

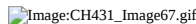
## 19.7: Work and Heat Have a Simple Molecular Interpretation

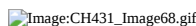
---

### Statistical interpretation

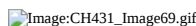
We can use what we know about the statistical side of thermodynamics to give a simple interpretation to a change  $dU$ :

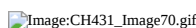
we see that because  $\delta w_{rev} = -PdV$





See also section 17-5 :In this section it is shown that we can manipulate the partition function to find the pressure of a system by calculating the above moment of the distribution. Again we take the derivative of the logarithm of the partition function  $Q$ , this time versus  $V$  and show that the result resembles the last equation pretty closely (apart from a factor  $k_B$ ). Thus we get:





***Once again we can find an important quantity of our system by manipulating the partition function  $Q$ .***

---

19.7: Work and Heat Have a Simple Molecular Interpretation is shared under a [CC BY-NC-SA 4.0](https://creativecommons.org/licenses/by-nc-sa/4.0/) license and was authored, remixed, and/or curated by LibreTexts.