

## Re: String langscapes and vacuum decay

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- *From:* "tadchem" <[thomas.davidson@xxxxxxx](mailto:thomas.davidson@xxxxxxx)>
  - *Date:* 26 Dec 2005 03:50:22 -0800
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Russell Wallace wrote:

> Leonard Susskind writes:

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> " Is it possible to test the landscape idea through observation?"

Observation is the only way to physically test *\*any\** idea. We call this concept 'empiricism.'

- > One idea is to look for signs that space is negatively curved,
- > meaning the
- > geometry of space-time is saddle-shaped as opposed to flat or like
- > the surface of
- > a sphere.

In a large universe the apparent population of galaxies in a given angular sector of space will depend on their distance and the overall curvature of the space.

In a homogeneous 'flat' universe (no curvature) the number of galaxies in such a sector will increase in direct proportion to the square of the distance from the observer. This is a result of the so-called 'inverse square' law.

In a homogeneous 'spherical' universe (positive curvature) the number of galaxies is finite, and the apparent number of galaxies per angular sector at any given distance will not increase as fast as the square of the distance.

In a homogeneous 'hyperbolic' universe (negative curvature) the number of galaxies is infinite, and the apparent number of galaxies per angular sector at any given distance will increase faster than the square of the distance. In a sufficiently large universe this would manifest as an incredibly bright night sky (Google "Olber's Paradox").

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- *Follow-Ups:*
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- *References:*
  - ◆ *String langscapes and vacuum decay*
    - ◇ *From:* Russell Wallace
  
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