

## LEADERSHIP AND ETHICS IN INTERCULTURAL ORGANISATIONS. THE RACE TO THE HUMAN GENOME

Antonio MARTURANO<sup>1</sup>

1. Prof., PhD, Swiss School of Management, Rome, Italy  
Corresponding author: marturano@btinternet.com

### INTRODUCTION

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Leadership and ethics have a quite interconnected life. Yet the crossing of those domains is often misunderstood. In the following I will try to describe how ethics is impacting on leadership in two different kinds of organizations working on the same business while having a different kind of organizational culture. I will start describing different levels of ethics, such a distinction is important to understand the ethical level we will be discussing in the following paragraph. Then, I will describe the way in which leadership is performed in these organisations – using as case studies the race to the human genome by the Celera Genomics and the Public Consortium – and embodied by their leaders. Finally, I will conclude that flatter and collaborative organisations are more likely to survive in a business competition on the basis of their moral sensibility.

### 1. ETHICAL LEVELS

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Ethics is a complex discipline that lies on different levels according to 1) the magnitude of individuals involved in the ethical deliberation and 2) whether we are referring to the common ethical sentiment in a community or a set of standards (often apparently utopian) which an individual or individuals believe to be the correct value that should be adopted in an (ideal) community. Regarding the latter we are talking about a quite known difference in philosophical literature between descriptive ethics (or morality) and prescriptive ethics (or ethics tout court). In the first case, we are talking about beliefs, norms

and values actually adopted in a particular society and which we are referring to without stating whether they are good or evil. Cannibalism, for example, is a normal practice among the Korowai tribe of south-eastern Papua New Guinea. By saying the Korowai people believe cannibalism is a good choice we are not endorsing cannibalism: we are just recording that Korowai people accept cannibalism as morally permissible<sup>1</sup>. When I say that cannibalism is something wrong (for a series of reasons) I am moving from a descriptive level to a prescriptive level. By saying “Cannibalism is wrong” I am endorsing that cannibalism is something evil and, for that, I ask if this should be a standard that the whole humanity should endorse.

When we place ourselves on a personal horizon – as for adopting a certain ethical rule involving myself and/or just another individual – we are talking about personal ethics. Such a level is quite personal and involves taking decisions which cannot pass other’s judgment as the resolution an individual choose involves a deep knowledge of the situation, a deep knowledge of the personality of all the few people involved that reflect a deep understanding of “being in other’s shoes”. Decisions about life and death – such as euthanasia, abortion and similar – fall in the range of this ethical level. While at the organizational level, ethical decisions involve an increased greatness of individuals: the depth of understanding needed for such deliberation is less than in the personal one, but responsibility is higher. People failing in their ethical deliberation at this level can go under scrutiny of other people and get sanctioned more legally than morally. Examples of ethical deliberations are dilemmas on resource allocations,

employment, and the similar. A good ethical deliberation at this level implies what is good for that organization as a whole (stakeholders and stockholders and all the individuals involved in an organization's life). At the community level, our horizon is the public welfare; ethical deliberations involve, therefore, the importance of individuals transcending even national boundaries. Again, those individuals (sometimes whole communities) that fail in their ethical deliberations are morally and often legally liable. The referendary instrument is often used for public choices. At this level, a community is engaged in a particular choice by public discussions through several media and the referendum are just the final formal moment through which that choice is made. An example of this ethical level is when different nations in Europe were asked to deliberate about adoption of nuclear plants in their country as a supply for power.

## **2. LEADERSHIP AND ETHICS**

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Leadership involves ethical engagement on several levels. Leadership is indeed an exercise of ethical deliberation. Leaders have to listen to their followers, be able to collect all the relevant information, be able to deliver a particular information to others (especially those who would not agree); to sum up, they need to excel in decision making and delivering them. Their ethical horizon may be at both organizational and collective level, their responsibility over decisions is very high. There is a vast literature over the relationships between ethics and leadership<sup>2</sup>.

