
Family Practice Forum

The Family Doctor as Cecidomyian Gall Midge

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For some time now, a question raised by educators in family practice and, more recently and more pointedly by non-family practice educators and accrediting bodies, is how there can be quality in training in a field which has increased at such a rapid and, to some, breakneck pace. Medicine, at least in its educational programs, does not change rapidly. It is traditional and tradition dies hard. Actually, no one is trying to kill it. Rather there are those who would have us accept the tortoise and hare analogy with family practice cast as the hare; and we all know who wins in the end. While many of us are quick to point out that family practice is a response to the combined needs of a physician-short city/state/country, and to the per-

sistent expressed demand by students in increasing numbers for programs to train family doctors, there still sits, quietly and naggingly in the lateral cingulate gyrus of each of us the thought, "could 'they' be right?" Is a shortage of either students or faculty the rate limiting factor of the quality of programs? How will we know when we have or are approaching "too many" or start to develop "bad" programs? These questions are real and need to be answered.

As I was muddling about with the above, the answer came in one of the essays of Stephen Jay Gould from his book, *Ever Since Darwin: Reflections in Natural History*.¹ In his essay on the cecidomyian gall midge entitled, "Organic Wisdom or Why Should a Fly Eat Its Mother from Inside?" Gould gives as the teleological truth that family practice training programs are expanding as rapidly as they are because they are supposed to. Actually, he uses the gall midge, a mushroom eating fly which has a peculiar dual reproductive sequence, to illustrate two major evolutionary strategies which apply themselves nicely to the world of modern medicine. The first reproductive sequence available to the gall midge is the rapid, asexual, parthenogenetic proliferation of larvae in

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the midst of abundant resources. In fact, there is such a compression of generations in the rush to reproduce that developing larvae eat their mothers for food while inside them even while the larvae's children are beginning to grow and think about eating *them*—a variation of the Russian box dolls, each having a smaller doll within it. This is known as r-selection and its evolutionary advantage is that it produces huge numbers of offspring which potentially can endure in the face of rapidly changing environments. Such a process does not lend itself to the gradual change often understood as evolution. Or more succinctly, Gould strategizes, "Reproduce like hell while you have the ephemeral resource, for it will not last long and some of your progeny must survive to find the next one."

The second evolutionary strategy is known as k-selection, which applies to populations living in an environment that is stable and close to saturation. Such populations, Gould says, "will gain nothing by producing hordes of poorly adjusted progeny. Better to raise a few finely tuned offspring." While the gall midges are r-strategists, human beings are examples of k-strategists—even in our more prolific moments, we can't match the midges' 20,000 per square foot in five weeks. Thus a survival strategy is the result of the interaction of a particular organism and its usual or ordinary environment.

When asked the perplexing question, "Why is there no proliferation of neurosurgical residency programs comparable to the proliferation of family practice programs?" one might, understanding evolutionary strategies, answer "because they are k-strategists." Conversely, the family practice movement seems to typify consummate r-strategy and fulfill Gould's definition of such a population. Family practice programs exist in an environment which, carefully stated, is very prone to extremes. Resources (read dollars) were very scarce for general practitioner training in the middle part of this century. In an evolutionary sense, resources became abundant in the 1960s and 1970s and, responding in a manner consistent with our procreational drives, we "reproduced like hell." The problem is that r-strategists live in wildly fluctuating environments and the feast-or-famine pendulum has given evidence over the past few years of swinging away from us and toward some other evanescent medical entity (primary care, physician distribution, preventive medicine, National

Health Insurance, for example). However, carrying our analogy further, the gall midge survives after resources dry up by reverting back to the slower, sexual reproduction, developing a pair of wings, and flying off in search of a new source of food. One lesson we might learn from this whole discussion is that we must have the flexibility to develop wings or we will be left stranded on a well-chewed and rapidly disappearing mushroom.

Social Darwinism has lent itself to many abuses and I do not intend this essay to add to the improper explanation of social phenomena by the application of biological principles. That was not what Gould (and most argue Darwin) intended. However, the evolutionary precedent of the two types of strategies is interesting in its relationship to what has happened and is happening to family practice residencies in this country. Inasmuch as the movement is composed of gadflies, social theorists, eccentrics, individualists, and many who turned to it more through instinct than through carefully reasoned choice, it remains an eclectic discipline. We are still producing generations of individuals who vary widely in their beliefs and their plans for the future. What we share is a common belief that care of patients is best done by a personal physician who knows an individual in context and who can care for a patient on those terms. In so far as we bow to the pressures to become k-strategists, "to produce a few finely tuned offspring," we will lose the most important adaptive strategy we have which is to be open to differences, sizes, shapes, philosophies, enough to discover the future when that future presents itself to us. K-strategists are not risk takers, they only change carefully and rationally. Family practice has never been such an entity, and to become so would diminish the potential we have for ever growing wings.

Reference

1. Gould SJ: *Ever Since Darwin: Reflections in Natural History*. New York, Norton, 1977