THE OCCASIONAL PAPER SERIES • VOL. 6 • NO. 1 • SEPTEMBER 2000

IN SEARCH OF

GROUND

THE INTELLECTUAL PROPERTY CHALLENGE TO PUBLIC AGRICULTURAL RESEARCH AND HUMAN RIGHTS AND 28 ALTERNATIVE INITIATIVES





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SYNOPSIS

AT ISSUE:

International Public researchers are having a tough time sorting out their intellectual property (IP) policies and their relationship to the private sector. Most public science bodies are unhappy with the impact of IP on scientific exchange, and with the legal and financial burdens imposed by IP. Nevertheless, most are surrendering to perceived corporate (or donor) pressure. Meanwhile, new Human Rights initiatives could place scientists in conflict or even in court with farmers over their IP decisions.

AT STAKE:

More than \$8 billion in global public agricultural research per annum (including the \$360 million spent annually by the CGIAR). At risk is the future of public science and of public assets in plant breeding, fish, forest, and livestock development. Public agricultural research (national and international) still accounts for 43% of all agricultural science and 87% of research oriented to farmers or poor consumers. If public researchers don't act wisely, they could find themselves accused of siding with the Gene Giants*, and of violating the Human Rights of poor farmers and consumers. If farmers can't get beyond rhetoric, they could see a potential public good turned into corporate property.

FORA:

Following the Global Forum on Agricultural Research (GFAR), the debate moves to the CGIAR's International Centres' Week (Oct. 23-27) in Washington, D.C. The issue could also figure in the FAO Commission on Genetic Resources for Food and Agriculture (CGRFA, Oct. 9-20). There is also talk of a Special Session of the UN General Assembly (on Genetic Resources or Genomics) that would address the public/private and IP issues. Finally, aspects of this issue could be brought by farmers and their governments before the UN Human Rights Commission in Geneva.

CONCLUSIONS:

Public research institutes have not thought through their context, or their choices. Immersed in their work and the struggle to survive, they have taken the path of least resistance and followed the IP trail. There are at least 28 specific policy initiatives they should consider. *Given their current governance structure, international science has neither the competence nor the accountability to be entrusted with IP or public/private policy decisions.*

*In this paper the term Gene Giants refers to the transnational agrochemical and pharmaceutical enterprises that dominate the field of agricultural biotechnology, such as DuPont, Monsanto, Syngenta, Aventis, and Dow.



INTRODUCTION

THE GLOBAL FORUM ON AGRICULTURAL RESEARCH (GFAR) HELD IN DRESDEN IN MAY WAS A SUCCESS –

if for no other reason than that all the protagonists (public sector scientists, government representatives, industry, and CSOs) managed to stay in the same rooms for three days without the intervention of SWAT teams or grief counselors. But the organizers' somewhat Pollyannic wishes for a "Global Shared Vision" was not to be. Although many public researchers and Civil Society Organizations (CSOs) share a common nightmare about intellectual property (patents and PBR's are the "devil incarnate") they take different approaches and adopt different solutions. As pressures from the WTO and the Gene Giants mount, many public institutes discover themselves "making bargains with the devil". In Dresden, public breeders would have done well to remember the writings of that most famous of Saxon scientists and authors, Goethe, and what happened in Faust when someone else struck a deal with the devil. Agronomists might also appreciate Stephen Benet's story of The Devil and Daniel Webster. Here, a struggling farmer makes a contract with the devil. When Satan comes to collect his due, the poor peasant hires a lawyer (Daniel Webster) who gets him off on a contract technicality and goes on to become famous. Does anyone recall the farmer's fate? Then there's the case of the Garden of Eden. Appropriately enough, the deal concerned access to the devil's intellectual property – the fruit of the tree of "Knowledge Agriculture". We're not clear on how the biodiversity in Eden fared, but we all know what happened to history's first would-be plant breeder... and her husband!

Some public researchers claim they now have no choice but to adopt IP – to go down to hell in order to fight the devil. Wouldn't it be a wiser strategy to fight from higher ground?



PART ONE

IS IT FAUST OR FAMINE?

IS SCIENCE THE RIGHT ANSWER? IS THIS THE RIGHT SCIENCE? CAN THESE SCIENTISTS BE TRUSTED WITH THE PUBLIC GOOD AND FARMERS' RIGHTS?

FAUST DIDN'T MAKE HIS BARGAIN SOLELY FOR PRIVATE GAIN. HE WAS DEVOTED TO THE PUBLIC GOOD.

He made his deal to make the world a better place. Among his many projects was one for intensive agriculture that was to feed the hungry. Then things went terribly wrong...

Returning from the Global Forum, the strongest impressions for many participants were that international agricultural researchers are looking (almost desperately and almost everywhere) for allies. Despite grotesque failures including non-scientists in Saxony's GFAR, the goodwill and desire to accommodate was evident to all.

A second impression was that the CGIAR (Consultative Group on International Agricultural Research) has never been better run. Not only is the quality of leadership impressive, but the political and scientific pluralism that now typifies much of the CG System has never been seen before. Although some of our responses – and most of our rhetoric – is (for mutually practical reasons) different – CSOs and CG institutes have a roughly similar view of the Gene Giants and a common hostility to intellectual property. As much as many CSOs would prefer to think otherwise, there is also a common passion to serve the poor and to end hunger.

Given these similarities then, why the distance and distrust between farmers and CSOs in Dresden on the one hand and CGIAR scientists on the other? Three reasons – first, CSOs are not convinced of the potential for science to be a significant part of the answer to world hunger and inequity. Second, we are not convinced that the kind of science being pursued in the international public sector is useful to poor farmers. Third, we *are* convinced that international public science is incapable of managing public policy without intergovernmental oversight.

IS IT FAUST OR FAMINE?

PART ONE

1. SCIENCE AS SOLUTION?

Like the proverbial hammer that sees the world in need of nails, the CGIAR's solution to hunger is more science. Although they know that other political and socioeconomic forces are more important, they don't understand these things and in the sadness of their hearts, they don't believe they can be altered. For them, science is, by-and-large, "pure". They will acknowledge that getting good science to poor farmers is not easy – that it can be perverted and diverted – but they take hope in the possibility that what they invent will ultimately reach – and help – the poor.

CSOs, on the other hand, contend that since the CGIAR is dipping into the same aid-pocket as community development and rural infrastructure, science needs "opportunity costing" and investments must be evaluated against other *non*-science activities whose impact could be immediate and sustainable. In failing to understand this, science is missing its context.

2. GOOD SCIENCE?

While CSOs tend to prioritize on the basis of "need" and "opportunity", scientists tend to focus on "new" and "opportunity". That which is "new" (and therefore unexplored) has limitless potential. That which is known has limited potential. Although the prospects of "wide-tech" (working with farmers as co-inventors) are "new", for agricultural scientists it fails the "opportunity" test since it requires enormous investments in skills they don't have. "High-Tech" has both newness and opportunity, and it invariably drives good scientists in directions that may or may not meet the "needs" of the poor.

CSOs have a natural distrust of scientists (but not of science) for this reason. The CGIAR is quietly desperate to move into GMOs and biotech in a big way. CSOs see risks without sign of benefits. If CG scientists have a good case for their enthusiasm, they have failed utterly to make that case to others.

3. PUBLIC TRUST?

Public scientists don't like policy, don't understand politics, and think that a letter in *nature* is a "primal scream". For all their intelligence, they are almost touchingly naïve. National public science, however, functions in a reasonably well-defined policy environment. International public science does not, nor does it have the tools of governance or the structures of accountability necessary to develop, monitor, and adjust policies. The history of the CGIAR makes this abundantly clear.

Do scientists have any choice but to follow in the path of Faust and IP? This paper looks at the conundrum facing international agricultural researchers. It examines the major forces threatening public science and it analyzes the competence of research networks to address the challenge. Finally, it offers 28 practical policy alternatives and describes political strategies available to farmers and governments to ensure that their rights and the public good are protected from extinction or corporate take-over.

The Genetically Modified Faust – Farming on the Low Ground

"As Faust's new vision unfolds, we see him come to life again... He outlines great reclamation projects to harness the sea for human purposes: man-made harbours and canals that can move ships full of goods and men; dams for largescale irrigation; green fields and forests, pastures and gardens, a vast and intensive agriculture... As Faust unfolds his plans, he notices that the devil is dazed, exhausted."

from Marshall Berman's
"Faust, the First Developer"

PART TWO

THE "PUBLIC GOOD" – GOING FROM "BAD" TO "UGLY"?

A DYING BREED?

THE FUTURE OF PUBLIC AGRICULTURAL RESEARCH IS IN DOUBT.

Public funding for agricultural development – including research – is withering everywhere. Annual foreign aid for agriculture in the South fell by 57% between the publication of the pro-agriculture *Our Common Future* (The Brundtland Commission report) in 1988 and The World Food Summit of 1996 (from \$9.24 billion down to \$4 billion, in 1990 dollars). World Bank loans for agriculture and/or rural development in general plummeted by 47% between 1986 and 1998 (from \$6 billion to \$3.2 billion, in 1996 dollars).¹

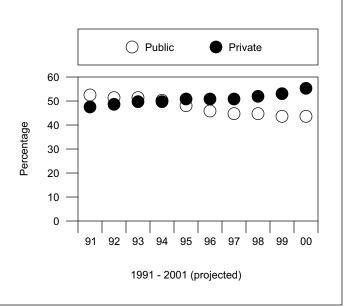
The aid community's declining interest in agriculture is reflected in the South's own lack of commitment. On average, the South spends barely 7.5% of total government budgets on agriculture. Only a tiny fraction of this goes to research.²

The disinterest in agriculture is incomprehensible. Seventyfive percent of the "\$1 poor" (those living on one dollar or less per day) are in rural areas of the world. Rapid urbanization not withstanding, even in 2025, about twothirds of the "\$1 poor" will still be rural.³ Even though farmers feed the urban poor, rural areas have access to hardly half the public services available to urbanites.⁴ Almost a quarter of the entire world's population is fed by farmers who save their own seeds and struggle for survival themselves.⁵

If public investment is vanishing however, private agricultural R&D is booming. In the OECD, private R&D totaled \$7 billion in 1993 – up sharply from \$4 billion in 1981. Private investment in research during this period represented an annual growth of 5.1%. Conversely, publicly performed agricultural R&D rose just 1.7% per annum, from \$5.7 billion in 1981 to \$6.9 billion in 1991.⁶ Well behind population growth.

