

Protect Knowledge to Feed the World?

The application of intellectual property rights in international agriculture today and tomorrow

Muri-bei-Bern, Switzerland, 26 September 2002

Strategies

How can intellectual property rights contribute to the food security of an increasingly globalized world while meeting the demands of farmers and breeders?

Anatole F. Krattiger

President, *bioDevelopments*—International Institute and
Adjunct Professor and Director, SWIFTT, Cornell University
33 Thornwood Drive, Suite 300
Ithaca NY 14850, USA
anatole@bioDevelopments.org or afk3@cornell.edu

| | | |
|----|--|----|
| | <i>Executive Summary</i> | ii |
| 1. | Introduction: The Concept of IP | 1 |
| 2. | The Context: Economic, Cultural and Political Globalization | 2 |
| 3. | The Opportunity brought about by the Globalization of Science | 3 |
| 4. | Strategies to Strengthen Public-Private Partnerships and Corporate Investments in International Agriculture | 5 |
| | Proposal 1: Creating an Agricultural Investment Service..... | 6 |
| | Proposal 2: The Need for a WAO—The World Agriculture Organization..... | 7 |
| | Overall Policy Initiatives | 8 |
| 5. | Conclusion | 9 |
| | Epilogue | 9 |

Executive Summary

Regardless of the term used for them, we prefer to regard IPRs as instruments of public policy which confers economic *privileges* on individuals or institutions solely for the purposes of contributing to the greater public good. The *privilege* is therefore a means to an end, not an end in itself.

John Barton and colleagues, 2002¹

No amount of discussion and policy will substitute for practical, concrete results.

Heinz Imhof, 2002²

After a brief conceptual definition of property and intellectual property (IP), it is argued that IP neither helps nor harms the interests of the poor. IP rights systems (IPRs) have only an indirect effect on the poor that is determined through policy decisions, particularly as related to access. Many critics of the globalized economy specifically condemn IPR systems, which has polarized discussions and, consequently, further marginalized the rural poor. The “modern” IP system is indeed far from perfect, but this is not due to an inadequate theorization of IP. Rather, it is the policy decisions made in the context of existing IPR systems in an increasingly globalized world that are the problem. As the protesters at Seattle and Doha confirmed, the growing back-lash against trade negotiations is making it increasingly perilous for the dominant powers of the IPR system to unilaterally define policy. New paradigms for developing policies are clearly needed to remedy the inequities that exist in the modern IPR system, which is failing to meet the needs of the poor in the short term and that of corporations in the long term as well. As part of such an effort to re-think how IPR policies are developed, this paper deals with near-term strategies at the interface between technology “ownership” and the developing world, with the goal of making critical agricultural technologies available for the benefit of the poor.

Overall, there is no doubt that IPRs have unleashed the creation of wealth and benefited many segments of society. Developing countries, however, can more easily measure the costs of enhanced IPR protection in the form of higher royalty and license payments than they can quantify the benefits of these increased R&D investments. Analysts thus conclude that domestic capacity levels are typically not sufficient for developing countries to fully benefit from IPR protection. To illustrate this point, it is often mentioned that developing country inventors account for less than 6% of all global inventions. Although this and other indicators can be discussed, argued about, and interpreted in different ways, the fact remains that in developing countries the costs of stronger IPR are frequently more visible than the benefits.

¹ Barton, J, D Alexander, C Correa, R Mashelkar, G Samuels and S Thomas. 2002. Integrating Intellectual Property Rights and Development Policy. Report of the Commission on Intellectual Property Rights published on 14 September 2002. www.iprcommission.org

² Imhof, H. 2002. Sustainable Agriculture: the contribution of the Plant Science Industry. Address to the World Summit on Sustainable Development, Lekgotla - Business Day, Johannesburg, 1 September 2002. Chairman of the Board of Directors, Syngenta AG.

Nowhere is this more apparent than in the discussions surrounding the implementation of TRIPS standards. One recent study examines the effects of stronger IPR protection in the area of Foreign Direct Investment (FDI) for selected developing countries in the post-TRIPS era. The results show that FDI is positively and significantly associated with an “IPR strength” index. Accordingly, that study concludes that governments interested in enhancing FDI to generate employment and advance technology usage are well advised to strengthen IPR, particularly in relation to membership in international instruments or multilateral conventions (such as joining UPOV, an international Plant Breeders’ Rights convention).

