Viewpoint

Flocking

Arie de Geus

Arie de Geus is widely recognized as the *originator of the concept of the learning organization. During one phase of his long and distinguished career at the Royal Dutch/Shell Group, when he* was *serving as the firm's coordinator of planning, he and his colleagues undertook a broad investigation into a provocative question: why do some companies survive over several centuries, while so many more last only a few decades? And what lessons can we learn from the experience of those that achieve long and prosperous lives? He has captured the learning from this exploration, and from a lifetime of astute observation and reflection, in a wise and wonderful new book,* The Living Organization. *We are delighted to be able to offer our* Prism *readers the following excerpt.*

According to the *Concise Oxford Dictionary*, ecology is the branch of biology dealing with the relationships between organisms and their surroundings, including other organisms.

I first learned about ecology in organizations during a visit with Allan Wilson, a zoologist/biochemist based at the University of California at Berkeley. I had come to Wilson only by happenstance; Peter Schwartz, then the head of our scenario team at Group Planning, heard a reference to him during a trip to California. Peter thought that Wilson's work might complement our other investigations into accelerating learning.[1]

Wilson's work in evolutionary biology would gain him the MacArthur „genius" prize several years later, but at that time, we knew him only as someone who studied the way animals learned. He knew just as little about us. Indeed, he was bemused to find a trio of Royal Dutch/Shell planners knocking on his door one morning. Clearly, he was not used to business people showing an interest in his work – let alone managers from a multinational oil company. So we explained, as best we could, that we were trying to understand the nature of learning in large organizations like our own. We thought there might be a clue in the nature of learning among animals.

„Ah, well, then...," Professor Wilson said. He was not sure that his work was relevant to ours, but he was quite happy to tell us about the role of learning in the evolution of life. We then passed a fascinating couple of hours in which he told us, in much-simplified language, about the „genetic clock" embedded in the molecules of genes of all species. The molecules of genetic material, he said, change at a surprisingly constant rate in the evolution of organisms, even those whose anatomy is evolving at very different rates. Through biochemical analysis of genetic material, it was possible to measure each species for the number of genetic „ticks" that it had undergone to reach its current state. Although not all his colleagues subscribed to the idea, Allan Wilson was convinced that the genetic clock runs at the same rate in every living organism, even in bacteria. A species with more ticks of the genetic clock in its structure would have evolved further than a species with fewer ticks.

„Do you understand," Professor Wilson asked us, „that in this way it is possible to establish a table of all the species on earth, and see who would come out as the 'most evolved'?"

Yes, surely we understood.

„Well, then," he said, „you would not be surprised to hear which species was number one – the most evolved species on earth."

No, indeed, we would not be surprised. And, indeed, the most highly evolved was the human species.

„But what about number two?" asked Wilson. „Which species, genus, or family is the second most evolved?"

The Shell executives could not guess. It turned out, Wilson said, that number two in the evolutionary race, at least as highly evolved as the higher primates, were members of the bird family. Songbirds, in particular, show a high rate of anatomical evolution. „Isn't that surprising?" he asked.

Why would it be surprising?

„Because the common ancestor of all birds is, in evolutionary terms, a relative newcomer. Birds evolved out of the reptile family. They had little time to reach the evolutionary level where they are nowadays. It is especially surprising if we think of evolution in terms of a Darwinian battle of survival and selection through the generations."

Conventional natural selection theory, he told us, posited that the only changes occurred between generations, as successful individuals reproduced more frequently and the new generation carried forward the most successful genes. But that theory could not account for the songbirds. They had simply had too little time to evolve to their current number of ticks on the molecular clock. There had not been a sufficient number of generations. How come, then, during a given time scale, one species (like the songbirds) seemed to have evolved so much

further than others?

Could something else happen *during* the life of a generation that accelerated the evolution of that species? That question was the focus of Allan Wilson's current research. He had developed a hypothesis about „intergenerational learning" – that species behavior, rather than environmental change, was the major driving force for evolution. In other words, certain species evolved „faster," according to the ticks on the molecular clock, because they exhibited a particular type of behavior.