## **3. THE RACE TO THE HUMAN GENOME PROJECT**

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The HGP was started in the mid-1980s in the USA as the project of constructing a "Genomic Centre". In 1988 the Human Genome Organisation (HUGO), an international scientific organisation for promoting a worldwide collaboration on the HGP, was conceived. The first proposal for studying the human genome within the European Union (EU) was the programme

"Preventive Medicine". (Although the work on that programme began in the same year, the EU programme itself was actuated by the European Parliament until 1990). The aim of the HGP was to use technologies of molecular biology to analyse the genetic structure of mankind; that is, to put systematically together genetic data (which are the basic units defining forms and functions of a human organism) and to speed up cartographic and systematisation processes of genes. The main competitor in the race were the US based private biotech company Celera Genomics led by Craig Venter and the Public Consortium, championed by the UK based Sanger Center, led by Nobel laureate Sir John Sulston.

While being an incumbent, Celera Genomic offered a new method for quickly sequencing the Human Genome which, at that time, was proceeding very slowly and which, at the same times, radically changed the way in which the Human Genome Project was conceptualised moving from a purely molecular biology project to a cross-disciplinary project involving computer science and making the new field of bioinformatics a reality. Celera Genomics, indeed, introduced a new technique for genome sequencing called the "Shotgun method". The Shotgun method is a mathematical algorithm - that is, computer software. The Shotgun method involves randomly sequencing tiny cloned sections of the genome, with no foreknowledge of where on a chromosome the section originally came from. The partial sequences obtained are then reassembled to a complete sequence by use of computers. The advantage of this method is that it eliminates the need for time-consuming mapping, as a result of increased computer speeds to solve such complicated algorithms (Trivedi, 2000). In fact, other methods of sequencing, such as BAC to BAC sequencing need to create a crude physical map of the whole genome before sequencing the DNA. In the BAC to BAC sequencing computers become important in the final step of the protocol, when the sequences collected in the so-called M13 libraries are fed into a computer program called PHRAP, that looks for common sequences that join two fragments together (Trivedi, 2000).

#### 4. ETHICAL-ORGANIZATIONAL ISSUES OF THE HUMAN GENOME PROJECT

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According to Vicedo (1992), one of the main problems arising at the beginning of the HGP was ensuring the coordination of the different tasks and the cooperation between all research groups. She points out: "Some regulatory guidelines could be established to secure the smooth functioning of the project, but the scientists concerned hold different views on this issue. J. Watson, for example, thinks that the groups will develop rules to co-ordinate their efforts as the investigations proceed. Other researchers, such as Walter Gilbert (Harvard), think that clear rules should provide all participating members access to the results. Others suggest that the need for groups to communicate to obtain mutual benefits will make them co-operate." Elke Jordan believes that the HGP's goals will be unattainable unless it is "built on teamwork, networking and collaboration." In his opinion, "This makes sharing and co-operation an ethical imperative." As Vicedo's remarks suggest, cooperation was a fundamental concern since the beginning of the HGP. One cause of concern arose due to the so-called emerging patenting-and-publish system between researchers and backed by the pharmaceutical and biotechnologies industries. This factor influenced the merging of scientific research with business interests.

This ethical problem is not directly related to the way biologists use the notion of information, nonetheless, this problem is related to data banks in which genetic results are stored<sup>3</sup>. The controversy between Celera and the public HGP consortium would provide an example. Indeed, according to HGP researcher John Sulston: "The Human Genome Project and Celera were not working toward a common goal, since only the former generated a public sequence. Like everyone else, Celera had free access to all our assembled sequence. But Celera also asked us for a personal transfer of individual nematode sequence reads. To comply would have been a major distraction from our [HGP] work" (Sulston quoted in Koerner, 2003). The paper Celera Genomics published in *Science* detailed the

