I want to first correct myself. I was wrong to say that covariance does not tell you the direction of the relationship. It does. A negative sign implies a negative relationship (like -ve correlation).  
  
The primary reason for using correlation(which is derived from the covariance) instead of covariance itself is because correlation is bounded between -1 and 1 and hence is more interpretable.

In terms of an example:

Our use case in the session was a good exhibition of this in practice. When plotting the covariance on the heat map provided us with numbers - as was called by one of you in the session “weird?”.  
  
The same relationship visualized and interpreted as correlation was more intuitive and understandable.

This is not to say that covariance is not useful. In fact we need to calculate the covariance in order to calculate correlation.