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Evolution of Stories  
Dalke / Grobstein

**Evolution of the Internet:  
A Rhizomatic Application of Darwin**

Evolution is the process Charles Darwin described – the story he told – to explain the diversity of the planet. Evolution exists in nature as the interplay between linear natural selection and random events. This randomness necessitates a nonlinear model for exploring evolution as a whole, and as randomness is increasingly recognized as the dominant evolutionary force, “evolutionary schemas may be forced to abandon the old model of the tree and descent” (Deleuze 33). If we take a rhizome as an evolutionary model instead of a tree, this “connects any point to any other point” (Deleuze 35) and allows for nonlinear progression. Once the model for evolution is freed from its directed linear path, it can be applied to disciplines outside of biology.

The internet has evolved in much the same way as life on earth. Just as “all life on Earth... started with a single origin of life” (Mayr 21) and has grown increasingly complex, “the Internet grew from a single experimental network... to a globe-spanning system linking millions of computers” (Abbate 1). Both processes began with a single entity that turned into populations by increasing its complexity and diversity. While the “spreading out” of organisms on the planet is governed by the Second Law of

Thermodynamics, the parallel “spreading out” of information on the Internet is the result of a different kind of entropy.

As populations and diversity increase, entropy escalates: in the internet's infancy, there were so few users that there was limited cyber-interaction among them (Abbate 84), but as more users signed on and more documents became available, there was further interaction and thus accelerated evolution. The same kind of order / disorder, expansion / contraction binaries that drive the evolution of life on earth can be applied to the evolution of the internet. In life, these opposing pairs catalyze speciation. On the internet, they create the kind of categories used in directories to organize information and by browsers to recognize different types of documents (HTML, PHP, PDF, JPEG, etc.). Whether the evolution of life and of the internet is occurring as a process moving toward “perfection” is irrelevant: both systems are in transition, suspended in “continuous flux” (Mayr 7) in a race toward ever-increasing complexity and diversity.

Both of these parallel processes must be considered rhizomatically. Neither the internet nor life has progressed along a clear line. Alongside and around the “main” trajectory of evolution, there exists “aparaallel evolution” (Deleuze 33). For example, the cat and the baboon are each evolving, but their evolutionary paths probably will not overlap, even though they can be traced to the same origin. Similarly, web design standards are changing just as search engine technology is improving, but one does not directly affect or shape the other. This aparaallel evolution is part of what makes the rhizome such an important model for evolutionary analysis and understanding. Even though each hypertext document is written in a treelike structure (Berners-Lee 1), the Internet as a whole and the way web pages are linked and derived is more emblematic of a rhizome.

One key element of evolution is adaptation. In life, adaptation is “any property of an organism believed to add to its fitness” (Mayr 283). For example, around five million years ago, apes living in the tree savanna had to develop “bipedal locomotion” to survive (Mayr 241). The evolution of the internet offers many examples of adaptation since “systems and organizations have had to adapt to survive the relentless pace of technological change” (Abbate 4). In fact, the World Wide Web Consortium (W3C) was created to “help make the Web a robust, scalable, and adaptive infrastructure for a world of information” (Jacobs 2). The internet's expansion and wider user base necessitated an adaptation that would allow a more user-friendly interface, leading to the invention of the World Wide Web (Berners-Lee “Answers” 2). In addition, web standards are constantly adapting to assure the internet's continued relevancy and usability. The internet, like the world, “is not constant but is forever changing” (Mayr 7).

The presence of vestigial structures – characteristics that were once functional but are no longer – has been cited as evidence of adaptation and evolution (Mayr 30). The human appendix is one example of this phenomenon. The Internet is littered with vestigial structures, like the keyword meta tag. The keyword meta tag was once used to insert invisible keywords onto pages to help search engines index them. Now, search engines no longer support this feature, rendering it useless, yet countless webmasters continue to include this tag every time they code a page (Sullivan 1). Because the internet's rhizomatic growth makes it difficult to regulate, the proliferation of vestigial characteristics is difficult to curb. This regulation and move toward consistency is one of the main functions of the W3C, which often acts on the Internet as natural selection does in nature.

The evolutionary process is rhizomatic, with entropy and adaptations “ceaselessly establish[ing] connections between... chains” (Deleuze 30). In nature, the sequence of single cell, complex single cell, multi-cell is not a linear process of becoming “better-adapted.” Each of these organisms still exists, and all of the earth's organisms are continually evolving rhizomatically. Collapsing this multifaceted process into a linear model does not account for the web-like nature of environmental and taxonomic change. Additionally, the internet – being a “web” itself – evolves in much the same way. Its continued usefulness is reliant upon its continued evolution: “If the Internet is to continue as an innovative means of collaboration, discovery, and social interaction, it will need to draw on its legacy of adaptability” (Abbate 220). As both nature and the Internet progress toward something as yet undefined, the only plausible goal seems to be the process of evolution itself.

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