Subsistence farmers and the poorer segment of the rural population, however, have essentially no access to the markets of proprietary technologies. They are “economically invisible”. Their exclusion cuts them off from the economic growth fueled by new proprietary technologies, further marginalizing them and exacerbating economic inequalities. To remedy this situation, we have three principal options available to us:

- curb or even abolish the IP system (with consequent global economic havoc and reduced corporate R&D investments);
- modify the IP system through multilateral negotiations (a formidable task); or
- build interfaces that level the playing field and allow the poor to have better access to proprietary technologies.

This paper focuses on the last option. It recognizes that IPRs, when implemented judiciously, spur corporate R&D investment, which provides society with many benefits. Globally, these gains should proportionately benefit the poor much more than the affluent. This is not happening, however, for a variety of reasons: the polarized global debate about IP, the increasingly marginalized public system of innovation, and the lack of market incentives for entrepreneurs to invest in local agricultural business development.

Globalization is not a policy but a fact, and so equally global initiatives are needed to

- a) balance inequalities, and
- b) to seize the opportunities created by globalization.

A new situation demands new solutions. Merely increasing foreign aid through traditional channels will not redress economic imbalances because it will not attack the current underlying structural problems of food security. Poor countries have long been arguing that they need more efficient access systems to technologies, stronger public institutions that deliver added-value, and access to markets to sell surplus production. To meet these objectives requires stronger social, political, and institutional infrastructures that the corporate sector's closer involvement in international agriculture would greatly enhance. And this is a partnership that, to succeed, requires the “authoritative” management of IPRs.

The “modern” IP system is far from perfect, but in the absence of a better system, what can be done today to obtain urgently needed technologies to benefit the poor? Economically invisible, the poor are served primarily by the public sector, which overall is too weak to manage authoritatively this interface (e.g., through commanding management of IP and contracts). The proposals here therefore focus on public-private partnerships as a means to make technology available to developing countries by reconciling the interests of IP holders. Because the nexus between public and private innovation, and between public and private good, is complex, stronger institutions are needed to deal with this crucially important public-

private interface. The strategies proposed here are aimed at better “managing” this interface to reduce the divide between the haves and have-nots. Its concrete action plans are as follows:

1. Creation of an “Agricultural Investment Service” to leverage and manage investment funds from bi- and multi-lateral donors, the philanthropic sector, and corporate entities, with the aim of increasing investment in rural agricultural economies. Such an investment service would be proactively engaged in leveraging technology and know-how from multinational companies as a way to upgrade and further enhance the value of the local entrepreneurial entities in which it invests.
2. The creation of a World Agriculture Organization (WAO) to specifically address the public good component of the agricultural systems in the developing world via three thrusts: focusing the public good aspect on the most needy countries and crops subsistence farmers depend on most; leveraging proprietary science to serve the public good; and managing market segmentation. This could be achieved cost effectively by “merging” the CGIAR centers into one new entity. Science has always played a central role in agricultural development, but today science and technological progress no longer fit into the established political and institutional boundaries. An adaptation to these changes is long overdue in order to succeed. The proposed WAO would most effectively deal with the nexus of public and private goods and thus ensure that the benefits of public R&D are available to all.
3. Pursuing other pragmatic policy initiatives such as strengthening institutions in countries that have weaker IP laws to level the playing field and minimize the possibility of abuse; developing sound models and concrete examples of public-private partnerships; the lowering of trade barriers in agricultural products to level the playing field between agricultural producers in developed and developing countries; and the judicious implementation/reformation of current IP systems.

Globalization starkly exposes the growing gap between rich and poor. To bridge this gap and alleviate the plight of the poor we should not drastically modify existing IPR systems—that way would lead to chaos. And while there can never be enough humanitarian action, we must channel these efforts to the greatest possible effect, which should include providing economic incentives for the corporate sector to extend their proprietary products to the poor. Our humanitarian plans will go further and faster by priming the engine of commercial self-interest.

