

# Re: specialization momentum

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- *From:* "g" <[gillawton@xxxxxxxxxxxxxx](mailto:gillawton@xxxxxxxxxxxxxx)>
  - *Date:* Mon, 27 Jun 2005 01:44:11 -0400 (EDT)
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> If you wish, you may email me the Word document. But, if it  
> uses macros, I am not going to open it.  
>  
Okay, I'll copy and past as direct content. I hope the word wrap  
will not be horrendous. Here goes:

## The Concept of Momentum of Specialization

By Gil Lawton

June 25, 2005

(This is a tentative conceptual effort to arrive at some terminology whereby evolutionary biology can be discussed by author with others, and whereby others might translate what they mean on the subject into words author is sure have mutually understood meanings with regard to discussion of evolutionary biology. This is a formidable challenge. Renowned authors have done this, but others have muddied the water behind them to the point I need new terms for them. Nothing taken away from better authors, and renowned scholars.)

Nothing is more exhilarating for a concept surfer than catching a conceptual tall wave -- a synthesis of disparate facts and relationships and subordinable smaller concepts -- and riding on that big wave for a while. Such a concept is what might be termed "specialization momentum." The term momentum in this context is analogous to the same name term as applied in classical physics but, rather than expressing an interplay of variables of speed and distance, its actors involved in evolutionary biology are: time and specialization (including the medical biological term "differentiation."

No one who looks for and discerns patterns in all things he observes and thinks about can fail to appreciate that there seems to be an abundance of evidence of vertical linearity of specialization in plants and animals, over time. And I do not mean this as for organisms alone, but for specialized organs which develop in vertical parallel (in a sense, symbiotically) as a part of the organism in its entirety.

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Let me emphasize that this linearity is not only specie consistent but, also, organ consistent and homeostatically consistent. Let me take pains to explain, although some readers will already have the concept by this point. (It is not a coincidence that the word specie and the word special are similar, because they derive from a common concept.)

For a specific example, let the specie be modern h. sapiens, and the organ the eye. Linearity of evolution of the whole organism is one element. Linearity of evolution of the eye is another. The situational milieu changes, though one and the same for the whole organism, and for the differentiating organ, thus viewed, are different effective evolutionary filters, as one set impacts the one and not the other, in contemporaneous, yet separate selectivities.

Q — How can a single milieu have different impacts on different evolutionary units?

A — Each, as it develops in respect to what it is stimulated by, and responds to, in accordance with what it does best, is impacted constructively or destructively by the elements in the milieu that it is filtered by.

As situational filters change in a milieu in some ways and remain somewhat consistent over long periods for others, the overall body of successive progeny are impacted by different filters than the single organ, eye, are impacted by. To put this another way, observation informs us that a primordial eye does not — by virtue of being exposed to the exact same externality (milieu) in which the body lives — become more body-like; nor does the body — by virtue of being amidst the very same milieu — become more eye-like. Each of these, then, is a different actor. And each has what is tantamount to its own direction (linearity), its own rate of mutation and "yes and no" (that is, favorable and unfavorable) filters of the one progeny with the one mutation, and the other with another. Where as random chance may determine each (organism and sensory detection, interpretation and response triggers), ONCE THE DIRECTION HAS BEEN SET AS TO WHAT STIMULUS TYPE IT WILL SERVE, it seems reasonable to me is probably, the eye would "differentiate" in response toward profiting from mutations filtered in relation to that kind of stimulus (light, light intensity, color, near acuity, distance acuity... etc.). The overall organism, meanwhile would respond in some ways overall, it would seem, (filtered by advantages versus disadvantages of size, say), while the linearity of evolution of the other organs (totally retroactively opportunistic in the case of favored mutations) would have their mutations variously selected for in relation to their independent specialties (or differentationally selective rewards and punishments, as it were).

Thus is exemplified what might be called "specialization momentum." And a possible "law" might be ventured as being valid, which might say: The more a function differentiates into an organism or organ, the more specialized it

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becomes in being filtered by factors impacting its special usefulness and non-usefulness in its role play.

Obviously, I am not a fan of the expression "survival of the fittest" nor the term "altruistic gene," although I respect those who are able to make sense of these conceptional views. As best I can conceive of it, what is a "yes" filter in one scenario is a "no" filter in another. Anything starting in the direction of being in the direction of adding weight to a T. Rex might be advantageous, but to a bird it would be disadvantageous. And a common ancestor of both, if it were to have existed, would have split into two groups, we might well imagine, one for which the gene is productive and the other for which it is counter-productive, and therefore the question of whether that gene is a good one, or an altruistic one, is as much subject to the particular momentum (direction and rate of change within it) of the one, as quite different from the other.

Indeed, to say that an entire organism is specialized, most certainly is not a totally useless conceptualization, either. After all, the whole of each successive progeny organism had to succeed or fail to live and reproduce as an entirety that was, is, in a very real sense, greater than the sum of its disparate parts. So the organism had to, has to, succeed BOTH as an entirety, AND as a conglomeration of separately evolving parts, none of which could survive in solo, and none of which could succeed in absence of homeostatic cooperation, at every moment, with its cousin organs. Specialization momentum, thus, was/is at once both holistic and individualistic. And societal, political, economic, physical, psychological parallels can be imagined, where a system evolves both systemically and as a group of individuals being filtered in their morphology, behavior, and/or other characteristics simultaneously together and in parallel.

Laboratory experiments with gene manipulations in certain fast-reproducing species, such as certain fruit flies, has shown relationships between, say, a gene that will give rise to a pair of antennae normally, but if slightly altered will give rise to a pair of leg-like appendages. My interpretation of this is that antennae and legs may have split their functionalities more recently, evolutionarily, than did, say, ear and a heart (absurd, but exemplifying how remote some specializations can be from others).

As we know from one of Newton's laws, an object tends to maintain a constant direction and velocity unless acted upon by an outside force. We know that no object in the universe exists in isolation from a multitude of masses and energy influences external to itself, and tends to seek, with the entirety, equilibrium. Ultimate homogeneous universal randomization of all mass and energy) is cited by some theorists as being the inevitable downstream tendency called "entropy."

(My own intuition tells me that is not the ultimate fate of all matter and energy, and that it is the energy in the universe, also called "change" that

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sustains the existence of mass; and change is self-propagating. But that goes outside the pale of sbe.)

The mention of physics was only to demonstrate the analogy between the linearity involved in velocity as interaction between mass, time and direction, from the viewpoint of classical physics, and specialization momentum from the viewpoint of evolutionary biology.

There have been those who offer that there is some divine intervention involved in the fact that science has not created a new specie. If so, that is an element in physical momentum, as well. But science deals with things observable (even if indirectly possible) measurable (even if only indirectly and statistically) and testable (even if only the impact of a thing or a phenomenon we cannot see upon some other thing we can see being affected by it).

Q — Why spend this many words drawing a concept?

A — Once the concept is drawn and understood, it can be referred to in a sentence by two words: specialization momentum. And that sentence would contain other terms which can be given meaning only as the tip of a pyramid can be given its place — only after a base has been established, and a hierarchy of concepts build layer by layer.

What I wish I could share that sentence here, and have it understood; but were I to write it here, it would not be understood (without the full construction of what must be laid down previously, to qualify intended meanings of terms.) —end—

g

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- *Follow-Ups:*

- ◆ **Re: specialization momentum**

- ◇ *From:* Perplexed in Peoria

- *References:*

- ◆ **Re: specialization momentum**

- ◇ *From:* Perplexed in Peoria

- Prev by Date: **Re: The Anti Science Art Of Evasion**

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- Next by Date: ***Re: What is Life?***
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