results of data sequencing and how this data would be used by the academic community. The material transfer agreement stated that academic users would be able to download up to one megabase per week from the Celera Genomics Web site, subject to a nonredistribution clause; if academics wanted to download more data, they would have to get a signature from a senior member of their institution guaranteeing that the data would not be redistributed (Sulston and Ferry, 2002, p. 234). Members of the HGP community vigorously protested against this agreement. Michael Ashburner, a former reviewing editor for *Science*, led the protest. He explained that such a strategy would be problematic for the future of genetics, because, if the strategy employed by Celera Genomics was similarly adopted by other researchers in the field, "the data will fragment across many sites and today's ease of searching will have gone, and gone forever. Science will be the MUCH poorer, and progress in this field will inevitably be delayed" (Ashburner quoted in Moody, 2004, p. 112). Others felt outraged that one of the fundamental principles of scientific progress, the publication and free access of data, should be undermined by the way Celera Genomics wished to keep its data proprietary, so that the complete database (including volumes of data on genetic variability in humans and the genomes of animals critical to biomedical research) could be available for mining to any pharmaceutical company in exchange for money. Very importantly, in Venter's mind, "Celera would be the definitive source of genomic information in the world, in much the same way that Microsoft had early on made its DOS operating system the standard for personal computers" (Shreeve, 2004, p. 220). Sean Eddy of Washington University and Ewan Birney of the European Bioinformatics Institute claimed, "The genome community has established a clear principle that published genome data must be deposited in the international databases, that bioinformatics is fuelled by this principle, and that *Science* therefore, threatens to set a precedent that undermines bioinformatics research" (quoted in Moody, 2004, p. 112). Many genome researchers agreed with Eddy and Birney that *Science* had acted unethically by publishing the Celera Genomics paper, when

Celera Genomics had not entered its data in an international database. For genome researchers who objected to the proprietary practices of Celera Genomics, the open-source regime offered a welcome alternative, one that, not only provided ready access to scientific data and to the research methodology behind the data, but, also, one that would highlight “the importance of sharing materials, data and research rights, and requiring [a] fair global access” (Taylor, 2007).

After the successes of Celera Genomics, led by Craig Venter, it could be argued that the actual patenting strategy seems focused now on protecting the interest of the few corporations working in this field. According to Sulston: “The Human Genome Project and Celera were not working toward a common goal, since, only the former generated a public sequence. Like everyone else, Celera had free access to all our assembled sequence. But Celera also asked us for a personal transfer of individual nematode sequence reads. To comply would have been a major distraction from our work” (Koerner, 2003). According to Cukier (2003), before the draft of the genome was completed (helped along, controversially, by the private sector company Celera Genomics), the Human Genome Analysis Group at the Sanger Institute in Britain even contacted the father of the free software movement, Stallman (1994) to get advice. Soon, draft license agreements and implementation plans were circulated, followed by a round of legal reviews. A “click-wrap contract” was drawn up so that if a party improved a sequence by mixing the HGP’s public draft version with extra sequence data, they would be obliged to release it. “Protecting the sequence from someone taking it, refining it and then licensing it in a way that locked everyone in, was the primary objective,” says Hubbard (Cukier, 2003). Allowing patents in DNA is inconsistent with the old model of research in which one scientist is free to build on the work of another, because no one has any intellectual property (IP) rights in the earlier work that would preclude further development of the ideas in the work. But, assigning IP rights in DNA or sequences effectively precludes scientists who do not belong to the organization, hindering the patent from advancing with the work. There are a couple of ethical problems here

worth noting – the gift-economy model respects the expressive and speech rights of scientists. IP, thus, inhibits speech rights, and, also, that would seem to slow down the development of therapies that would conduce to the common welfare. But, Cukier concludes, as the industry advances, there is a growing call among researchers to redefine the lines of intellectual property. Instead of simply learning to live with the current system, they want to upend it. In addition to graduate degrees, they are armed with moral arguments, evidence of economic efficiency, and a nascent spirit of solidarity, which is renewing the traditional ethos of cooperation, found in science and the academy. And the approach that is gaining momentum comes from the neighboring industry of open-source information technology. Its underlying principles are the communal development of technology, complete transparency in the way it works, and the ability to use and make improvements that are shared openly with others. Where proprietary software’s underlying source code is forbidden to be modified (and normally even inspected) by customers, open-source products encourage users to develop it further on. The parallel in life sciences are things like the HGP that represent a “common good”, says Sulston (2002), co-recipient of the 2002 Nobel Prize. “Progress is best in open source”, he concludes (Cukier, 2003).