So, is it time to call a spade a spade and surrender to the inevitably superior corporate R&D? By no means! Private and public researchers perform markedly different duties. First, little private research takes place in the South. Corporate R&D in the South typically account for no more than 10-15% of total agricultural research in these countries.⁷ Secondly, only 12% of corporate research goes to farm-level technologies. In contrast, 80% of public research is (at least theoretically) oriented to the farmer. Food processing and post-harvest research dominates private research, accounting for 30-90% of all private

Public/Private Ag R&D



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R&D.⁸ In other words, less than \$100 million of corporate R&D is farmer-focused while more than \$5.5 billion in public funding is (ostensibly) devoted to improving farm production. There is no chance whatsoever that private companies will – or will want to – take over this important research from public breeders.

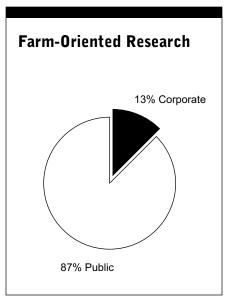
The world's agricultural research is experiencing a dramatic re-orientation toward post-harvest and food processing technologies. The decline in public research, therefore, should be no surprise. Public research is farm-based; corporate research is factory-based. Half a century ago, farmers (and their suppliers) accounted for 57% of the consumer's food purchasing budget which assured farmers majority control over agricultural policy. At the end of the century, the farmers' share of the consumer budget had shrunk to 28%.9 Farmers' Rights have dwindled accordingly.

The concentration in off-farm research is echoed in the rapid growth in agribusiness consolidation worldwide. The top five grain-trading enterprises control at least 75% of the world market for all cereals¹⁰, and similar levels of concentration have arisen for most internationally traded commodities. According to a study conducted for GFAR, a handful of multinational corporations control about 90% of the global trade in wheat, maize, coffee, cocoa, and pineapple; about 80% of the tea trade; 70% of the global banana and rice markets; and more than 60% of the world trade in sugar.¹¹ Remarkable

levels of concentration are also developing at the retail end of the food chain in both OECD and South countries. Half of the national vegetable business in Costa Rica is dominated by one enterprise. One company controls 40% of the same market in Honduras. Five retailers control 50% or more of all food purchases in France, Germany, and the UK.¹² Clearly the research orientation of these companies is neither pro-farmer nor pro-poor.

The level of concentration is bound to increase – and to move corporate interest (and research) further and further away from the farmer and closer to middle-class urban consumers. In the first six months of 2000 alone, there were close to \$150 billion in food industry consolidations and the predictions of still greater mergers are universal.¹³

Of that portion of total agricultural research still devoted to plant breeding, the situation is also worsening. Public research is collapsing while private research, heavily focussed on the development of pesticide and herbicide related varieties, continues to increase. In the USA, a survey by Ken Frey at Iowa State University reveals that each year (1990 to 1994), the number of scientist years devoted to plant breeding in the public sector decreased by 2.5. Meanwhile, the private industry breeding effort grew annually by 32 scientist years.¹⁴ Unless urgent initiatives are taken around the world, public breeders will soon become an extinct species.



PART TWO

PATENT AND/OR PERISH?

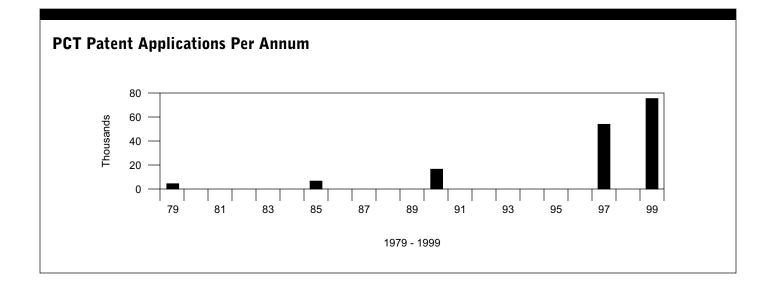
IS IP THE "KILL" OR THE "CURE" FOR PUBLIC RESEARCHERS?

An important factor in the swing toward corporate consolidations and private research has been the extension of the IP system to virtually all the products and processes of life. It took from 1791 to 1999 - more than 200 years for the U.S. Government to issue six million patents. By the time the sixth million claim was approved, however, more than three million more applications – all concerned with biomaterials – were in the wings awaiting adoption.¹⁵ Between 1980 and 1994 the share of global trade involving high-tech (patented) production rose from 12 to 24%, and now (taking into consideration intellectual property on plants and livestock) accounts for more than half of the GDP of OECD countries.¹⁶ In 1999, WIPO received a record 76,023 number of patent filings - with three-quarters of these coming from just five countries (U.S. 39.8%; Germany 14.7%; Japan 9.8%, UK 6.4%; and France 4.9%). Also in 1999, the U.S. PTO granted a record 153,493 utility patents.17

In 1990, total revenues from patent licences amounted to \$15 billion. By 1998, licencing fees garnered \$100 billion and some experts justifiably predict revenues of half a trillion dollars per annum by 2005. Since 1995 in the USA, the number of intellectual property lawsuits reaching federal courts has risen ten times faster than other legal actions. There were 8,200 cases in 1999 alone.¹⁸ John Barton of Stanford Law School now estimates that the average cost of patent litigation – per litigant – is \$1.5 million.

Today it is common for universities to pay exorbitant legal fees to defend their intellectual property. According to the Association of University Technology Managers annual report, dozens of major universities – Brandeis, West Virginia, Tufts, and Miami among them – spent more on legal fees in 1997 than they earned from all licensing and patenting activity that year.¹⁹ In 1997, as companies were raking in close to \$100 billion in royalties, U.S. universities earned only \$611 million in licensing fees – hardly half of one percent of total patent revenues.²⁰

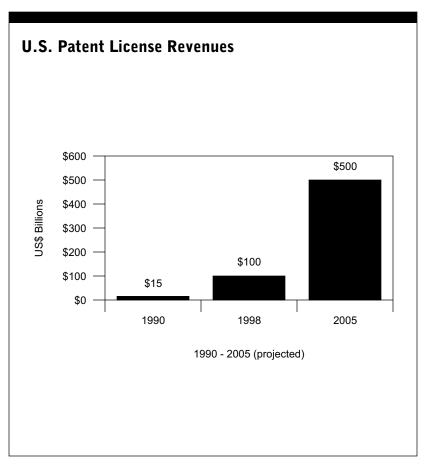
As bio-patents grow more common they also grow more complex. In February this year, Gregory Aharonian, editor

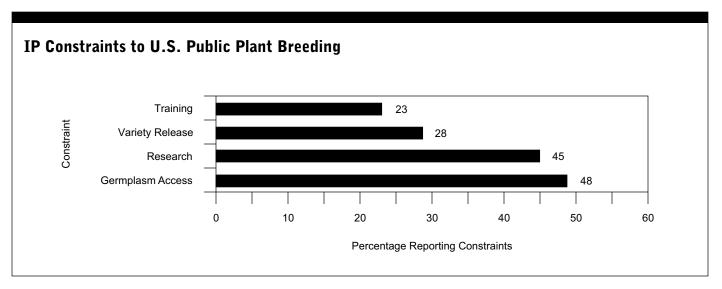


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of the Internet Patent News Service, reported that the U.S. Patent and Trademark Office had just received a biotech patent 400,000 pages in length – sufficient to warrant its own FedEx truck.²¹ Complex claims make sorting out license obligations next to impossible. When the public sector researchers in Switzerland and Germany, developing Vitamin-A enriched rice, went to check the legal status of their invention, they were horrified to find that they could be transgressing a minimum of 70 and possibly well over 100 patents.²²

It is probably no surprise that at least 97% of all patents are held by nationals of OECD countries. It is more surprising, and much more disturbing, that at least 90% of all technology and product patents are held by global corporations.²³ Perhaps the clearest indication of the monopolistic nature of the patent system, however, is the fact that at least 70% of all patent royalty payments are made between the subsidiaries of parent enterprises. The game is "keep away" – not the promotion of knowledge. It is in this environment that international agricultural researchers are trying to fend their way, adopt IP policies, and strive for an equitable relationship with the Gene Giants.





PART TWO

UTOPIAN U-TURNS?

THERE'S AN OLD ADAGE THAT "NICE GUYS FINISH LAST"... THAT'S BECAUSE THEY END UP RUNNING IN THE WRONG DIRECTION. SOMEWHERE ALONG THE WAY THEY MAKE A U-TURN!

Faust was not the only public worker to get lost in his enterprise.²⁴ It is often said that the road to hell is paved with good intentions. It could also be argued that the road to heaven is marked by U-turns. Damned if you do damned if you don't? When the Cadbury family set up its chocolate business 176 years ago, they had dreams of a utopian workers' paradise built on Quaker principles. The same was true for the Hershey's when they launched their family enterprise in Pennsylvania. Utopian principles were the order of the day. During the Saxony Forum, the last Cadbury - Sir Dominic Cadbury, stepped down from the now vast and publicly-traded enterprise of Cadbury Schweppes, and the new regime is hoping to merge with Hershey's or that other utopian bastion, Quaker Oats.²⁵ There's no talk of utopia. It's a business. A few people got fat making alot of people fat. In fact, the only people who didn't get fat were the cocoa plantation workers and smallholders of WestAfrica. Even in their most noble moments, the workers' paradise never extended to Africa.

