

## Re: [PO] Re: Can a regular Turing Machine provide Protected Memory?

**Source:** <http://sci.tech-archive.net/Archive/sci.logic/2004-08/3712.html>

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**From:** Owen Jacobson ([angstrom\\_at\\_lionsanctuary.net](mailto:angstrom_at_lionsanctuary.net))

**Date:** 08/30/04

Date: Mon, 30 Aug 2004 07:41:46 GMT

On Sun, 29 Aug 2004 13:34:44 +0000, Peter Olcott wrote:

> *"Simon G Best" <s.g.best@btopenworld.com> wrote:*  
>  
>> *Peter Olcott wrote:*  
>>  
>>> *"Simon G Best" <s.g.best@btopenworld.com> wrote:*  
>>>  
>>> *I still don't see how this is other than one condition that causes*  
>>> *failure, such that the absence of this condition still permits*  
>>> *success.*  
>>>  
>>> *It doesn't /cause/ failure. Halts behaves /exactly/ the same under*  
>>> */both/ conditions (one condition being where it's being used within*  
>>> *another TM, and the other condition being where it's used on its own).*  
>>>  
>> *I have already addressed this issue to you again in the preceding post. I*  
> *have already shown that this is not true. Whenever Halts detects that it*  
> *is run inside of another TM, it simply halts. If the UTM that is running*  
> *Halt reports that there is a state transition out of the final state of*  
> *Halt, then it knows that another TM has invoked it.*

The ability of the machine to examine the properties of that machine is not universal to all Turing machines.

Therefore, if your "augmented" UTM truly is Turing-equivalent, we must be able to simulate your UTM on another UTM that does not provide the capability to examine states and must necessarily run identically when this happens. From that statement, we can construct a Turing machine that contradicts whatever Halts reports about that machine (already proven and belaboured elsewhere).

The only other conclusion we can derive is that your "augmented" "UTM" \*cannot\* be correctly run on another UTM. (There is no third option -- either it can be run correctly on a UTM, or it can't.) Therefore, if we were to accept that your augmented model could

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correctly analyze Turing machines, we would of necessity also have to accept that your model of comput