

Re: Article: On Scale and Complexity

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- *From:* "g" <gillawton@xxxxxxxxxxxxxx>
 - *Date:* Sun, 24 Jul 2005 21:19:50 -0400 (EDT)
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"Robert Karl Stonjek" <rstonjek@xxxxxxxxxxxxxx> wrote in message
[news:dbvc4v\\$N0r\\$1@xxxxxxxxxxxxxxxxxxxxxxxxxxxx](mailto:news:dbvc4v$N0r$1@xxxxxxxxxxxxxxxxxxxxxxxxxxxx)

> THEORETICAL BIOLOGY: ON SCALE AND COMPLEXITY

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> The following points are made by Neil D. Theise (Nature 2005 435:1165):

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> 1) Complexity theory, which describes emergent self-organization of

> complex

> adaptive systems, has gained a prominent position in many sciences. One

> powerful aspect of emergent self-organization is that scale matters. What

> appears to be a dynamic, ever changing organizational panoply at the scale

> of the interacting agents that comprise it, looks to be a single,

> functional

> entity from a higher scale. (snip)

> 2) Cells fulfill all the criteria necessary to be considered agents within

> a

> complex system: they exist in great numbers; their interactions involve

> homeostatic, negative feedback loops; and they respond to local

> environmental cues with limited stochasticity ("quenched disorder"). Like

> any group of interacting individuals fulfilling these criteria, they

> self-organize without external planning. What emerges is the structure and

> function of our tissues, organs and bodies.

Yes. And, to think about the fact that the earliest bilaterians known to
now

are those of only 100-200 microns width which existed 40-55 million years

prior to the Cambrian. Yet they had bilateral symmetry, (mouth, gut, anus),

endoderm, mesoderm, ectoderm and paired coeloms.

Not a very large scale, by some standards, yet a sufficient scale for all
that.

Wow.

> Full Text at ScienceWeek

> <http://scienceweek.com/2005/sw050729-3.htm>

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> Posted by

> Robert Karl Stonjek

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• **References:**

◆ **Article: On Scale and Complexity**

◇ *From:* Robert Karl Stonjek

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