The key to constructive progress is “balance”. Our global situation demands a better balance between the public and private, between the needs of people and of institutions, and between the developed and developing world. However long our discussions are here, and regardless of the number and scope of our proposed policy initiatives, this balance will have to come from “within”. It must be generated “organically” by the rational-critical debate of people in forward-looking institutions, corporations, and countries who come together to face the challenge of re-imagining the current structure of the public/private nexus. From this re-thinking will come the pragmatic, practical, and concrete results that we all seek. We should begin with the successful generation of wealth by existing IPR systems and we should end with a more equitable distribution of that wealth. To that end, the proposals made here aim to provide more economic incentives for transferring proprietary property to those who need it most, and allow the humanitarian predisposition in all of us to flourish.

1. Introduction: The Concept of IP

The concept of property rights, whether for intellectual or tangible (or material) property, is a relatively simple matter: “Property” is a philosophical and social construct. In the case of IP, it is a negative right granted by a nation-state to the owner (a person or an institution) to keep others from appropriating the invention for a limited period of time. The distinction between *mine* and *yours* has been around since time immemorial and has always characterized social and political organization and power (both in human societies as well as in natural ecosystems). Plato and Aristotle argued over the nature of property and its relation to the public and private. Aristotle’s analysis of what private property is, of what it should be and how it is to be administered essentially has not changed.

Just as the Greeks struggled with these concepts, so do we today, and also just like them, we have not arrived at a resolution. And perhaps we are focussing too exclusively on the conceptual issues at the expense of pragmatic ones. While debates about the theory of IP abound, in practice the world seems to have already decided about these matters: nearly everything is going the “proprietary way”. In other words, the most important issues concerning how IP can contribute to or hinder global food security do not turn on further analyses of property or IP *per se*, but on the policies and strategies that public and private institutions pursue in technology transfer. What kinds of alliances and partnerships are being built—especially public-private partnerships—and how effective are they?

We need to understand better not the conceptual but the concrete obstacles that block the distribution of technological benefits. Consider that the “modern” system of IP that we work with evolved during the medieval times in Europe, became legalized through the establishment of a patent system in the late eighteenth-century, and was formalized by the 1883 Paris Convention, the terms of which are still in effect today. The convention had been created for the “protection of industrial property” which has as its object “patents, utility models, industrial designs, trademarks, service marks, trade names, indications of source or appellations of origin, and the repression of unfair competition.” But then and now many local and indigenous societies have different property regimes, such as for example, those based on communal property. One of the unresolved concrete challenges facing us is the creation of an interface between these more traditional systems and the system of “modern” property that dominates global science, technology and trade today. What we need are new ideas and solutions for *bridging* different systems of ownership.

With the globalization of science, technology and business are flourishing, for it appears that private property regimes and globalization mutually reinforce each other. But many argue that the “modern” IP system has gone too far, as epitomized in the huge sums of moneys companies spend to obtain freedom-to-operate (i.e. transaction costs) or in litigation, leading to a sub-optimal use of innovation (the so called tragedy of the “anticommons”). Indeed, while globalization has led to greater wealth overall, it is also increasing the imbalance between the world's rich and poor, and this needs to be addressed urgently. Our first priority should be to better manage the interface between the public and the private, while also pursuing equitable solutions through political means and policy instruments.

Finally, and perhaps most importantly, a balancing action is required for economic imperatives: whereas IP systems efficiently produce wealth, economic activity driven only by the pursuit of financial gain and greed eventually leads to coercion and social unrest. Neither one of which are in the interest of individuals, societies, or businesses.

2. The Context: Economic, Cultural and Political Globalization

Until the end of the cold war, global policy formulation was considered to be the sole prerogative of nation-states, expressed in part through foreign policy and in part through multilateral institutions. Since the end of the cold war, which coincided with the rise of the internet, with mass communication, and arguably the biggest and most powerful wave of globalization, people have had much easier access to information and can more easily influence global affairs through “soft” power.

Similarly, until the late 1980s, agriculture in the developing world had primarily been handled by nation-states and multilateral organizations. Arguably, no other area has changed more dramatically in the last decade than agriculture. In an ever more globalized economic and technological environment, science plays an increasingly vital role, but today science and technological progress no longer fit with the established political and institutional boundaries of institutions created a generation or more ago.

