Learning From Hackers

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THE THINGS SAID IN MANIFESTOS AREN'T NECESSARILY NEW. ON THE CONTRARY, THEY ARE OFTEN THINGS THAT COMMON SENSE TAKES FOR GRANTED AND NO LONGER FEELS NEED TO BE SAID AS THEY ARE 'NATURAL' AND OBVIOUS. BUT NOBODY SAYS THEM. THEY ARE CLEARLY WRITTEN DOWN SOMEWHERE, BUT RISK NEVER BEING CONSIDERED IN IMPORTANT VENUES WHERE PEOPLE SIT DOWN TO CREATE REGULATIONS, LAWS AND GOVERNING BODIES. IT IS NO COINCIDENCE THAT WHAT WE CONSIDER 'NATURAL RIGHTS' HAVE BEEN WRITTEN DOWN IN THE UNIVERSAL DECLARATION OF HUMAN RIGHTS; IT IS NO COINCIDENCE THAT WHEN WE WANT TO REFUSE TO DO SOMETHING, WE APPEAL TO THE FACT THAT 'IT ISN'T WRITTEN DOWN ANYWHERE' THAT YOU HAVE TO DO IT.

It is no coincidence that so many cultures, religions and bodies of knowledge that 'are not written down anywhere' — because they belong to peoples who have handed down their knowledge through oral tradition over millennia — have disappeared and been replaced by those cultures which are written down. This has happened, for example, with peasant farming culture, which has had to give way to the sacred texts of universities, followed by the pronouncements of chemical companies, seed companies and then multinationals and banks.

The Manifesto on the Future of Seeds contains many important points and we believe it should be read and circulated, understood, thought about and presented for endorsement to as many national governments as possible. Because making declarations is also important. If you say 'I agree' about something, and you say it publicly, you cannot then say the opposite with impunity. Every sentence, every concept in this Manifesto is the result of analysis, debate and discussion: the work of the Commission for the Future of Food is slow and meticulous and the

people involved know that words are important. It is thanks to words that we live in this world, it is particularly through words that we will succeed in protecting our planet, and ourselves along with it.

From sharing to freedom

We are going to focus on two issues that are close to our hearts: 'Freedom of exchange and trade in seeds for farmers' and 'Freedom of access to open source seeds'.

The 'open source' idea is a wonderful gift from the world of information technology. In the 1960s and 1970s, the first computer scientists were similar to a community: they collaborated and freely exchanged information. In the 1980s, when the use of software for managing a whole range of applications gained increasing significance, manufacturers began to stake out their territory, make distinctions, claim rights and register patents. While today the world of computer scientists is associated in collective imagination with creativity, easily accessible software, and is a part of our everyday lives, in the 1980s computer scientists had become something of an arcane group, closer to engineers than writers. They were very careful not to share anything they knew so they could bolster their knowledge which — since it was not shared — was also power.

Fortunately, there were some people who thought differently. It was the programmers outside the system, the 'hackers', who enthusiastically took to hacking, or disassembling, 'inaccessible' programs produced by large companies and trying to rebuild them. There was a virtuous example from the 1970s when an operating system called UNIX (which still remains one of the most stable and widely used operating systems) was distributed at low cost mainly to universities. The manufacturer did not provide any assistance but there was complete freedom to tinker with it: if universities had programmers who were able to change, rewrite or modify the programs used, they were completely free to use program source codes and do what they wished.

It is like buying a bicycle: if you buy one and then something goes wrong, say the chain needs lubricating or slips from the sprocket, or you want to add a gear or modify the bell, it is your own business — if you're able to do it, you can. Alternatively, you can imagine buying a bicycle that only allows you to know about the things you have to use, the handlebars and pedals, but not the gears that help propel the bicycle. Any time you need to look at the gears you have to contact the manufacturers and, subject to payment and without any instruction, they carry out any changes.

UNIX ushered in a whole series of intricate legal questions and complex developments, both within information technology and for associated regulations. But the huge philosophical and practical leap forward in quality came in 1985, when the then 30-year-old Richard Stallman— a computer scientist who still recognized today as one of the most sophisticated minds in the

sector — founded the Free Software Foundation. Yet again words were important: moving from the idea of 'open source' to that of 'free software' wasn't just a minor detail. The supporters of open source had presented and resolved a practical problem, but free software presented an ethical and social problem that was resolved in terms of freedom, not feasibility. Freedom here was understood as giving users the option of distributing and modifying software according to their requirements and being able to also distribute any modifications made. So it was not just an 'open source' program — which provided the technical means to make adjustments and modifications — but an entire system, with all the attendant legal and technical ramifications, which allowed *users* of a product to harness it to the best of their inventive and innovative capabilities, and make it part of their culture. Furthermore, as Pekka Himanen says in his *The Hacker Ethic* (Random House, 2001), it is not a question of money: 'Stallman's hacker ethic is not opposed to making money, but only to making money by excluding others from information'.

