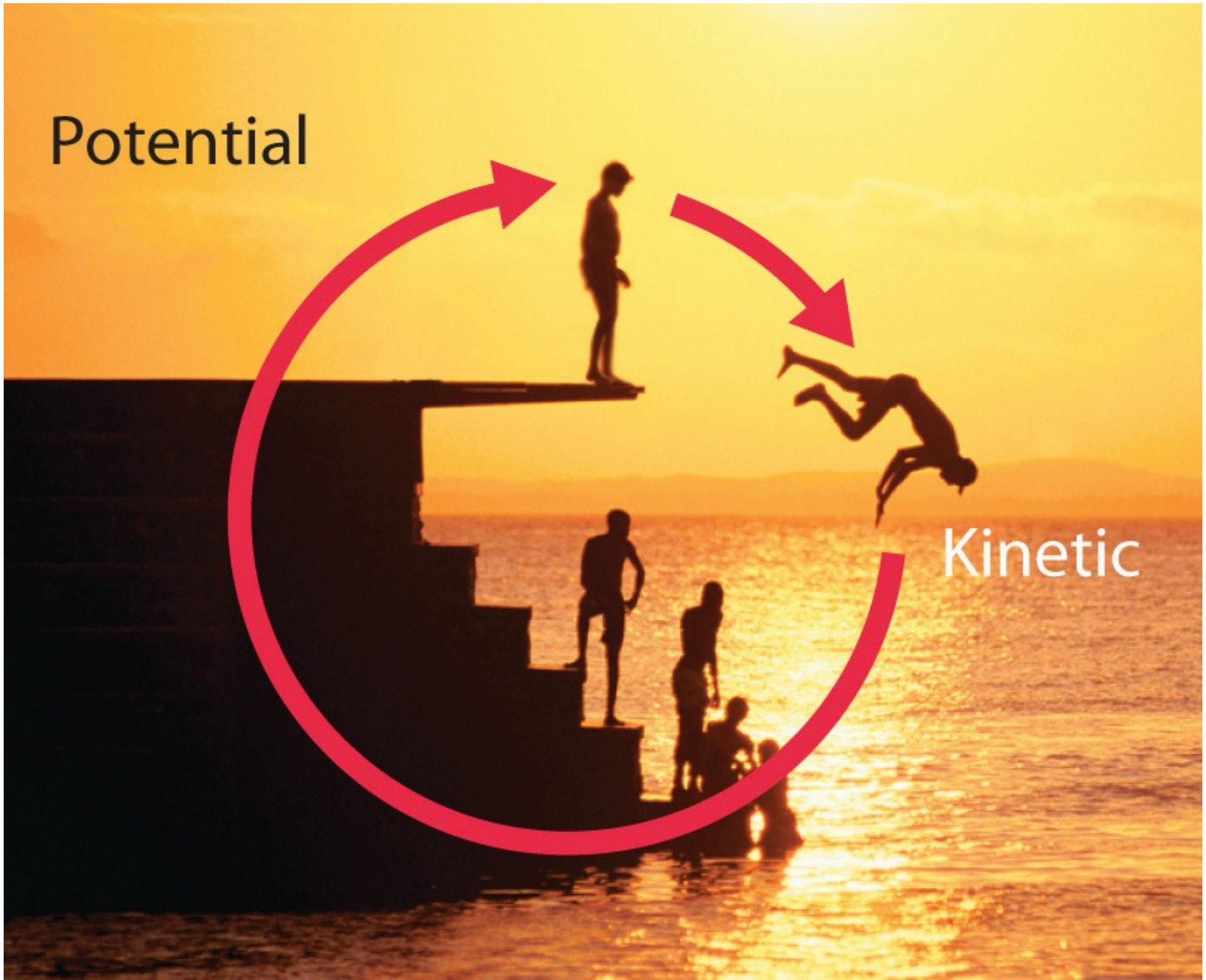


That is a most abstract idea! It says that there is a numerical quantity which does not change when something happens.

It is not a description of a mechanism, or anything concrete; it is just a strange fact that we can calculate some number and when we finish watching nature go through her tricks and calculate the number again, it is the same.



Energy is conserved; it cannot be created or destroyed. Objects have whatever energy they have now from exchanges of energy (work done) with other objects.



Why is energy conserved?!

Emmy Noether -
symmetry implies conservation