Can public institutions make U-turns as well? Despite a charter espousing the loftiest ideals of academic integrity and public service, the University of Toledo usurped and patented Aklilu Lemma's endod research and then offered to license the technology back to Ethiopia for \$50,000. With similarly high standards, Colorado State University patented Andean quinoa, UC Davis laid claim to West Africa's disease resistant rice gene and the University of Wisconsin patented brazzein from West Africa. All of these institutions were founded to serve the public interest. Somewhere along the way there was a U-turn. Will the same happen to international public research institutions?

In general, agricultural scientists in the international public sector take a dim view of intellectual property and are also often less than enthusiastic about the strategies of their "forprofit" brethren in the private sector. For most, the venture into IP is made reluctantly and with many misgivings. Customarily, the policy shift is not to "aggressive" patenting but to "patent if necessary" or to "patent as a last resort". Customarily, too, the shift comes with vows to patent solely when the public good would be otherwise endangered, and that practices will be subjected to case-by-case scrutiny.

So, can we sit back with some confidence secure that the public trust is well placed and that at least their patents are in safe hands? Is there any way of measuring the competence of the public sector to manage IP policy?

It is possible to consider three criteria and to test these against the experience of the CGIAR's 16 International Agricultural Research Centres (IARCs).

1. AWARENESS OF SELF

(Governance) Does the CG System have a clear sense of itself and how it functions? If it does not understand its own governance (style and personality), then it won't be able to manage highly charged policy issues.

2. AWARENESS OF SURROUNDINGS

(Context) Does the CG System show a clear awareness of its role in research and rural development and in policy leadership? If not, how will it evaluate its policy choices?

3. AWARENESS OF CONSEQUENCES

(Policy-Making Skills) Has the CG System demonstrated a clear capacity to understand issues and reach decisions or consensus positions? If not, how will it adjust its policies in the future?

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AWARENESS OF SELF

In 1992, when the CGIAR (after years of delay and technological confusion) produced a set of 18 CD-ROMS purporting to offer the international community everything it wanted to know about IARCs (but were afraid to ask), RAFI purchased the set and immediately searched through the 18 disks looking for the word "governance" and the term "external review". There was not a single Center external review to be found. The word "governance" only appeared on the disk covering, among others, ISNAR, and there only in ISNAR publications exhorting NARS to improve their governance systems. There was no information whatsoever describing the governance structure of IARCs individually or collectively. It simply did not occur to the CGIAR that governance is an issue or that anybody would be interested.

RAFI began an annual review of CG/IARC governance back in 1991 and has since backdated the information to 1986. Crudely speaking, the data showed a slide toward North domination of IARC boards of trustees that accelerated in the mid-nineties. The studies also show the central role of the "Agree-culture" (Australia, Canada, UK, USA) with an average of almost a third of all key posts going to nationals of these (largely) anglophone countries. Further, RAFI took the key chair (boards and committees) and DG posts and found that three-quarters routinely go to the North.

The information appeared to surprise Center DG's as well as trustees and funders. During the Period of Renewal (1994-96), however, the government's imbalance actually worsened probably due to the financial crisis facing IARCS. Mostly through the aggressive leadership of CG Chair Ismail Serageldin, the figures began to turn in the late 90's until IARC boards were finally balanced in 1999. The imbalance in key Board Chair and DG posts remains, however, with 13 of the 16 Centers ruled from the North.

AWARENESS OF SURROUNDINGS

In the mid-nineties, CG Centres were at once embarrassed and delighted to discover that the "side effects" of their work for the South included major benefits for their financial contributors in the North. The reasons for delight were obvious. The System felt itself to be in a cash crisis and was desperate to strike any chord of responsiveness from donor countries. Suddenly, there was some data available showing that the North also reaped windfall rewards from the CG System.

The embarrassment came from not really knowing all along that these "side effects" were there and from being accused of either being willingly "used" by the North to extract wealth from the South or even worse, being too stupid to know.

There were, of course, earlier indicators. Dana Dalrymple in the USA had written two booklets noting the benefits of IRRI rice and CIMMYT wheat to the USA. These had been published in the mid- and late-eighties. In Australia, Derek Tribe had also penned two reports showing major benefits for his country. The last, Doing Well by Doing Good, was so sufficiently blunt that one would have thought everyone would catch on. Partly inspired by these earlier works, RAFI released an Occasional Paper in 1993, titled Declaring the Benefits, which argued that the cash benefit of the CG to the North was in the order of \$5 billion per annum – a very large multiple of the North's cash contribution to the CG. Not to rely on CSO data, IFPRI cobbled together information from Dalrymple and others and produced its own figures for the benefits derived by the United States from wheat and rice in the CGIAR. Although much more conservative than RAFI, IFPRI's study also showed the System to be a highly lucrative investment for U.S. farmers and consumers.

Was the System really so unaware of its value to its benefactors? Yes and no. As long as money was flowing freely from the North, there was no need for astute Centers to play the "kickback" card. The financial coattails of the

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Green Revolution era were long and only began to thread out in the mid-eighties or later. Since CG funds flowed from the aid ministries and agencies of OECD governments and the World Bank, the donors themselves had little interest in being told that they were net beneficiaries of their own aid dollars. Nevertheless, there was a general sense of value - that association with the CGIAR paid off in many ways. In the early eighties when Karnal Bunt (a fungal disease of wheat and triticale) threatened nursery trial exchanges between CIMMYT in Mexico and North America, wheat breeders in Canada and the USA banded together to argue that any cutoff in access to CIMMYT germplasm could endanger benefits the breeders estimated at \$500 million per year. So, at least ten years before the reverse flows of benefits became a public - and "hot" topic within the CGIAR, the major actors in the System were aware that the North gained immensely from CG activities.

For the purpose of evaluating the CGIAR's capacity to manage policy appropriately, however, two points need to be considered. First, the System's awareness – as already discussed – of its distribution of benefits. Second, the System's use of this information to solve its problems and the implications this use has for the CG's mandate.

On the first issue, the System's awareness was miserably low. On the second, various Centres reacted differently. In 1993-94, Centres such as IRRI, ICARDA, and CIAT rushed to publish a handful of little pamphlets directed to individual national donors. Each running a dozen pages or less, the pamphlets highlighted the close relationship between, for example, CIAT and the USA. Uniformly, the booklets noted the number of nationals serving at the Centre or on its board, summarized the cash flows, outlined the major projects funded, described specific research collaborations with public institutions in the donor country, and hinted at the untapped potential for future collaboration.

In a few instances, however, the Centres' efforts to attract financial support verged on the ridiculous. Centres hinted that their network of field locations around the world might be useful for GMO field trials or that they could help protect trade investments or be used in targeted collection expeditions that would get valuable germplasm into the hands of OECD breeders quickly. All of these booklets were written post-RIO and the adoption of the Convention on Biological Diversity.

Although the worst of these booklets are abhorrent to the current management of the Centres involved, they have never been formally refuted or withdrawn and it is even possible that the current leadership is unaware of their existence. Not a good indication of competent policy management.

Chip Off the Old Block

"Intellectual property is the oil of the 21st century. Look at the richest men a hundred years ago; they all made their money extracting natural resources or moving them around. All today's richest men have made their money out of intellectual property."

 Mark Getty, grandson of oil magnate, J. Paul Getty, quoted in: "Blood and Oil" Economist, March 4, 2000, p.68.

AWARENESS OF Consequences

It is fashionable in CG circles to decry (or ridicule) the ponderous pace with which FAO is revising its International Undertaking on Plant Genetic Resources for Food and Agriculture. Negotiations began in 1994 and the end may not yet be in sight. Yet, the FAO negotiations are legally binding on world governments and attempt to establish a unique multilateral system of open germplasm exchange in a world where such exchanges are highly politicized. No easy task.

By contrast, CGIAR has been attempting to define a clear IP policy at least since the late Eighties, and committees and

panels have been working intensively on the issue at least since 1992. No unambiguous systemwide policy is in place. Even though the policy would not be legally-binding on governments and may not even affect the legal management of the Centres themselves.

In one important policy area, the CGIAR has acted decisively and with unity. In 1994, all Centres with germplasm collections or interests signed individual agreements with FAO surrendering policy oversight for their gene bank accessions to the UN agency. As a sign of systemwide commitment, the Chair of the CGIAR signed each agreement on behalf of the Centres. In signing, more than 550,000 gene bank accessions (and the genetic material contained within each accession) were placed firmly in the public domain. The entire negotiation process took less than two years with the final negotiations taking only a couple of months. It was an impressive act – for both CGIAR and FAO.

It has to be acknowledged, however, that this act of solidarity was performed under intense political pressure. In May of 1994, the World Bank had been publicly accused of trying to take over the Centres' gene banks. In order to counter this concern, the new Chair of the CG – a vice-president of the World Bank – applied extraordinary pressure on Centre boards to force them to comply with the FAO text under negotiation at the time. Most boards – and many donors – were quite unhappy with the pressure but felt that the media environment left them with no choice but to agree.

The policy obligations falling out from the 1994 agreement have shown that the System is still very capable of confusion. In 1998, RAFI and the Heritage Seed Curators of Australia (HSCA) launched a series of investigations into violations of the Trust Agreement associated with Australia. These investigations ultimately culminated in a report titled, *Plant Breeders' Wrongs*, listing 147 possible IP abuses. Only a few of these directly involved the CGIAR and its agreement with FAO.

The response of the CGIAR was very mixed. IPGRI, ICRISAT, CIMMYT, the CG Chair, and the Systemwide Genetic Resources Programme (SGRP) acted swiftly, responsibly, and cooperatively. ICARDA responded horribly. CIAT, IITA, and IRRI either didn't respond at all or were as passive as they could possibly be. FAO, it must be admitted, was AWOL for most of the ruckus. The experience made clear that the System has major problems – and few mechanisms – for policy conflict resolution internally.