And what behavior did primates and songbirds share, to put them at the top of the table of evolved species? Wilson theorized that accelerated anatomical evolution took place in species with three particular characteristics:

• *Innovation.* Either as individuals or as a community, the species has the capacity (or at least the potential) to invent new behavior. They can develop skills that allow them to exploit their environment in new ways.

• *Social propagation.* There is an established process for transmission of a skill from the individual to the community as a whole – not genetically, but somehow through direct communication.

• *Mobility.* The individuals of the species have the ability to move around, and (more importantly) they actually use it! They flock or move in herds, rather than sitting in isolated territories.

The Titmouse and the Milk Bottle

To test this hypothesis, Wilson had turned to a well-documented case involving the British titmouse, a small songbird common in English gardens. The United Kingdom has a long-standing milk distribution system in which milkmen in small trucks bring the milk in bottles to the door of each country house. At the beginning of this century, these milk bottles had no top. Birds had easy access to the cream which settled in the top of the bottle. Two different species of British garden birds, the titmice and the red robins, learned to siphon up cream from the bottles and tap this new, rich food source.

This *innovation,* in itself, was already quite an achievement. But it also had an evolutionary effect. The cream was much richer than the usual food sources of these birds, and the two species underwent some adaptation of their digestive systems to cope with the unusual nutrients. This internal adaptation almost certainly took place through Darwinian selection.

Then, between the two world wars, the U.K. dairy distributors closed access to the food source by placing aluminum seals on the bottles. By the early 1950s, the entire titmouse population of the United Kingdom – about a million birds – had learned how to pierce the aluminum seals. Regaining access to this rich food source provided an important victory for the titmouse family as a whole; it gave them an advantage in the battle for survival. Conversely, the red robins, as a family, never regained access to the cream. Occasionally, an individual robin learns how to pierce the seals of the milk bottles, but the knowledge never passes to the rest of the species.

In short, the titmice went through an extraordinarily successful institutional learning process. The red robins failed, even though individual robins had been as innovative as individual titmice. Moreover, the difference could not be attributed to their ability to communicate. As songbirds, both the titmice and the red robins had the same wide range of means of communication: color, behavior, movements, and song. The explanation, said Professor Wilson, could be found only in the *social propagation* process: the way titmice spread their skill from one individual to members of the species as a whole.

In spring, the titmice live in couples until they have reared their young. By early summer, when the young titmice are flying and feeding on their own, we see the birds moving from garden to garden in flocks of eight to ten individuals. These flocks seem to remain intact, moving together around the countryside, and the period of *mobility* lasts for two to three months.

Red robins, by contrast, are territorial birds. A male robin will not allow another male to enter its territory.

When threatened, the robin sends a warning, as if to say, „Keep the hell out of here." In general, red robins tend to communicate with each other in an antagonistic manner, with fixed boundaries that they do not cross.

Birds that flock, said Allan Wilson, seem to learn faster. They increase their chances to survive and evolve more quickly.

Flocking in Organizations

Any organization with several hundred people is bound to have at least a couple of innovators. There are always people curious enough to poke their way into new discoveries, like the titmice finding their cream. However, keeping a few innovators on hand is not enough, in itself, for institutional learning. The organization must leave *space* for them, so that they do not feel squelched and their innovations have time to develop. (This is the purpose of such well-known innovations as the „skunkworks" of Lockheed Aircraft – spaces set aside for innovators to work without interference from the rest of the organization. It also raises deeper issues of control

and freedom, to which we will return at the end of this chapter.)

Even if you develop a high-caliber system of innovation, you will still not have institutional learning until you develop the ability to „flock." Flocking depends on two of Allan Wilson's key criteria for learning: *mobility* of people and some effective mechanism of *social transmission.*

Consider, for example, the most effective possible forms of training and development. Some managers see conventional training and development as merely an opportunity to acquire some new skills. However, if it is given the wider definition of „developing individuals up to their potential," then training and development become a powerful vehicle for institutionalizing learning. Over time, the capabilities of the organization as a whole increase, more than you would expect merely from summing together the increase in individuals' capabilities.