Globalization has many aspects, forms, and shapes. Stanley Hoffman³ observes that it has three forms: economic globalization (resulting from revolutions in technology, information, international business, and trade), cultural globalization (resulting from the increased flow of cultural goods, and resulting in uniformization), and political globalization, which is a product of the two.

Economic globalization led to the specialization and integration of companies. This made possible a tremendous increase in aggregate wealth integration, but it happened partly at the expense of social justice. Companies are under enormous pressures to become more profitable, not least because they are run (or are responsible) to financiers as opposed to “industrialists”. This pressure, together with easier access to markets and trade, has made companies more disconnected from the societies in which they operate. Henry Ford was arguably much more integrated into the local economy; his now famous dictum “I pay my workers so they can buy my cars” represents an integration of his production and market approach with the local workforce. What the efficiency gain of the “new corporation” achieves is an accelerated pace of innovation and scientific development. It is noteworthy that during the 1990s the economies of the developing world that were integrating themselves into the world economy grew more than twice as much as developed countries. The non-globalizers, however, grew only half as much as developed countries. Moreover, technological innovations have not spread to those who most need them. This is somewhat surprising from an economic perspective, because the spread has low marginal costs associated with it. In theory, technological developments could be obtained by many more countries at low marginal cost, with companies benefiting from significantly increased market shares. Differential pricing would be a prerequisite and could be managed⁴.

The second aspect, or cultural globalization, led to a cultural “disenchantment of the world”. This is particularly apparent in the area related to property rights because of the clash between the “public good” and the “private good”. Nowhere in agriculture is this more apparent than in the debate over access to genetic resources, which arguably epitomized this

³ Hoffman, S. 2002. Clash of Globalizations”, *Foreign Affairs* 81(4).

⁴ Without wanting to go into any details, for differential pricing to work in pharmaceuticals, at least, developed countries’ pricing policies would need to change and effective measures against parallel imports would also need to be implemented.

discourse in the 1980s during the so-called “seed war”. It is also an area where we have a painful reminder of “why governments can’t make policy”⁵.

No doubt, culture should be protected from globalization in order to protect identity, whereas economic globalization should be strengthened in order to allow nations to integrate economically. This will reduce global inequality and engender a stronger sense of world citizenship, since individuals in different parts of the world would have an equal stake in economic growth, environmental stewardship, and social stability. For instance, the number of children under the age of five that die each year from malnutrition related causes is “10,000 times” higher than the number of victims of the atrocities of September 11 last year. These deaths and the related misery could be prevented in this modern age with technologies already used in developed countries. It is surprising that these “atrocities” that have been with us for decades—at least partially brought about by the political economy of modern times (and perhaps a lack of humanitarian impulse)—have not engendered a passion to bring solutions to those suffering. Our actions—or lack thereof—compares very badly with the huge response in the USA and elsewhere to the fight against terrorism, which is ironic given that it is precisely poverty, inequality, and malnutrition that partly “breeds” discontent, social unrest, and terrorism.

The third aspect, political globalization, is partly off-set by the increased international civil society, one that, however, is even less accountable to democratic institutions than the governments and corporations it is displacing. The problem that characterizes globalization has not bypassed civil society; civil society, as much as corporations and governments, can abuse their privileged place. It is in the end the self-interest of individuals and institutions that drives these actors. Few can afford to operate altruistically if they want to survive, yet alone grow.

3. The Opportunity brought about by the Globalization of Science

The globalization of science as related to agriculture is perhaps best illustrated in the international collaboration across the public and corporate sectors in genomics and related technologies. This collaboration, fuelled in part by property regimes, has led to an incredible pace of innovation and technological advance. Biotechnology in a broad sense represents one of the greatest opportunities embedded in globalization for the developing world and global food security. How can these scientific advances be leveraged for the benefit of global food security?