THE NEW NAÏVETÉ

As already noted, the CGIAR has probably never been better led. Individual leaders show no lack of sophistication or political agility. But there seems to be a difference between individual savvy and institutional – especially network – savvy. In the long struggle to reach a common IP policy, there is no real indication that any of the Centres – or the System as a whole – has given serious thought to the possibility that any policy could have wide-ranging "downstream" effects that need to be considered even as the core policy is being formulated.

The absence of this kind of analysis exposes a Systemwide naïveté that may have been reduced of late, but has not gone away and is entirely capable of gaining ground again.

Without gene therapy, public science may be biologically incapable of perceiving its own policy choices and effects. Given its natural disposition to avoid policy decisions, there is a tendency to drift toward the norm. If others are proposing pro-IP policies, then it is easiest to just go along. The *status quo* is the least difficult even if not always the most attractive.

Even where public institutions have a natural disposition against IP, they generally lack the resources or experience to fashion viable alternative policy strategies. As a consequence, impassioned opposition devolves into grudging acquiescence. It is clearly not enough to "just say no" to IP. Centres must adopt alternatives that work.

The naivete often includes a most unscientific sense of immortality. Because the board and staff of a centre share a common culture, viewpoint, and policy on IP in 2000 doesn't mean that the same centre with different

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personalities will maintain that posture in 2003. Patents last for 20 years – DG's rarely last half that long and boards rotate completely every six years or so. In preparing this paper, RAFI encountered board members who argued that it is unfair to dredge up a centre's foibles in the bad old bygone days of the early or mid-nineties (much less the mid-seventies) on the grounds that the "new" management would never allow such mistakes to happen. This, in itself, is an indication of policy naïveté and institutional unreality. Some policies, such as on spousal employment, remuneration, tenure, or host country relations, can often be changed and changed again without serious damage to the survival of the institution. An IP policy has long-term institutional implications that can be extremely difficult to monitor or reverse. If the institution doesn't have long-term memory and a clear sense of self, future policy changes with respect to IP could prove impossible.

ALL "NAIVES" AND NO KNIGHTS?

Although RAFI must conclude that international research institutions are inherently naïve and ultimately cannot be trusted with major policy issues, this is not to condemn the individuals involved nor to suggest that events in the past several years have not shown some institutions to act boldly and even brilliantly in their defense of the public good.

Most recently, CIAT took the unprecedented step of threatening legal action against a U.S. company for its patent claim on the *Enola* bean – a traditional Mexican yellow bean – usurped by the company. In taking this action, CIAT has dragged FAO along with it and is giving support to the Government of Mexico in its challenge of the patent. Although the germplasm involved in the patent did not come from the CIAT gene bank, the institution believes that its yellow bean accessions, held under trust with FAO, are threatened by the company claim and it has acted accordingly. As an institution, CIAT and a number of senior officials at CIAT, deserve admiration and credit for their courage.

Likewise, in 1999, CIMMYT acted bravely and with

CGIAR and the "Ethics" of Monopoly Rights

A REPORT PREPARED BY THE CG'S PANEL ON PROPRIETARY SCIENCE AND TECHNOLOGY IN APRIL, 1998, EXAMINED THE CGIAR'S POLICY POSTURE ON IP ISSUES...

The report acknowledges that there are two "somewhat polarized views" about how the Centres should regard patent rights to technology of other parties:

THE FIRST VIEW

"Centres do not need to concern themselves unduly. They are using patented technology, but for research purposes; this at least within the spirit of the patent laws, if not necessarily the letter in all cases. The owners of the technology are in many cases aware of this and have not objected; in any case owners are unlikely to sue, because of the bad publicity it would cause them."

THE SECOND VIEW

"A second view is based on ethics. It is that the Centres, as bodies supported largely by public funds, have a duty to behave in an exemplary manner. This means that they must fully respect all rights of all parties, including IPR. If a patent has been granted on a technology, that indicates it is proprietary, and permission is required to work with the technology. According to this view, the possible invalidity of a patent, or even the fact of its non-existence in certain territories, so giving no legal rights in those territories, would be irrelevant. In our opinion, the second view is closer to the attitude the Centres should take." (emphasis ours)

Source: "Report of the CGIAR Expert Panel on Proprietary Science and Technology", April 1998, SDR/TAC: IAR/98/7.1, Section 4.2: Respect for Patents.

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lightening speed when it was informed that an Australian enterprise was tendering a CIMMYT wheat variety for license in that country. In the space of a weekend, CIMMYT marshaled its arguments, did its homework, and warned off the enterprise and the Australian PBR office.

In 1998, ICRISAT showed the way by confronting breeches to its trust agreement with FAO when it went head-to-head with another Australian institution, looking to "PBR" two chickpea varieties taken from the ICRISAT gene bank. Though in uncharted waters, ICRISAT was tough and energetic in successfully defending the public interest.

As a network, the CGIAR also deserves considerable credit for collectively calling upon the governments of the world to respect the FAO-CGIAR Trust Agreement and to halt piracies such as those RAFI had identified in Australia. The public call, issued by the CGIAR Chair, sent shock waves throughout the seed industry and drew immediate attention to the problem.

Still more impressive was the policy pronouncement made by the CGIAR in 1998 that member institutes would refuse to use Terminator Technology in their breeding programmes for release to farmers. This was a brave decision considering it was made in Washington in front of the U.S. Government delegation. This single act helped enormously to crystallize governmental and public opinion on the Terminator.

On numerous occasions, the International Plant Genetic Resources Institute (IPGRI) and the Systemwide Genetic Resources Programme (SGRP) of the CG System have shown themselves to be courageous and careful defenders of the public interest.

However, in sum, these instances and institutions are the exception that proves the rule – not the rule itself.



CGIAR and "Equity" in Human Rights

"Information is also needed on whether research institutions, concerned about their relations with donors, are avoiding technologies that they are legally free to use in a limited context. Will international research institutes, for example, distribute crop varieties containing a BT gene that is unpatented in developing countries, but patented in donor countries?"

- John H. Barton and Joseph Strauss, "Letter to Nature", August 2000.

Why the CGIAR Can't Decide

During the 1990's, the CGIAR struggled constantly to sort out its IP policies and its relations with the private sector to no avail. After more than a decade of effort, we must conclude that not only is the CG incapable of deciding – it should not be allowed to take such decisions on its own. Here are nine reasons why.

1. Ungovernable Policies?

At an international conference held in Quebec City in 1995 as part of the lead up to the World Food Summit, RAFI presented its data on CG Governance. From the podium, a senior IFPRI (the CG's policy think-tank) official disputed the data and told the audience that it was CG policy to have balanced South/North boards. He was absolutely wrong on the figures and on the policy. There is no CG policy. The fact is neither IFPRI nor the CG ever thought about it before!

2. Investment Insurance?

"By supporting CIAT's work, the USA helps tackle problems of concern to many U.S. citizens. One of these is political instability, which stems from poverty and other social problems, and which threatens U.S. trade and investment abroad. In many countries, poverty and political unrest are powerful incentives for rural-urban migration, and even for massive and non-massive and unmanageable emigration to other countries, especially the USA."

- The United States of America and CIAT, (circa 1993-94) p.1.

3. High Ground or Testing Grounds?

"Conversely, new techniques in biotechnology increase the ability of agricultural scientists to manipulate useful genes for crop improvement. Scientists therefore need easy access to diverse genetic resources and to test new products in different environments. Because CIAT offers good facilities and access to a range of germplasm and environments, U.S. scientists will continue to strengthen their links to the Center."

- The United States of America and CIAT, (circa 1993-94) p.8.

4. Middle East Middleman?

In a mid-nineties report, ICARDA advised that it has a close working relationship with the Australian aid programme, collecting and evaluating lentil germplasm in WANA. ICARDA went so far as to acknowledge that the material collected in joint expeditions within the region was grown out in conditions identical to those found in Mediterranean Australia, and that interesting germplasm was "immediately" shipped to Australia.

5. Tactless TAC?

In 1992, TAC agreed to give NGOs and IARCs meeting in Cali a policy paper proposing CGIAR's position on IP. The document was still being "tweaked" when the meeting began and was eventually presented as a "non-paper." The NGOs present were asked to treat it as "secret". The IARCs themselves were horrified and the NGOs refused. Finally the policy document was completely withdrawn and has never been seen since.

6. Private Eyes?

In 1992, RAFI was invited by the then DG of CIMMYT to visit its Mexican headquarters and talk with senior staff. At the end of the visit, everyone gathered in the CIMMYT boardroom and we were asked for our thoughts on the organization. We began by joking that we no longer believed that CIMMYT was a front for the CIA. Everyone laughed, rather nervously we thought, until the Deputy DG thoughtfully noted that it had taken forever to rid the Center of the two CIA operatives and even after that, the CIA wanted to place another agent in the organization. The laughter stopped.

7. Privatize?

In the mid-nineties, a retiring CIMMYT board member told RAFI that he had seen a staff discussion paper analyzing the prospects for privatizing certain potentially profitable Centre activities either through direct sale to a company or through the creation of a "for-profit" subsidiary. Nothing appears to have come of the paper and current board members appear unaware that the issue was ever raised.

8. Boards without Borders?

When it was learned that "in-trust" germplasm sent by ICARDA to Australia was under IP application in that country, ICARDA refused to demand the claim be dropped. Only after intense internal and external pressure did the CG Centre act to honour its commitment to FAO. During months of angry negotiation, ICARDA neglected to mention that one of its senior scientists served on the board of the offending Australian organization.

