

# THE ROAD TO HELL

KARL ZIPF

Carnegie-Mellon University  
Pittsburgh, Pennsylvania 15213

*In the course of their education, chemical engineers probably work enough homework problems to pave the road. The following question was assigned by S. L. Rosen to the New Alternative students this past summer.*

*Prove that Hell is isothermal.*

*This proof requires two assumptions, both probably pretty good:*

- a) *There are some capable engineers among the inhabitants.*
- b) *They are suffering as much as the other lost souls.*

*The expected answer involved the concept that a heat engine can always be run between two reservoirs at different temperatures. Therefore, if Hell were not isothermal, the engineers could build engines to run air conditioners, shovel coal into the fires, etc.*

*However, Karl Zipf's answer showed a good deal more originality. It follows here:*

**G**O TO HELL. Yes, this is probably the easiest way to prove whether Hell is isothermal or not. All one has to do is record some meaningful data. However, I shall try to prove or disprove it without undertaking the journey.

$$PV = nRT \quad (1)$$

One can use the above equation for the basis of the proof, but first the theological problem of how many moles to a soul must be solved. If the soul is a physically real item\* then it will have a molar mass. Thus over a period of time there should be an increase in the souls in Hell, and therefore, an increase in the number of moles in Hell. This assumption can be readily proven by the fact that the population has been increasing.

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\*There are indications that the soul is physically real and is a vapor.

A further assumption is that the ratio of good: bad has remained constant. However, some denominations believe that if one does not subscribe to their doctrine then one is going to Hell. These sects often mutually exclude each other and there could be the possibility that everyone is going to Hell. Regardless of the exact numbers involved it is apparent that the overall number of souls in Hell is on an increase. Since the population of Hell is parallel to the population of Earth, then the general trend in Hell can be seen as a rapidly increasing exponential population.

Lastly, it can be concluded that the volume of Hell has remained constant, since Hell has not manifested itself upon the Earth, contrary to popular belief.

Now let us review the two assumptions.

- 1) There is an increase in the number of the moles of souls in Hell.
- 2) The volume of Hell is constant.

Upon rewriting Eq. (1) :

$$\Delta \left( \frac{P}{T} \right) = \frac{\Delta nR}{V} \quad (2)$$

As one can see that as the moles of souls increase the  $\Delta P$  increases or  $\Delta T$  decreases. If the pressure increased, then there could eventually be an explosion, and then all Hell would break loose. Because this has not happened it can be assumed that the pressure is constant and that the temperature must decrease. Thus, Hell is not isothermal. Furthermore, the decrease in temperature supports Dante's observations, for according to his data the center of Hell is a frozen lake.  $\square$

FINIS

Karl Zipf

MCMLXXVI Anno Domini

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Karl Zipf is a single, male student in the Department of Chemical Engineering at CMU. He is finishing an M.S. thesis on Soil Stabilization with Professor Rosen this semester. He is 24. Karl has a B.S. in Biology from Lehigh University and is one of our second year New Alternative graduates.

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