Knowledge and possession

Also at the end of the 1970s the world received a new gift, but unlike the one from the field of information science, it wasn't exactly a welcome one. This time new developments in the biological sciences were involved. Ananda Chakrabarty, a US biochemist, created a genetically modified form of the Pseudomonas bacterium, enabling it to act like a solvent for oil slicks for use in treating polluted water. He applied to patent his bacterium and once more a period of disputes and reassessments of the entire regulatory system governing patents was set in motion. Finally, eight years later, a historic sentence from the United States Supreme Court granted the patent, defining as a patentable invention 'anything under the sun made by man', and stating that the distinction was 'not between living and inanimate things, but between products of nature, whether living or not, and human-made inventions'. It was an epoch-making change: the crucial distinction was no longer between animate and inanimate, but between a product of nature and a human-made product. (Note the underlying thinking behind this distinction: humans are evidently considered separate from nature, not a part of it. It was a legal legitimization of the opposition between humans and nature that has produced so much damage since the Age of Enlightenment).

This prompted an analysis of the meaning of property rights when referred to living things. It might seem very questionable logic to the layman, but this is what happened to the concept of a patent. Originally devised within an industrial context, patents were an instrument that enabled inventors to be rewarded and have their authorship of an idea recognized while also publishing a description for use by future inventors. Patents gradually turned into an instrument for revenue, prohibition,

limitations on modifying and implementing the patented object. They moved from being a recognition of authorship to a declaration of ownership. There should be a clear difference between saying ' that's my son' and 'that's my lawnmower', but there doesn't seem to be much clarity left in the world of patents. And if the patented object is not a tin opener, but a living organism which we can only describe in certain respects, without ever being able to predict all its ramifications and behaviors, then the patent/ownership instrument appears at least inadequate in its present form, if not inappropriate in its function.

The codes of seeds

So we come to seeds. The information science metaphor is again very appropriate. In the computer world we have hardware (technical equipment, machines and assemblies) and software (programs, data, applications), and we can think of the agricultural world in a similar fashion. On the one hand (hardware), we can identify features with a smaller (or at least slower) tendency to change and evolve: the land, climate and general geomorphological conditions; on the other (software), we have all those features that humans continuously use to drive evolution and change: equipment, fertilizers and, in particular, seeds.

An agronomy text published in Italy at the beginning of the 20th century (Nullo Bendandi, *Le sementi nella tecnica agricola e nel commercio* [Seeds in agricultural technology and commerce], Catania 1913) reminds us of a very important principle that applies to all forms of agriculture: when the land has been prepared, cultivated and fertilized, you have to then address the most important and difficult technical problem in agriculture: the selection of seed. The choice of seed variety determines the wealth of biodiversity. The incredible power of modern agriculture depends on the variety and the availability of a great range of seeds.

In his paper 'La sfida della complessità: riflessioni su evoluzione, etica, identità umana' (The challenge of complexity: reflections on evolution, ethics and human identity) (in *Il gene invadente,* ed. Genetic Rights Council, Baldini Castoldi Dalai, 2006), Gianluca Bocchi states that, ' nature possesses two resources in abundance, they are always present and cannot be compressed: time and diversity. The interweaving of time and diversity have enabled living organisms to colonize an entire planet'.

We could thus add 'time' to the category of agricultural hardware and 'diversity' to the software.

The problem is now clear and it is a recent one: seeds are patented and farmers can no longer resow collected seeds.

For readers unfamiliar with agricultural practices, when a field of wheat, corn or potatoes is grown, part of the harvested crop is used for food, but a part has always been used for seed, normally by selecting the best ears or potatoes.

But the new prospect of patent rights on seeds presages and pro-

motes a disassociation between production and reproduction. Production — for self consumption or the food market — remains in the hands of farmers. Reproduction becomes the privilege of the seed producer. (The seed producer is almost always a producer of herbicides, pesticides and fungicides. This seems a strange situation, with parallels in information technology: the software manufacturers often develop systems that are easy to attack, but also the antivirus programs that protect them. And users are not at all happy about this.)