9. Private Defender?

"Of approximately 500,000 accessions... fewer than 200 cases of improper IPR applications protection have been alleged. Of these, only 10 or fewer have been proven substantive... Thus in five years of experience... one could say that the level of confirmed "abuse" has been approximately 0.000004% per annum at most..." – minutes of the CGIAR Genetic Resources Policy Committee (GRPC), 24 February 2000. The only study known to the GRPC was the joint HSCA/RAFI analysis of the Australian PBR Office. The CSOs ultimately identified 147 dubious claims, of which 118 were Australian and the rest were research spin-offs. The 118 Australian cases represented 6% of *all* Aussie PBR applications since the law was enacted. Sadly, GRPC was echoing industry's defence, which had been publicly ridiculed at the World Seed Conference in Cambridge six months earlier!

Twenty-Eight Pro-Active Responses to Intellectual Property for Public Researchers

Pooling Public Power

- 1. Establish an association of public agricultural research institutes.
- 2. Form a union of public agricultural scientists for ethical research and technologies.
- 3. Adopt codes for scientific and technical collaboration.
- 4. Create a public commission on science, innovation, and society.
- Call for the re-opening of the WIPO and UPOV Conventions and the introduction of new clauses intended to safeguard the rightful interests of public institutions and indigenous and rural communities.
- 6. Undertake an independent audit (including public hearings and questionnaires to public researchers) of the impact of intellectual property systems on science and society.
- Request a CGIAR Co-Sponsor (UN Agency) to seek an Advisory Opinion on the ethical and social limitations on biological intellectual property from the International Court of Justice.
- 8. Call for a Special Session of the UN General Assembly to debate genomics and genetic resources.
- 9. Join with CSO's in seeking guidance from the UN Commission on Human Rights on the possible conflicts between Article 27 of the Universal Declaration of Human Rights and Article 27 of the WTO TRIPS chapter.
- 10. Create an alliance with diverse civil society groups such as indigenous and other farming organizations concerned about intellectual property practices.

Publish not Patent (better "read than dead"!)

- 11. Establish a peer-reviewed international agricultural science magazine on the Internet.
- 12. Strengthen the *Prior Publication* option in cooperation with scientific publications.
- 13. Strengthen the *Prior Publication* option via regulations in national IP offices and international conventions.
- 14. Publish a common annual report on the impact of IP and the private sector on Public Goods.

Public Good not Pirate Greed

- 15. Collective monitoring of IP abuses.
- 16. Establish an *Ombudsperson* office (financed through IP application fees) in patent offices and in international IP conventions.
- 17. Affirm the *Research Exemption* nationally and internationally.

- 18. Support *Non-Patent Patent* legislation & utilization nationally and internationally.
- 19. Develop *Public Research Registries* in order to identify public domain research.
- 20. Create *Public Goods Panels* to vet IP applications to protect public research products.
- 21. Provide *public "in-service" training* for patent examiners on indigenous knowledge and public research methodologies.
- 22. Convene or co-convene regional and sub-regional workshops on IP issues stressing the rights of individuals and states to benefit from scientific advances and affirming national sovereignty on IP issues.

PR not IP

- 23. Public relations Collective *confrontation* of biopiracies.
- 24. Public responsibility Contractual *donor commitment* to intervene in biopiracy disputes where public funding may be abused (possibly through national legislation or regulation).
- 25. Public relations A *Tech Tithe Club* through which those commercializing public research commit to voluntary financial & technological contributions (such as offered by ASSINSEL).
- 26. Public responsibility A *Public Benefit Club* for the collective development of pro-poor products that commercial entities refuse to develop without exclusive monopoly.
- 27. Public responsibility Publicly commit to using the best and most appropriate technologies in the service of the poor, even if under IP, in countries where the IP is non-applicable.
- 28. Public responsibility Publicly declare that MTA conditions based on IP are not valid in countries where the IP itself is non-applicable.



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28 STEPS TO HIGHER GROUND

Twenty-eight pro-active non-IP alternatives to defend and advance the public interest are summarized here. Some are entirely external to IP Systems. Others represent external proposals to ameliorate the worst excesses of current systems. While proposals to constrain predatory practices are helpful, ultimately, a beneficial (or even benign) exclusive monopoly knowledge regime is impossible. If these 28 options have not been evaluated, RAFI invites public sector institutions to do so now and to suspend "open-to-patent" policies until their review is complete.

POOLING FOR PUBLIC POWER

1. ORGANIZE

Establish an association of public agricultural research institutes. Public agriculture needs an effective lobbying voice capable of getting its message across to governments and intergovernmental organizations. The association should be open to any not-for-profit agricultural research institution at both national and international levels. An articulate and purposeful consortium could also bargain more effectively with industry to establish many of the other options cited here.

2. UNIONIZE

Form a union of public agricultural scientists for ethical research and technologies. Public scientists and technicians need their own collective bargaining unit and standards association that will make it possible for them to ensure scientific freedom and protect the public interest. Again, such an association should be open to national and international scientists and should be represented in all relevant fora.

3. FORMALIZE

Adopt codes for scientific and technical collaboration. Public agriculture should establish its own internationally agreed upon codes of conduct and standards for monitoring collaborative activities. These codes should include best practices for managing and exchanging germplasm and germplasm information; standards for benefit sharing in the event of commercialization; clear monitoring, reporting, and response procedures, etc. Public institutes should collectively engage the public in developing these codes and in monitoring their implementation.

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4. PUBLICIZE

Create a public commission on science, innovation, and society. With or without their own association, public agricultural institutions should establish a special commission to investigate their problems (funding, academic, intellectual property, other policies) and make recommendations applicable internationally and nationally. The time-limited commission should involve high-profile panel members and should be prepared to give the commission's conclusions high visibility. The commission should have a clear political strategy associated with its report.

5. CRITICIZE

Call for the re-opening of the WIPO and UPOV Conventions & the introduction of new clauses intended to safeguard the rightful interests of public institutions and indigenous and rural communities. Some elements of international IP conventions are under ongoing review and it may only be necessary for public bodies to make representations to standing committees. However, in other cases, it may be appropriate to call for a re-opening of conventions and the formal presentation of a specific platform of changes required by the public sector in order to function with freedom and effectiveness on behalf of the public good. The formulation of the platform could logically arise from the recommendations of the commission described above or through a more modest process evolved through public sector associations.

6. ANALYZE

Undertake an independent audit (including public hearings and questionnaires to public researchers) of the impact of intellectual property systems on science and society. An independent IP audit could either be conducted in conjunction with the commission noted above, or as part of the initiative to re-open an IP convention. The intent is to provide empirical and authoritative evidence of the precise impact of IP, including specific elements of IP on public agricultural research and public goods. Although the audit should be international in scope, it could be supported by a series of related national audits as well.

7. ADVANCE

Request a CGIAR Co-Sponsor (UN Agency) to seek an Advisory Opinion on the ethical and social limitations on biological intellectual property from the International Court of Justice. The International Court of Justice is a highly flexible UN instrument capable of accepting and interpreting legal questions put to it by intergovernmental bodies whose own charters identify the World Court as the arbiter in matters of administration and international law. Normally, the Court turns around an Advisory Opinion within 12 months. The Court is able to invite "Friends of the Court" to give oral or written testimony and can finance participation through requests to the UN General Assembly. While the Court's Advisory Opinion does not oblige States to accept or act upon its advice, States customarily do so.

8. SSUNGA

Call for a Special Session of the UN General Assembly to debate genomics and genetic resources. UN Special Sessions on major issues are normally held in September immediately in advance of the regular session in New York. A Special Session on Genomics/Genetic Resources could raise all the issues related to the ownership and control of genetic material and could compliment or set the stage for a World Court hearing. UNGA could also go to the Court for an Advisory Opinion on some issues.

9. UNCHR

Join with CSOs in seeking guidance from the UN Commissioner for Human Rights on the possible conflicts between Human Rights covenants (such as Article 27 of the Universal Declaration of Human Rights) and Article 27 of the WTO TRIPS chapter. A direct appeal to the UN Human Rights Commissioner could be complimentary to World Court and SSUNGA initiatives because it has the advantage of ensuring the participation of farming and indigenous communities as well as IARCs in direct debate, and could also take place more quickly. The Human Rights Commission is already reviewing the Right to Food and might well regard this initiative as relevant to its work.

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10. ALLIES

Create an alliance with disposed civil society groups such as indigenous and other farming organizations concerned about intellectual property practices. Public agriculture needs to move out and form alliances with its natural allies – farmers, indigenous peoples, consumers, and CSOs – who are also concerned about the impact of IP on public research. While single institutions or collective associations of public agencies can conduct the ideas described above, they would benefit by a broader coalition.

PUBLISH NOT PATENT (BETTER "READ THAN DEAD"!)

11. WRITE

Establish a peer-reviewed international agricultural science magazine on the Internet. A peer-reviewed international agricultural science journal on the Internet would be inexpensive. It could provide the language diversity and length also useful in showing "prior art" and giving IP examiners the opportunity to refer to the electronic journal routinely as they consider claims. Such a publication could also meet the needs of public sector researchers who otherwise have difficulties having their work acknowledged in the academic community.

12. FIGHT

Strengthen the *Prior Publication* option in cooperation with scientific publications. In cooperation with major scientific journals such as *Nature* and *Science*, it might be possible to improve the amount of space given to agricultural sciences and to add a specific element to every published article that describes the role of the public sector in the research and allows the author(s) to speculate on the wider (or possibly "obvious") extensions of the research. In a sense, the revised article format might make it more difficult for private sector institutions to "rip off" public research by allowing wider non-IP "claims" by public scientists.

13. RIGHT

Strengthen the *Prior Publication* option via regulations in national IP offices and international conventions. IP examiners and offices are doing a poor job of monitoring scientific publications and other information that might advise them of "prior art". By legislation or regulation, it might prove possible to oblige a closer (and wider) survey of public information and traditional knowledge before erroneous patents are granted.