First, it should be clearly stated that without IP regimes these powerful new technologies would never have been made. The public sector is good at making fundamental discoveries, but rarely demonstrates the will to invest significant financial resources in the risky business of bringing scientific advances to commercial products. This is where the critics of intellectual property rights (IPRs) in agriculture have a weak point. For who will invest in improved seeds, in market structures to disseminate the seeds, and in market access for the agricultural products of subsistence farmers? For decades, the national public sector and the international development community have invested significant sums of money but they are unable to maintain that investment, never mind growing it in accordance with global needs. The public sector’s assets pale in comparison to the tremendous resources that the corporate

⁵ Petit, M., C. Fowler, W. Collins, C. Correa, and C-G Thornstrom. Why Governments Can’t Make Policy: The case of plant genetic resources in the international arena. CIP: Peru.

sector can bring to potential products. This is not to at all to say that IP systems have created a more equitable world, as a recent very authoritative study on development policy and IP clearly demonstrates, the relationships between IP and social benefits are complex at best (Barton and colleagues *op cit*), but it is to say that such systems have made possible the ongoing revolution in agricultural technologies. What is needed is a fairer distribution of those technologies.

In the absence of global policy solutions for the improvement of the “modern” IP system, the question for the rural poor is not really whether the public OR the corporate sector should invest in increased agricultural R&D. The question, rather, is much more pragmatic and two-fold:

- How can corporate technologies and know-how be leveraged to serve the poor?
- How can the public sector’s investments be made more effective to serve the “public good”?

“Private goods” are typically traded in markets: if the market agrees on a price (e.g. for cakes), the ownership or use of the good (e.g. the cake) or services is transferred..Several people can make an offer, or bid, and hence there can be competition, or rivalry, and some can (and always will) be excluded. Further, once the good is consumed (e.g. the cake has been eaten), others are excluded from eating the cake. A “public good”, by contrast, is a good whose use by one person does not compete with nor rival its use by another person (non-rival) and no person can exclude other persons from its use (non-excludable). Sunlight, traffic lights, street signs, national defense, peace, the eradication of smallpox, etc. are examples of public goods. Who provides the public good is not important: governments provide public goods (e.g. defense, roads) and private goods (private housing, medical care). Similarly, the private sector may provides public goods (e.g. private security services, technical norms, charity). However, because of the non-excludability, the private sector rarely contributes to the creation of a public good but quite often enhances existing public goods. Finally, the creation of a public good is not necessarily free of costs. Costs may have been born by society at large (e.g. street signs) but the enjoyment or use of it is free to any and all individuals who pass through that particular street.

Genetic resources, provided they are not protected by IP, are also public goods. In agriculture in general and with biotechnology in particular, “non-excludability” and “non-rivalry” are particularly relevant because with many crops, once a new variety exists and some seed has been shared or sold, it is difficult to prevent any farmer from using the new variety (non-excludable), and because many crops self-reproduce in one way or another, their use by one farmer does not compete with their use by another (non-rival). Indeed, the main conclusion we should draw from the debates about property and IPRs is that the underlying pros and cons are based on factors other than those that pertain to property or IP regimes *per se*. In other words, many argue that IP is bad and harms subsistence farmers. In fact, IP *per se* does not harm anyone, it is only how it is handled, or the policy context in which IP systems are implemented, that can cause problems. In addition, the “public good” in agriculture must increasingly rely on private inputs (e.g., proprietary science and technology); hence again it is the interface between the public and the private that needs to be addressed.

Solutions to the two questions posed above will require the authoritative management of IP. Those who really need proprietary technologies (and, by extension, access to IP) are the poor. But the generation of inventions (based on the number of patents filed) is proportional to the

per capita gross national product. In other words, the richer a nation, the more R&D, which in turn leads to more inventions and discoveries. As a logical consequence, one can hardly be in favor of abolishing IPRs, especially not of those of the rich, because there would be nothing to transfer and distribute. The poor have a chance to escape the cycle of poverty by reaping the rewards of their own labor enhanced with access to both public and proprietary technologies. This does not require the rejection of patents and related rights but the leveling of the playing field by enabling them access to property. This is precisely the value of public-private partnerships come to play.