So the choice of seeds issue is connected to the choice between a pluralistic model of agriculture, like the one we want to keep, and a standardized model of agriculture, based on GMOs and 'homogeneous hybrids' — which are seeds obtained, as in the case of corn, from populations that are as pure as possible in order to maximize the phenomenon known as 'hybrid vigor' or 'heterosis'. However, they only yield excellent results in the first harvest: if the seeds obtained from this type of crop are reused, the yields are unsatisfactory. So farmers have to repurchase the seeds produced by homogenous hybridization or start with the parent lines used to produce them. But farmers are not given access to this information. The 'source codes' of these types of patented hybrid are protected and not shared.

Seeds belong to food communities

Where should we take action, what is the legal basis that the Manifesto on the Future of Seeds should found itself on? In fact there is legislation covering Community rights in a 1998 regulation, that guarantees farmers the right to reuse in their farms the seeds obtained from planting material for propagation.

The phenomenon of biodiversity described in the first point of the third part of the Manifesto ('The Law of Seed') is the result not of individual actions, but of cooperative community exchange among farmers. It is not through individual strokes of genius that it has been possible to create and protect biodiversity, but only through shared crossbreeding and hybridization efforts, the fruit of collective experience carried out within localized areas over time. Community exchange is an insurance policy against the erosion of biodiversity and against the risk of plants suddenly disappearing.

When we speak of hybridization carried out by traditional agriculture, we are speaking of the hybridization of local breeds and varieties with highly distinctive characteristics within a specified area. As Marcello Buiatti explains (*Il benevolo disordine* [The benevolent disorder of life], Utet, 2004): 'In traditional agriculture, genetic diversity within crop species is maintained for at least two reasons. Most importantly it allows the selection of genotypes suited to the different environments present in the same agricultural area. Secondly it allows plants with different characteristics to be maintained, possibly unwittingly, within the same field, so harvests are obtained every year, even if not at high yields (...)'. But


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where industrial agriculture prevails, there tends to be standardization of varieties in order to obtain seeds providing very high yields, even if this is only for one season. The seeds are intended for the market and can therefore be protected by patents (which by law can only be registered for homogenous materials). It is the difference between an 'organism' approach (many functions of moderate efficiency, few energy inputs necessary) and the 'machine' approach (a few functions of high efficiency, considerable waste of energy and resources).

But although Community regulations regarding patent protection and special safeguards for plant varieties allow (for now!) farmers to reuse their seeds, they do not allow the exchange of seeds between neighbors or within a community, never mind between different communities. A request should be made at Community level to at least introduce an exemption that grants local communities the right to exchange seeds, as has been done for individual farmers who can reuse their seeds (providing they use non-hybridized seeds, otherwise this exemption is of little use, since the seeds will not give good yields). This is the first regulatory issue that we should aim to achieve. We can then bring global contracts to the attention of international organizations. For example, the contract for Round-up Ready rape seed stipulates conditions that would be illegitimate from the viewpoint of EU lawmakers: that is, the right granted to the farmer to only sow seed once, Monsanto's right to inspect the land and even transfer this obligation to the heirs.

A decision was recently issued by the European Court of Justice in Luxembourg (April 10 2003, case C-305/00, Christian Schulin) on the question of whether a multinational holding a patent in Europe could demand information from a farmer regarding the use of propagation on his farm: information, that is, about the results of seed production based on his performing the occupation of farmer. In fact this was ruled to be a violation of the farmer's privacy in his use of seeds: the decision did not allow the multinational the right to this information, but it is of great concern that the request was made.

Who guides whom, who steals from whom

However, in addition to pressing for modifications to patent legislation, we can and must take immediate action, again following the example of the hackers, who were motivated by creativity, legality and sharing. We can also learn from an important legal case, which saw a large multinational try to patent a pharmaceutical use of the Indian neem tree. The multinational lost the case thanks to a devastatingly simple argument. The use of the neem tree in medicine had not been discovered by the multinational — far from it. It was, in fact, centuries old as could be proved from some ancient sacred Hindu writings which mentioned its use.

So again, it is important to write things down somewhere.