14. RATE

Publish a common annual report on the impact of IP and the private sector on public goods. The report (in print and on the Internet) should offer both examples and a general evaluation of trends and impacts to help policy-makers understand and adjust their legislative and regulatory mechanisms in order to safeguard public services.

PUBLIC GOOD NOT PIRATE GREED

15. TRACK

Collective *monitoring* of IP abuses. To date, public agriculture has not shown itself to be capable of monitoring biopiracy or IP infringement by the private sector. By working collectively, public institutions should be able to put a minimal monitoring instrument in place. By working with Civil Society Organizations and farmer and indigenous peoples' organizations, a truly effective monitoring mechanism should be possible.

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16. TRUST

Establish an *Ombudsperson* office (financed through IP application fees) in patent offices and in international IP conventions. In Scandinavian countries, the position of *Ombudsman* – a neutral person or an advocate for those seeking redress from government – is well established. Financed through IP application fees (nationally) and through national membership fees (in international conventions), an *Ombudsperson* office should be established within patent offices to receive complaints and inquiries from individuals, public institutes, and peoples' organizations. If a complaint appears to have some basis, the *Ombudsperson* would have the financial and legal resources to pursue the complaint to a final legal conclusion.

17. TEST

Affirm the *Research Exemption* nationally and internationally. The function of the research exemption is either inconsistent or abused in many countries and at international conventions. Public agriculture should review the research exemption and make specific recommendations for its strengthening and enforcement. The intent would be to facilitate scientific exchange through regulatory or legislative amendments.

18. TRIAL

Support *Non-Patent Patent* legislation and utilization nationally, and internationally. In a few IP jurisdictions (such as the USA) it is possible to go through the process of obtaining a "non-patent" in the patent office. The purpose of the non-patent is to confirm that a specific body of knowledge is in the public domain and cannot be subjected to patent claim by others. Public agriculture should broaden this possibility and encourage its adoption in national legislation and in other IP conventions.

19. TRACE

Develop *Public Research Registries* in order to identify public domain research. Public agriculture should establish specific registries describing their scientific research – past and present – using database fields and formats that make the information readily accessible to IP offices, conventions, and other scientists. This would make it easier for IP examiners to search for prior art and to consult with the public sector before issuing inappropriate claims.

20. TEAM

Create *Public Goods Panels* to vet IP applications to protect public research products. As an extension of the previous proposal, governments should establish scientific panels from public sector scientists to review IP claims in their field prior to their final acceptance or rejection. The panels would assess the novelty and utility of the claims in view of prior art and notify authorities if there is a possible conflict with the public interest.

21. TEACH

Provide *public "in-service" training* for patent examiners on indigenous knowledge and public research methodologies. Public agriculture should offer to provide training seminars for IP examiners in their fields. The seminars might be conducted every second year or so in order to keep examiners abreast of public research and scientific developments that could materially influence decisions reached in the IP office. The costs of such seminars should be financed through IP application fees.

22. TALK

Convene or co-convene regional and sub-regional workshops on IP issues, stressing the rights of individuals and states to benefit from scientific advances, and affirming national sovereignty on IP issues. Possibly in conjunction with farmers' and indigenous peoples' organizations, public science could host or participate actively in workshops that would encourage governments and others to understand the flexibility they have under the Universal Declaration of Human Rights and the TRIPS Chapter.

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PR NOT IP

23. TEASE

Public relations – Collective *confrontation* of bio-piracies. The record shows that the cheapest and most effective way to challenge a bad IP claim is through publicity. Public agriculture should be prepared to speak out publicly and collectively where they feel that a claim is wrong or where they believe the claim, right or wrong, is against the public interest. Drawing attention to bad IP does not automatically imply that the public institute believes there has been wrongdoing – only that the IP decision is not in the best interests of society. If public agriculture is not prepared to use this simple and inexpensive option, it is certainly not prepared to defend its own patents.

24. TESTAMENT

Public responsibility – Contractual *donor commitment* to intervene in bio-piracy disputes where public funding may be abused (possibly through national legislation or regulation). Governments, foreign aid agencies, and other donors should be prepared to defend their research investment from piracy or inappropriate claims as a normal condition of the original funding agreement. This "defence" should be embodied in national laws for the purpose of protecting national public goods, and should be interpreted as extending to national funding of international public goods as well. The costs of defence, therefore, should be borne by the judicial system of the funding country and not by the immediate funding department or programme.

25. TRADE

Public relations – A *Tech Tithe Club* through which those commercializing public research commit to voluntary financial and technological contributions (such as offered by ASSINSEL). The Gene Giants and other large research institutions do not want to be seen as predatory or as feeding off public research. They can be made to pay either through contractual commitments (including patent licenses) or – much less expensively – through the formation of voluntary donor programmes through which the private sector volunteers significant funds to the public sector in lieu of

legal mechanisms. In general, companies will respond well to avoid bad publicity and to garner positive publicity through their voluntary contributions. This less legalistic approach will cost less, take less time, and probably earn more money.

26. TRYST

Public responsibility – A *Public Benefit Club* for the collective development of pro-poor products that commercial entities refuse to develop without exclusive monopoly. Particularly in agricultural fields such as veterinary medicine, it is difficult – given the high level of corporate concentration in the industry – to commercialize drugs or diagnostic kits developed in the public sector unless the public institute can offer an exclusive license to the multinational enterprise. However, donors and public agriculture collectively might be able to negotiate profitable commercialization arrangements with smaller national or regional enterprises without exclusive licenses. Donors and institutes could collectively develop an investment pool for this purpose.

27. TELL

Public responsibility – Publicly commit to using the best and most appropriate technologies in the service of the poor, even if under IP, in countries where the IP is non-applicable. Public science should take a clear stand in support of national sovereignty and human rights by publicly stating and openly pursuing the use of any truly beneficial technologies in any partner country where the IP claims are non-applicable.

28. TELL AGAIN

Public responsibility – Publicly declare that MTA conditions based on IP are not valid in countries where the IP itself is non-applicable. Public science should take a public stand against the imposition of inappropriate MTA restrictions of any kind and actively advise partner countries that MTA agreements accepted by the public body are not necessarily transferable to partners. In addition, institutes and the international community should scrutinize the whole nature and impact of MTAs to better understand their use as a pseudo-patent in germplasm exchange.

Guess Who's Coming to Eat Your Lunch!

Why the Gene Giants will be interested in the International Public Sector

When Whitney MacMillan left the helm of Cargill, one of the world's largest grain trading and food processing enterprises, he'd never heard of CGIAR. When he was asked to join a panel to review the System, he had his homework cut out for him. Many Gene Giant executives have either never heard of – or couldn't care less about – international, agricultural, public research institutions. So why worry about corporate takeovers? Because as global corporations spread into the new markets of the South, they will encounter public researchers. Unless principles, policies, and monitoring mechanisms are firmly in place the multinationals will take over public science, while hardly giving the little institutes a passing thought. Corporations aren't hungry for the CGIAR – they're just bulimic for power. Here's what will happen...

GENETIC RESOURCES

1. Gene Banks

CGIAR and related institutions have the world's most unique and best-documented collections of Farmers' Varieties and their wild and weedy relatives. Companies may strive for preferential or priority access to useful germplasm.

2. FAO-CGIAR Trust Agreement

Companies may pressure CG Centres to redefine terms or conditions in order to allow them to negotiate patents or priority access to in-trust material.

3. New Collections

With access problems increasing and the number of new collections evaporating, companies may wish to take advantage of International Centres' experience and reputation to support new expeditions searching for germplasm of particular interest to them.

FIELD EXPERIMENTATION

4. GM Crops

As most South governments continue to have inadequate or nonexistent legislative and regulatory procedures for GM products, the Gene Giants may hope to piggy-back on the reputation of international institutions that routinely contribute to, or conduct research in, many developing countries.

5. Field Trials

The Gene Giants may wish to test or introduce their products in international field and nursery trial programmes supported by Centres.

CHEAP LABOUR

6. Personnel

Collaborative research programmes, or "topping off" grants, could allow Gene Giants to capture cheap human resources to conduct work that would otherwise cost more in industrialized countries, or on a more commercial basis.

7. Other Assets

After two to four decades of infrastructure investment, many Centres have laboratories, equipment, greenhouses, gene banks, fields, and administrative procedures that Gene Giants might capture with minimal grants or cheap contracts.

POLICY INFLUENCE

8. Good Will Hunting

Gene Giants can use their collaborative research or grants to capture the "Good Will" which the media and many countries ascribe to the International Centres.

9. Present Access

With ready access to many agriculture ministers and other national policymakers, International Centres can be used to pave the way for Gene Giants to influence policies and programmes advantageous to their commercial interests.

10. Future Access

Most South researchers pass through the portals of international centre training programmes at one time or another – often early in their careers. Influence over the training curricula and access to the trainees could help Gene Giants introduce products and marketing systems in the future – and to identify potential employees or influenceable future science policymakers.

PART FOUR

HUMAN RIGHTS OR CORPORATE RIGHTS?

INTERNATIONALLY, THE CHOICES FACING AGRICULTURAL SCIENCE CAN PERHAPS BE SUMMARIZED AS THE CHOICE OF ARTICLE 27. CIVIL SOCIETY ORGANIZATIONS KNOW WHERE THEY STAND ON THE ARTICLE – NOW THEY HAVE TO DECIDE WHERE THEY STAND ON THEIR SUPPORT FOR INTERNATIONAL AGRICULTURAL RESEARCH!

ARTICLE 27... OR ARTICLE 27?