What qualities must this training have to be effective? First, it must encourage *mobility.* At Shell, for instance, executive development programs run parallel to a person's career. The organization spends about U.S. $2,400 per employee each year on education; half represents the pure cost of five to six days' training, and the other half consists of the trainees' salaries.[2] As always with training, whereas the costs are substantial and quantifiable, the results cannot be measured. But the intangible results are undeniable: Shell people know that, at every stage of their careers, they will be encouraged to move forward or to move into new endeavors or to bring themselves (and the company) new skills.

Even more significantly, most of the training they undergo is collaborative and related to real-world activities. Managers from all over the world meet in collaborative problem-solving exercises, so that the firm is constantly improving its own capabilities, even during „time-out" periods for education.

I have found it very important for teams of disparate people to undergo intensive training together at regular intervals. Apart from knowledge transfer, such an intensive training program brings together many groups of people, learners and trainers, all from the same corporation, but coming from very different cultural backgrounds and many different professional and academic disciplines. The flocking is intensive; course attendees nearly always tell you afterwards, „It was not so much what I learned in the official sessions, but what I picked up from my colleagues during the breaks that was important."

As with the titmouse's innovation, when it learned to siphon cream from English milk bottles, a well-designed program of development can have evolutionary effect. The innovation spreads rapidly through the organization, without being commanded to spread. Somehow, people just seem to know what to do. They gain and spread the knowledge because they have been given structures that encourage flocking.

Job Mobility

One question often pops up in debates among human relations and human resources managers: Should people be thoroughly trained to do a particular job and, once they have learned to do it more or less decently, left in place so that they provide a return on the investment of their training, or should we move people around in many jobs during their careers and let them accumulate experience?

Although the two approaches to job rotation are not necessarily in contradiction (one can move people around and still train them thoroughly for each job), the philosophy underlying each is quite different. The first approach is analytical; it sees the company as a combination of machines and labor, organized to produce the highest possible proceeds at minimum costs. The organization is positioned to gain the most value possible from its investment in the „asset" of „human capital."

The second approach sees the company as a self-perpetuating work community. Each employee has an ultimate potential, and it is in the company's interests to help the individual reach that potential. Thus, people move from job to job within the enterprise – in part so they accumulate the maximum experience available during a working life and in part so that, through „flocking," the organization gains from their experiences.

The military in many countries has long learned the advantages of mobility. Promotion by merit allows the creation of a top command level from a much wider recruitment base in the population. It considerably increases the chances of having a more capable officer corps. Today's general is not necessarily the son of yesterday's general. A lifelong emphasis on training – from officers' schools to continual learning for enlisted soldiers – is also a key component in achieving this end.

Social Propagation

Does mobility mean only that you move as an individual, from group to group? Or can it also involve groups and teams that move from situation to situation?

It probably means both.

Most innovative companies are run by teams. This is because teams have a higher capacity to learn than individuals. In fact, in most companies with a certain degree of complexity, most decisions are made by teams.

The capacity for a management team's learning is influenced by the way the team is defined. It should include all the people (directly or indirectly) who together have the power to act on their common interest. Ideally, a management team at any level of the company should include all people who are necessary for the implementation of that team's decisions. They should be able to work together on common problems, each with his or her individual contribution and technical specialty. This would be an ideal „flock."

Some companies facilitate flocking of their management teams; other companies have stronger territorial tendencies. They classify members by their specialty, skill, or mandate – production engineers in one „function," marketers in another. Then they appoint a management team of people from various functions and give each a specific written statement, spelling out in detail exactly what his or her assignment should be.

Each member is carefully instructed to avoid encroaching on the others' territories; marketing people do not oversee production, and production people steer clear of marketing concerns. Finance managers concern themselves with measurement and money handling and do not permit themselves to get involved in process concerns, while process managers ignore the imperatives of finance, except where they are given direct orders. Each red robin is allocated his or her territory in the corporate garden.

We should therefore not be surprised when these teams communicate as antagonistically as red robins, squabbling at the boundaries of their territories. The amount of institutional learning is limited.

As in bird species, the resulting social transmission will be different in a territorial company. Both the territorial and the flocking company may employ equally innovative individuals, but the chances that the innovative ideas will become company policy are much reduced in the territorial company.