As far as seeds are concerned, they need to be described: every possible

use and minimum detail must be chronicled. This has prompted a new project that Slow Food — together with the Slow Food Foundation, Terra Madre and anyone wishing to join in — will start constructing in the coming months. It involves creating an open source data bank which will publish information from the scientific community on the Internet. We will describe the seeds, their DNA, their traditional, food and medicinal uses and anything else that can be said about them. We will establish rules for sharing which will allow everyone to have access to information, but will prevent the commercialization of this information by industrial interests.

Terra Madre 2006 gathered hundreds of universities, thousands of farmers, cooks and restaurateurs from around the world. Seeking a better dialogue between the various areas of knowledge has revolutionary effects since it upsets the traditional power relationships between agriculture, the market and science. Who should give advice to whom? So far the market and science have imposed their requirements on farmers, and farmers have had no alternative but to acquiesce, in the name of a cultural subordination that had no right to exist. But if there is real dialogue, agriculture — and with it nature and the planet — can defend itself from science, and the market can be made to serve communities. Let it be the food communities, who every day feed the world and protect the planet, who determine the priorities for research and the economy.

We will implement this open source databank project by asking the international scientific community to collect information, and they in turn will have to work with food communities so they can write down and describe as much as possible about agricultural genetic resources.

And we will bear in mind that when we speak of common assets and human heritage, we are not just stating abstractions without consequences in our behavior and the judgments that we are called to exercise.

The Compendium of the Catechism of the Catholic Church has a section referring to the Seventh Commandment 'You shall not steal' (another example of a written record that expresses the ideas of good and evil that belong to a large proportion of humanity), and asks under what conditions there is a right to private property. The answer given states there is a right to private property, provided that the universal destination of goods for satisfying the fundamental needs of all humans remains primordial. This simply means that the earth and the sustenance it provides is for the benefit of all. As a primordial right it takes priority over all other rights.

If we apply this to seeds, we can see that the right to private property exists provided that the universal destination of seeds for satisfying the fundamental needs of all humans remains primordial — that is, natural seeds are for the benefit of all as a priority over all other rights. So if you violate people's food sovereignty over seeds, you steal something from someone, or rather from everyone.

IN 2003, THE INTERNATIONAL COMMISSION ON THE FUTURE OF FOOD PUBLISHED AND PUBLICIZED THE MANIFESTO ON THE FUTURE OF FOOD, A DOCUMENT THAT OUTLINED A SERIES OF INTERVENTIONS AND FAR-SIGHTED IDEAS TO ENSURE THAT THE ENTIRE AGROALIFOOD CHAIN BECOMES MORE SUSTAINABLE FROM BOTH THE SOCIAL AND THE ECOLOGICAL PERSPECTIVES, AND WITH THE AIM OF SUPPORTING AND REINFORCING THE MOVEMENTS THAT ARE WORKING TO BUILD A FAIRER AND BETTER BALANCED WORLD.
SUBSEQUENTLY, THROUGH A GLOBAL CONSULTATION HELD AT TERRA MADRE, IN TURIN, A MANIFESTO ON THE FUTURE OF SEEDS WAS DRAWN UP. HERE IS A SUMMARY (TO READ THE FULL TEXT, CONSULT WWW.ARSIA.TOSCANA.IT/CIBO/INDEX.HTM).

MANIFESTO ON THE FUTURE OF SEEDS

Seeds, the first link in the food chain, the concrete reality of cultural and biological diversity, a mine for the future evolution of life, the symbol of life itself, are today under siege.
Industrial agriculture has led to severe erosion of the biological diversity of seeds, of crops, of animal breeds. The FAO conference in Leipzig in 1996 identified the substitution of local varieties as the most important cause of genetic erosion.
Monocultures are ecologically unstable. The shrinking genetic base of agriculture leads to an increase in the vulnerability of production and a threat to food safety.
In history there are many examples of the value of biodiversity maintenance. In many cases it was only thanks to wild varieties of cultivated species that it was possible to limit the harmful consequences that epidemics had on staple crops for the human diet.
The genetic resources of cultivated species are being reduced at the rate of 1-2% yearly (FAO, 1993) and it is estimated that since the early 1900s about 75% of agricultural crop diversity has already been lost.
Worldwide, domestic animal breeds are disappearing at an annual rate of 5%, or 6 breeds per month. (FAO, 1995). Out of 4,500-5,000 breeds, 1,500 are at risk of extinction.
In order to stop the threat to our seeds and our growers, in order to regenerate biodiversity and strengthen the rights of farmers, we are obliged to pursue the following principles:

I. A Strategy of diversification

I.1 – Diversity in the use of seeds
So as to ensure the future of mankind, it is urgent to reverse the dangerous tendency to limit the diversity of plants that are used and the genetic diversity within a species itself.