As almost everybody knows, Article 27 - specifically subsection (3) – of the TRIPS chapter, commands signatory states to adopt patent regimes for micro-organisms and patents or another "effective" sui generis regime for plant varieties. IP on animals remains optional although the commandment regarding microbial is so loose that it could be interpreted to mean any living material that can be squeezed into a test tube - including human DNA. What seems to be forgotten is that other Article 27 – the legally binding, non-reversible, long-entrenched, and legislatively sustained commitment to guarantee the rights of society to have access to beneficial technologies that resides firmly within the Universal Declaration of Human Rights. (Other Human Rights covenants related to the right to food, et cetera, however, could carry even greater weight in intergovernmental discussions. In this document, the Declaration's "Article 27: should be understood to represent the range of relevant Human Rights accords administered by the UN Commissioner for Human Rights.") Having pledged themselves to abide by all intergovernmental treaties and conventions, international institutions are going to have to decide which Article 27 has precedent.

Article 27 (1) of the Human Rights covenant states that "Everyone has the right to... share in scientific advancement and its benefits." Only in the subsequent subarticle, (27 (2)) is there recognition that "Everyone has the right to the protection of the moral and material interests..." arising from scientific works. In this way, the 1948 treaty attempts to balance the right of society to have access to science and technology (and the creative arts) with the right of inventors ("authors") not to be ripped-off. In the end, the Treaty yields to the sovereignty of nations to sort out the balance within their national context. Nothing in the Human Rights Declaration implies that inventors or creators have the right to exclusive monopoly, and nothing in Article 27 of the covenant would suggest that limited liability companies (corporations) – those that control more than 95% of the world's patents – can assume the rights of the original creators.

In fact, the UNDP Human Development Report 2000, Human Rights and Human Development²⁶ explicitly draws out the contradictions between the Universal Declaration and the TRIPS Chapter of the Uruguay Round Treaty. The UNDP report goes further and suggests that TRIPS could run afoul of the International Covenant on Economic, Social, and Cultural Rights and the International Covenant on Civil and Political Rights. On August 17th, the UN Sub-Commission for the Protection and Promotion of Human Rights added considerable fuel to the fire ignited by UNDP, by passing a unanimous resolution expressing concern that the WTO TRIPS deal could infringe on the rights of poor people and their access to both seeds and pharmaceuticals.²⁷ The unusual resolution followed upon other statements emanating from the UN High Commissioner on Human Rights and the various intergovernmental committees associated with her Office that had originally caused consternation at the Seattle WTO Ministerial meeting at the end of 1999. Indeed, since at least 1998, Human Rights bodies within the UN have been sending ever-stronger

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signals that there is a real conflict between governments' commitments to Human Rights and their more recent agreements on trade and IP.²⁸

Both the intergovernmental bodies of the Human Rights Commission and UNDP make it clear that the Universal Declaration – along with many of its attendant treaties and covenants – are legally-binding and cannot be weakened or withdrawn by signatory states. Further, the covenants establish the right of participation of effected individuals and groups in legal proceedings to remedy rights abuses. With the August resolution, farmers are in a clear position to directly challenge the policies of international scientific institutions. The institutions, caught between the proverbial "rock and a hard place", must decide whether to take common cause with the farmers and seek clarification of their predicament – or be taken before the Human Rights Commission by farmers.

"HIPPOCRATES, WE HAVE A PROBLEM!"

INTERNATIONAL PUBLIC SCIENCE IS BECOMING A TROJAN TRADE REP... WILL SCIENTISTS ACHIEVE WHAT THE WTO AND THE USA COULD NOT?

The first dictum of the Hippocratic Oath taken by medical doctors is "to do no harm". They are also supposed to put the interests of their patients first. Agricultural and other scientific researchers working on behalf of the poor would do well to adopt the Hippocratic Oath. International scientific organizations believe themselves to be good global citizens when (despite their distaste for some of its manifestations) they abide by intellectual property regimes.

Article 27 – On Whose Side are Public Sector Institutions?

THE HIGH GROUND: Human Rights

The Universal Declaration of Human Rights (1948)

27. (1) Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits.

(2) Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary, or artistic production of which he is the author.

THE LOW GROUND: Corporate Rights

WTO Trade-Related Aspects fo Intellectual Property Rights (1995)

27.3(b) Plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. However, Members shall provide for the protection of plant varieties either by patents or by an <u>effective sui generis</u> system or by any combination thereof. The provisions of this subparagraph shall be reviewed four years after the date of entry into force of the WTO Agreement.

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Rather, scientists are advancing and enforcing the national laws of their donor states over the poor countries they are pledged to serve. In doing so, public institutes deny the poor access to technologies they and their governments may need and have every moral and legal right to use. Public researchers may violate one or more international Human Rights conventions.

Although policies adopted by some international researchers struggle sincerely to ensure the development and dissemination of "public goods" for "public benefit" in a world of patent predators, the institutes also commit to abide by intellectual property claims. Few institutes recognize (or realize) that patents are a matter of *national* – not *international* – law and that countries where the patents do not apply have every right to use these technologies. Institute policies speak solely to the rights of intellectual property holders. The reasons for this disturbing intellectual myopia arise from both the cultural orientation and financial circumstances of the organizations.

GOOD CITIZENS... OF WHO'S COUNTRY?

Without actually *thinking* about it, most international institutes have assumed that they must accept the conditions laid-down by a patent-holder everywhere in the world. Their automatic acceptance of the authority of, for example, U.S., Japanese, and EU patent regimes is both cultural and financial. The decision-makers at most international research organizations are citizens of the countries with the most monopolistic patent regimes. Most of the institutes' funding come from the USA, Japan, and the EU. Their auto-acceptance of the IP hegemony shows that agricultural researchers are "political". It also shows that they are not astute enough politically to even recognize their own context or know when they are, *de facto*, adopting policies.

But, of course, they have a point. Even though few hightech patents have even been applied for among the poorest nations in Africa, Asia, and Latin America, the explicit unauthorized use of patented technologies in these countries could bring down the wrath of the patent-holders; contribute to a yet more divisive knowledge exchange environment; and put pressure on donors to apply financial sanctions. In this light, are public bodies merely acknowledging reality and quietly adopting pragmatic policies they believe to be in the best interests of the poor?

If so, Hippocrates, we have a problem! Institutes are not only making policies for themselves, they are imposing their policies upon the poor countries with whom they work. In accepting – and passing on – IP restrictions, they are setting the policy and future scientific advances of their national partners. They are doing so without the implicit or explicit understanding of the countries. By determining that they know what is best for the South, they are doing harm.

This being *real politick*, one would expect public institutes to sit down and discuss these issues frankly, and openly, with national governments and their research partners. One would also expect them to band together to bargain and barter for the best politically acceptable "deal". One would further expect negotiation with both governments and corporations. In general, this has not happened. But, of course, if you don't *know* you have a policy problem, there is not much reason to negotiate.

The final solutions here are not likely to be as clear-cut as everyone would like. There is a juggling act involved. There is nuance.

International public institutions have not demonstrated – historically or recently – that they have the savvy or the skills necessary to undertake this task. Because they operate with an ambiguous international legal status, they cannot be relied upon to defend and secure the interests of the poor in conflicted policy areas where their own survival could be involved. Unintentionally, unknowingly, they will take the role of the Trojan Trade Representatives of the patent-holder countries.

THE MALICE OF ABSENCE

In reviewing the published IP policies of several international institutes, RAFI discovered that:

• None explicitly acknowledged the right of a sovereign state to utilize technologies not under IP in that state.

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- None discussed the risk of imposing non-applicable IP or MTA restrictions on states.
- None referenced the relevant Human Rights treaties that affirm society's right to access innovation.
- None advanced any discussion of the conflicts involved.

International Agricultural Research Centres may be violating several Human Rights covenants including Article 27 of the Universal Declaration in four ways:

1. Withholding Scientific Advances

If IARCs decline to utilize beneficial scientific advances, either in general or in some countries, because of IP claims pertaining in other countries.

2. Transferring Patent Obligations

If IARCs pass on IP obligations they have assumed to countries where those obligations are non-applicable without advising the country that they are not obliged – morally or legally – to adhere to the IARC's obligations.

3. Offloading MTA Obligations

If IARCs impose MTA (Material Transfer Agreement) obligations that are premised upon IP claims to countries wherein the IP claims are non-applicable without advising the country of its full right to disregard the IARC's obligations. It is not uncommon now for both public and private institutions to transfer technologies and germplasm via MTAs. Often the material being transferred could be replicated or obtained by others without recourse to any single institution. In these cases, the reason given for accepting the conditions laid down by the MTA is an IP claim that encompasses the material being transferred. In other words, an international public body might accept the restrictions of an MTA out of deference for an irrelevant IP (for all or most of the countries with whom it cooperates. An IARC might transfer its MTA obligations (through its own MTA or merely by inferring obligations from the original MTA) that are premised on the IP claim. Third parties are generally not legally obliged to honour MTAs signed by others. Third World countries certainly should not be made to feel that they have to honour IPs that are non-applicable - nor be asked to accept MTA restrictions

passed on by IARCs because of irrelevant IP claims. MTAs are an increasingly problematic and important concern in need of greater public debate.

4. Financial Mismanagement

If the IARC utilizes public funds to pay for private technologies to be used in countries where those technologies can be utilized without obligation.

In reviewing the formal IP policies of a number of international public science organizations, RAFI has yet to find a single institute that, directly or indirectly, recognizes the right of states to use proprietary technologies when their national laws allow. No institute (subtly or otherwise) acknowledges its own possible jeopardy in passing on IP constraints. RAFI believes that discussion would reveal a number of specific instances where public bodies have enforced inappropriate IP requirements and have governed their own approach to new technologies so as not to conflict with proprietary technologies.

The formulation of an IP policy in an international public institution is not easy. For example, although RAFI and many other CSOs would choose civil disobedience rather than submit to unjust or inequitable laws or treaties, that option is not realistically available to high-profile international institutions in today's world. Public bodies must be careful to address both Article 27s, in order to assure all parties that they are acting in good faith and without bias. This "balance" must be explicit in the institute's public policy and pronouncements. If international institutions abide by international conventions and also honour the laws of each country within which they operate, they could well find themselves in an untenable legal and political mess. Public bodies must seek the advice of the intergovernmental community for practical solutions.