## **5. LEADERSHIP LESSONS FROM THE HGP**

Celera Genomics eventually lost the race to the Human Genome because of the governmental pressure to keep results fully free and available for the whole scientific community. Venter’s dream to make Celera the “Microsoft of the Genomics” vanished. Celera failed its mission not because innovation problems. They failed to become leaders in the HGP because the organizational model Celera adopted did not match with the very mission of the Human Genome Project as a whole. The Celera Genomic was quite a secretive company (aimed at becoming the equivalent of Microsoft for genomics) with a transactional style of leadership. Transactional leadership indeed focuses on the role of supervision, organization, and group performance;

transactional leadership is a style of leadership in which the leader promotes compliance of his followers through both rewards and punishments. Furthermore, it is characterised by an organisational pyramidal hierarchy in which information is mono-directional flowing from top down, and control is centralised and the leader behaves in a quite autocratic way. Leaders using the transactional approach are not looking to change the future, they are looking to merely keep things the same. These leaders pay attention to their followers' work in order to find faults and deviations. This type of leadership was effective in Celera's case as they wished to carry the Human Genome Project out in a specific fashion. On the other hand, the Public Consortium, was an opened and flat – not hierarchical – kind of organization very similar to a transformational leadership model. Indeed, transformational leadership enhances the motivation, morale, and performance of followers through a variety of mechanisms. These include connecting the follower's sense of identity and self to the project and the collective identity of the organization; being a role model for followers that inspires them and makes them interested; challenging followers to take greater ownership for their work, and understanding the strengths and weaknesses of followers, so the leader can provide followers with tasks that enhance their performance. In this kind of leadership, information flows in every direction and there is no centralised control over the research but rather a coordination between several parts<sup>4</sup>.

Very importantly, the Public Consortium by adopting the open-source philosophy promised to shift, according to Raymond, to a "gift economy", where status among peers is achieved by giving away things that are useful to the community. Social aspects of science work in a similar way; activities such as publishing papers, giving talks, and sharing results help scientists to obtain status among scientific peers. Science, in this sense, is a sort of gift economy of ideas; the open-source model, thus, gets to the basic nature of the old and ordinary way (or imaginary) of scientific research. Open source philosophy, in other words, provided a standardization, along the Human Genome Project, of an organisational vision which was the real key for success

in the race. The open source philosophy, as a model for scientific enquiry, is fitting Merton's four related norms of scientific practice; these norms, according to Merton, were guidelines for the practice of scientific enquiry in order to ensure the growth of certified knowledge: universalism, means that scientific truths are of impersonal kinds, that is valid *erga omnes*, independent from the scientist and the place of discovery. Communitarism, means that science is basically a social practice, based on past efforts influencing the future ones. Disinterest, which is about a scientist's commitment to truth as his/her first motivation. Organised scepticism means the valuation of possible truths by means of open debate, peer review, and experimental replicability. According to the analysis of Rabinow, the most important reward for a scientist is getting appreciation from his community and professional prestige. According to Merton, the trick in the system stems from the fact that scientists, while working for their interest, are, on the other hand, reinforcing collectively the public good (Rabinow, 1996: p. 22).

The most appealing feature of the Open Source philosophy – which makes that so close to transformational leadership – for genetics and software research is the fact that it is possible to create a research network based on the model, that the source code can be given and other researchers can fix and improve that software. Open Source projects also tend to have much stronger communities. The entire premise is one based on sharing and the enjoyment of creation for the good of the community (Torvalds, 2001): ethical values – rooted into the fabric of scientific progress – and not performance was the key for organizational success.

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## Endnotes

1. See Ben Fordham (21 May 2006), *Last cannibals*. NineMsn. Archived from the original on 2006-08-21. Retrieved 2006-10-25
2. For a discussion see J. Ciulla, "The state of leadership ethics and the work that lies before us", *Business Ethics: A European Review*, 14/4, 2005, pp. 323-335.
3. Recently an editorial in the very authoritative journal *Nature* (2004, p. 1025) has shown how the problem of genetic data accessibility is related to information; "Increasingly, it is easiest to make [genetic] materials available in the form of information, but even this imposes significant challenges, as high-dimensional biology generates very large files. We currently insist that sequences be deposited in databases such as GenBank and EMBL and, at least for expression data, in the microarray databases GEO and ArrayExpress according to MIAME criteria. But it is time to develop community standards for new kinds of large datasets, and we would welcome suggestions about how to proceed with array CGH, methylation, ChIP on chip and other epigenomic datasets."
4. For a discussion about the difference between Transformational and Transactional leadership and the ethical role in this dichotomy see James MacGregor Burns, *Leadership*, Harper Collins, 1978 and Bernard Bass, *Leadership and Performance*, N.Y. Free Press, 1985.