I.2 – Diversity in agricultural systems

Agricultural policies aimed at promoting the diversity of cultivars must encourage the development and spread of agricultural systems based on an integral approach, in which biodiversity is an indispensable tool for reducing external input.

I.3 – Diversity in producer-consumer relations
Agricultural biodiversity improves when production from seeds enters into production and consumption circuits that permit the grower to have an adequate income. The concentration of the distributive system reduces biodiversity, while systems in which producers are directly in contact with consumers enhance it.

I.4 – Diversity of cultures
The maintenance, conservation and renewed spread of surviving farming traditions and cultures is an immediate and urgent challenge to avoid impoverishing even further future possibilities at the global and regional level. It also involves having respect for and valorizing diverse traditions, the different ways of perceiving nature and the food cultures.

I.5 – Diversity in the paths of innovation
Hundreds and thousands of farming

communities and cooperatives, millions of families, subsistence farmers throughout the world not only form the basis for maintaining the current reserves and varieties of seeds and the knowledge that comes from indigenous or industrial cultivations, but also for the future development of seeds. If we can guarantee fair and just cooperation among these groups, the researchers and the professional farmers and integrate the various degrees of knowledge and experience, there is no reason to be afraid of future challenges.

II. "Freedom of life"

II.1 - Freedom of access for farmers

Farmers and farming communities having access to seeds and genetic resources must not be restricted by patents, or private ownership, or by the refusal to supply germoplasm conserved outside the region of origin.

II.2 - "Open source"

By definition the knowledge incorporated in seeds and germoplasm is not an invention, but the shared legacy of mankind that other discoveries can be based on. This knowledge must be made freely available and accessible to everyone.

II.3 – Freedom to re-sow

Growers and farmers have the right to conserve and re-sow any kind of seed they have grown.

II. 4 – Freedom to produce seeds

This includes developing new varieties from these seeds.

II. 5 – Freedom of exchange

This also includes the right to sell and share seeds on non-exclusive bases.

III. Respect for life

III. 1 – Biosecurity

The introduction of new varieties and plants must take into consideration the potential environmental risks as well as other possible risks to agriculture.

III. 2 – Genetic engineering

As a precaution, genetically modified seeds should not be dispersed in the environment. Nations, regions and communities have the right to ban the dispersion and utilization of GMOs.

III. 3 – Sterile and suicide seeds

The production of seeds that cannot reproduce themselves goes against the very nature of seeds inasmuch as they are the source of the reproduction of life and of freedom for the growers. The introduction of these features must be banned at a global level because such seeds are studied to create a monopoly on the world scale.

III. 4 – Hybrid seeds have no future

We must stop developing seeds that cannot be naturally reproduced by growers.

IV. Growing the seeds of tomorrow

Below we list some non-mandatory suggestions about conserving, utilizing and developing seeds in order to cope with future challenges.

IV. 1 – Conservation and development of seeds based on the values of the Food Communities

The modern technologies of selection, identification and cultivation should be based on the experience and ingenuity of the growers and the Food Communities they are part of , and should aim to have them actively participate in the scientific aspects of cultivation as well.

IV. 2 - Introduction in agricultural ecosystems

The future objective regarding the utilization and development of seeds should be to integrate farm production in agro-ecosystems.

IV. 3 – Reducing greenhouse gases

The aim should be to develop zero emission farming practices based on soil or biological resources.

IV. 4 – Gradually eliminate the use of toxic substances

In order to reduce toxic contamination inside our food chain and our environment, cultivation must no longer be based on the use of chemical products, but on the utilization of seeds better suited to the needs of eco-agricultural practices.

IV. 5 – Diversity within the varieties

In order to reduce the risk of susceptibility to parasites and adverse environmental conditions and to increase natural diversity, future development of seeds should be based on the widest genetic diversity possible.

IV. 6 – Growing quality food

Genetic selection should always be focused on quality, understood both as taste and as respect for the physiological and cultural characteristics of peoples. The production of seeds by Food Communities should be inspired by these principles.

IV. 7 – Women, the protagonists of biodiversity

All over the world, women represent the majority of the farm labor force and possess and pass on knowledge about the quality and the methods of processing food. They should therefore have a central role in protecting biodiversity and in the conservation, exchange and reproduction of seeds.