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POLICY PIECES

An IP policy adopted by an international institution should contain the following points:

1.

Recognition of the rights related to innovation and access embedded in Human Rights Treaties.

2.

A commitment to abide by the laws of each country within which the institute carries out its mandate.

3.

A commitment to make the best technologies available to every country within the legal parameters determined by the recipient country.

4.

A commitment not to impose the IP standards of one country upon another sovereign country.

FIRST FORA

THE 28 STEPS BEGIN WITH THREE

The twenty-eight proposals (there are undoubtedly more) discussed in this paper can be translated into a more specific action agenda. Aside from many possible national or regional initiatives, work can begin now in three global fora.

INTERNATIONAL CENTRES' WEEK (CGIAR)

Although the issues discussed here extend beyond the CGIAR and are relevant to any international public research body, the CGIAR has become the focal point (lightening rod?) for policy debate. When the 16 IARC's, their fifty or so donors (mostly governments), and their co-sponsoring agencies meet in Washington this October, the collective body could consider the following actions:

1.

Agree to suspend the pursuit of any new IP claims or agreements until a full Systemwide IP Policy Report is concluded (by mid-term 2001?).

2.

Commit, as part of the Systemwide Report, to a thorough evaluation of all policy options including, among others, those outlined in this paper.

3.

Agree to undertake individual IARC IP audits to determine whether or not some existing IP arrangements maybe in conflict with the Human Rights Declaration and/or sovereign rights. (IARCS did recently complete IP audits and this recommendation only seeks answers to additional questions, which should be readily found from the audits.)

4.

Request that each national government that is a member of the CGIAR undertake its own study of the practices of governmental and other public institutions with respect to IP and MTAs to determine if public institutions within the country are improperly imposing conditions on other outside the country that could contravene the Human Rights Declaration.

5.

Confirm full CGIAR support for UN Human Rights accords and commit to facilitating its implementation in all countries within which they operate.

6.

Request policy guidance from the FAO Commission on Genetic Resources for Food and Agriculture (CGRFA).

7.

Request one of the CGIAR Co-Sponsors (UNDP, FAO, or the World Bank) to seek an Advisory Opinion from the World Court on the possible conflict between Human Rights treaties and Trade treaties.

8.

Agree to join with other public bodies, farmers' organizations, and indigenous peoples' organizations in

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calling upon the UN Commissioner for Human Rights to examine the Human Rights/trade uncertainty and render advice.

9.

Endorse proposals for the convening of a Special Session of the UN General Assembly on Genomics and Genetic Resources ("Genome Summit").

The Hidden "Givens": Excerpt from CIMMYT's IP Policy Statement

(AS PUBLISHED IN MAY 2000, BOTH IN PRINT AND ON ITS WEBSITE.)

Note: The CIMMYT statement is one of the most recent IARC IP Policies and also one of the most thoughtful. Nevertheless, it is what the policy fails to make clear that is most prominent in its statement as with all others reviewed by RAFI.

ACCESS TO AND USE OF PROPRIETARY TECHNOLOGY

1.

Proprietary technology (technology owned and protected by intellectual property rights by others), when properly acquired may be used by CIMMYT to enable CIMMYT to make important advances necessary to further its mission.

2.

Prior to the use and application of such technology, CIMMYT will make best efforts to identify any restraints associated with its use or with the distribution of products or processes incorporating the proprietary technology. CIMMYT will endeavor to produce and distribute research products that are "free and clear" of restrictions imposed by third party intellectual property rights. If not "free and clear", CIMMYT will make best efforts to disclose any outstanding restrictions that might apply to these products.

FAO COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

1.

At the next regular meeting of the FAO CGRFA, member governments could review the impact of IP and corporate concentration on PGRFA with particular attention to policy developments in the CGIAR.

2.

The Commission might also recommend to the FAO Council or Conference that an Advisory Opinion be sought from the International Court of Justice.

3.

CGRFA may also wish to raise the possible conflict between Farmers' Rights and the Right to Food on one hand and trade treaties on the other with the UN Human Rights Commission as part of its ongoing work on the Right to Food and FAO's own work on Farmers' Rights.

4.

In addition, the Commission should begin its own evaluation of the effectiveness of FAO in addressing possible abuses to its Trust Agreement with CGIAR.

UN HUMAN RIGHTS COMMISSION

1.

IARC's, farmers' organizations and indigenous peoples' organizations could consider making a joint appeal to the Human Rights Commissioner to review the impact of IP and MTAs on the rights of sovereign states, farmers, and indigenous peoples.

2.

If IARCs are not prepared to take such an initiative, CSOs should do this on their own and request that the IARCs be included in the Human Rights review.

The Seven " Devil made me do it!" Arguments for Public Patenting

Public institutes offer six arguments for adopting policies open to IP. The arguments are more based on premonition than practice. Good (and sincere) scientists seldom make good (or innovative) policy makers. Without fail, institutes insist that their policy shift required soulsearching and courage. In reality, the policies are poorly analysed, devoid of creativity, and required all the heroism it usually takes to follow the herd.

CONVENTIONAL WISDOM	ANALYSIS	ALTERNATIVES
1. Don Quixote "We can't let them pirate Public Goods!"	Windmills of the mind? Most public institutions have no problem with their work being pirated so long as it doesn't hamper their own research or prevent them from getting it to the South.	Spotlight Turn the moral outrage into publicity that will force the claims to be abandoned – not into more patents that are too costly and will never be defended anyway.
2. R&D Interruptus "They'll patent our work and then stop us from continuing our research!"	Unlikely "Scrooges" Any examples? Gene Giants don't like this style. This is a risk, but most CG R&D is in countries where the patent is not – or where the company is not active.	Don't Limit Claims with Patents It's a cheaper and easier defence via prior publication where the claims should be broader than in a reasonable patent. Publicity is more effective.
3. Filthy Lucre "We can plough our royalties back into pro- poor research!"	"Pied Piper" Patents? You'll also get "pie in the sky when you die". There's not much money in pro-poor research. But, once profit becomes a motive, the public mission is skewed by an innovative torrent of rationalizations.	Tech Tithe If public research is going to make someone money, publicize it; make sure their government knows; encourage donations. It's cheaper and probably yields more money and goodwill.
4. Good Partnership "They need to patent for North markets & we have free use in the South. But the project must be protected."	Reality Checkout? The commercial reasoning is real. The "commercialiser" may want to patent but the IARC only needs a good contract. What if the "market" territory changes or additional "claims" are filed via a later patent?	Public Benefit Club Contractual research agreements can be easier to uphold than patents – and cost less.
5. No Patent – No Point "Our work won't get to people unless we grant an exclusive license to develop & market it."	Pro-Poor Monopolies? It's hard to imagine the conditions under which turning over an exclusive monopoly on public research to a Gene Giant is the best option for the poor. Examples?	R&D Club Put together a consortium of donors and public institutes and/or undertake technology-support agreements with commercial entities in the South on a non- exclusive basis that gives them a non-IP head start in their market area.
6. Golden Fleeced "We need their patented technologies. If we don't respect IP, they won't share these technologies. Or worse, they'll sue us!"	True or False? If the technologies are patented then they are accessible to anyone with reasonable knowledge of the art and can be utilized in any country that does not recognize the patent. If the patent does not disclose sufficient information, demand the patent be withdrawn.	Golden Nice A public appeal to the company to make its technology available to the poor will get an immediate favourable (if begrudging) response from every Gene Giant wanting to be "Mr. Nice Guy" in the media.
7. Irresponsible Not To "We're keeping our options open. It would be irresponsible of us not to employ all the tools available to defend the public."	The NRA Argument? Spending foreign aid on legal fees & futile litigation does not defend the Public Trust. The U.S. National Rifle Association uses the same self-defense argument. Most people still end up shooting themselves or those they wish to protect.	Tool School This would only be credible if institutes have explored all other tools (including RAFI's 28) & engaged those they find useful. In the absence of pursuit of non-IP tools, the "open to patent" option is intellectually irresponsible.

CONCLUSION

CIVIL SOCIETY ISSUES AND ACTIONS

WHAT – IF ANYTHING – DO CSOS WANT FROM PUBLIC SCIENCE? AND WHAT ARE WE WILLING TO DO TO GET IT?

RAFI, along with other CSOs (especially those in the South) has long been critical of CGIAR IP policy and also of CG science. Many CSO critics, contemplating the financial, policy and governance crisis confronting the System, find it difficult to sympathize.

In RAFI's opinion, there are three strong reasons why CSOs should come to the support of international agricultural research:

1.

Regardless of our views about specific IARCs or networks, the Public Good, that they are part of, needs to be defended and its territory expanded – not eroded.

2.

If some CSOs see the CG as either negligible or negative now, the CG's possible slide into the private sector will render it a serious threat to national policies and food security in the future. At its worst, "damage control" is still a good reason to fight for the public domain.

3.

Though not first or foremost, science has a role. Well-governed, public science can serve the public interest and serve as a counter to private science. Without losing perspective on the central realities of food security, CSOs can support and significantly influence public research if we desire to.

TROJAN HORSE, WAR HORSE, OR TEAM HORSE?

These reasons stand with or without CGIAR. If the CG is prepared – as it seemed to be in Saxony – to make allies and work together – then its involvement could be extremely influential in global debate. This is the System – and these are the people – who were the first global body to condemn Terminator Technology. Their condemnation was made in Washington in front of the U.S. Government and they did not hesitate to "bite the hand that feeds them". There is no law that says they must descend to the level of a Trojan Horse for Trade Reps. It is equally unlikely that they will ever be a War Horse advocating CSO policies. But they could be a good and useful Work Horse – part of a team of horses clearing the way for food security around the world.

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