A caveat, however, is necessary. Flocking is hard-wired into the titmouse species. Robins cannot be trained to flock; flocking is not part of their genetic makeup. Therefore, anyone who tries to apply this metaphor literally might be tempted to argue that companies, too, are genetically predetermined. Some cultures are like songbirds: they can learn to flock more easily because they have institutional learning bred into them, whereas other companies are more like mollusks. In that case, it's hardly worth trying, because the capacity for learning is innate and unchangeable... isn't it?

I doubt it. Surely, corporate life is not a Greek tragedy in which the outcome is hard-wired into the characters by the Olympian gods, and the play can climax only in its inevitable tragic ending. Human organizations have resources for evolution that songbirds do not. And, even if they have not participated in designing a company from its birth, many managers will find themselves in a position with influence on some part of the business. From there, they can begin to remodel the company's structures and policies in a way that facilitates flocking and improves the company's ability to learn.

Innovation and the Dilemma of Freedom

Many managers shrink from institutional learning. They fear flocking, and they are terrified of innovation. And they are quite right to feel this way. They are stuck on the horns of the age-old managerial dilemma between control and freedom.

Innovation and flocking require *organizational space* – freedom from control, from direction, and from punishment for failures. Experiments must take place with relative safety. Conversation must be free and candid, without fear of reprisal. Employee movements must be largely self-determined; no one can „command" a bird to flock in a certain direction, because the travel pattern of the flock emerges from its own movement.

This is terrain where many managers fear to tread. In many companies, creating space is seen by most managers as losing efficiency, or even losing cohesion. It is not a simple matter to decide, one Monday morning, „We are going to create an atmosphere of space in this company." Having made that decision, you lie awake at night. God knows what some idiot is doing this very moment, you think, in Malaysia or Chile or Sweden – or in your own office.

Because the worry is so agonizing, the average manager is inclined to err on the side of control. A restful night's sleep is a very compelling motive. In the process, however, the organization's ability to flock is compromised.

Just as a car buyer expects a new car to behave in a known and predictable way, a manager wants a company to produce predictable results and to give timely warnings when it is running on a dangerous course. Both car buyer and manager require an acceptable degree of control before they will entrust their lives (literally or metaphorically) to their new vehicle. This need for control is so fundamental that it has dominated management literature for 100 years. Books abound on financial control systems and on organizational theory for effective managerial control. The apogee came in the 1950s, with Taylorism, „scientific management," and the widespread adoption oftime-and-motion studies. Companies, these mixtures of people and capital assets, were

reduced to machines. Managers were reduced to being machinists. The search for total control, however, could not be sustained. The cost of maintaining a company without flocking and innovation, where every adaptation had to be ordered from the highest levels of the hierarchy, was too great.

Nowadays most managers recognize that cost. Almost everyone is in favor of decentralization and empowerment – in other words, for increasing freedom. But even today, few dare to risk the accompanying loss of control.

Most of those who dare will show their fears in a crisis. They will recentralize quickly, pulling power back into the center and into the top. After all, beneath the rhetoric about „empowerment," most managers trust themselves infinitely more than they trust anybody else.

They will have to live or die with the consequences.

This dilemma, as it happens, is very common in ecological matters. To behave with ecological concern often requires a leap of faith: that you will be better protected by harmony and flocking than you will by territoriality and force of will.

Ecology, after all, is itself a process of Piaget's learning through accommodation. Learning in ecosystems takes place constantly, as entities adapt themselves to new understandings, based on changing conditions in their environment. The entities that survive in a turbulent ecosystem are those that can adapt themselves to new understandings, based on changing conditions in their environment.

Thus, what qualities would position an entity well for this sort of learning? Would it be better to be strong and stalwart, to dominate a niche? Or would entities, like companies, do well to cultivate more modest, adaptive qualities, such as tolerance and an appreciation of internal space?

[1] *Jeff S. Wyles, Joseph G. Kimbel, and Allan C. Wilson, „Birds, Behavior and Anatomical Evolution,"* Proceedings of the National Academy of Sciences*, July 1993.*

[2] *From an interview with Bram Roza, head of Group Training, Royal Dutch/Shell, in the Dutch-language magazine Shell Venster, January/February 1994.*

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