Overall, there is no doubt that IPRs have unleashed the creation of wealth and benefited many segments of society. Developing countries, however, can more easily measure the costs of enhanced IPR protection in the form of higher royalty and license payments than they can quantify the benefits of these increased R&D investments. The situation would be different if the domestic capacity in R&D were enhanced to benefit from IPR protection. To illustrate this point, it is often mentioned that developing country inventors account for less than 6% of all global inventions. Although this and other indicators can be discussed, argued about, and interpreted in different ways, the fact remains that in developing countries the costs of stronger IPR are frequently more visible than the benefits.

Nowhere is this more apparent than in the discussions surrounding the implementation of TRIPS standards. One recent study (Lesser, 2002⁶), examines the effects of stronger IPR protection in the area of Foreign Direct Investment (FDI) for selected developing countries in the post-TRIPS era. The results show both imports and FDI are positively and significantly associated with the IPR strength index. One point in the IPR score (about 10%) is associated with a \$ 1.5 billion increase in FDI and an \$ 8.9 billion increase in imports. These numbers are aggregate increases and should not be interpreted literally as predictions for any individual country. Rather, the significant point is that small changes in policy (such as joining UPOV, an international Plant Breeders' Rights convention) can boost trade and FDI. Of equal relevance is the study's discovery that a change in the enforcement of IPR standards, as measured in this study through the "Corruption Perceptions Index" (CPI; www.gwdg.de/~uwwv/1999Data). Enhancing the transparency of the IPR system is complex, which includes the important aspect of implementation according to the rules, provides additional evidence supporting IPR system's importance in the progression to a more value added economy. Accordingly, the study concludes that governments interested in enhancing FDI to generate employment and advance technology usage are well advised to strengthen IPR, particularly in relation to membership in international instruments or multilateral conventions.

4. Strategies to Strengthen Public-Private Partnerships and Corporate Investments in International Agriculture

Technologies are developed and disseminated in an evolutionary fashion: institutions—or rather, the people within institutions—learn and then generate new ideas given the difficulties they face and the prospects they see. If these inventions work well, others adapt and adopt them and they begin to spread. This has always been the case in regards to agriculture and seeds, and agricultural biotechnology is merely an additional tool to create new seeds. They

⁶ Lesser, W. 2002. The Effects of Intellectual Property Rights on Foreign Direct Investment and Imports into Developing Countries in the Post-TRIPS Era. To be published in October in *IP Strategy Today* No. 5-2002. www.bioDevelopments.org.

are useful, however, only if they are allowed to spread. Hence the proposals below address an important constraint: increasing the investments in the areas of technology dissemination and market access by the poor. In short, to increase market access requires new interfaces between the public and the private sectors. That nexus is complex for many reasons: different perceptions about the "other" side, an insufficient amount of time for building relations founded on trust and confidence, and sometimes differing or conflicting goals and objectives, to name but a few. The proposals below aim to strengthen that public-private interface in order to transfer science and technology to the agricultural markets of the poor through more authoritative IP and contract management.

Note that some of the proposals would require a significant policy shift by bilateral and multilateral donor organizations, whereas others simply require a better focus on existing initiatives and programs; all are complementary.

Proposal 1: Creating an Agricultural Investment Service

There is an urgent need to attract increased investment in rural agricultural economies by promoting small agribusiness enterprises. The Latin American Agribusiness Development Corporation (LAAD) has been doing something similar on a small scale for nearly two decades. Linking finance and agricultural companies with small entrepreneurs in the rural areas, and assisted by loans from the US Agency for International Development (USAID), the LAAD brought important growth to localized rural areas.

Similar entities need to be created on a regional or sub-regional basis so that investment funds from bilateral and multilateral donors, from the philanthropic sector, and from corporate entities can be leveraged and managed with respect to local conditions. Such an investment service should also be proactively engaged in leveraging technology and know-how from multinational companies to upgrade and further enhance the value of the local entrepreneurial entities in which it invests.

A variant of this approach has recently been proposed by the author⁷ as an "Investment Company for Development," which would provide business investment services to local entrepreneurs, small companies, and university researchers in order to facilitate the acquisition and transfer of innovations from the laboratory to the market as well as from multinational companies to poorer rural areas. It would also leverage official development assistance (ODA) and foreign direct investment (FDI). The strategy would consist of three thrusts:

- marketing investment opportunities on a regional basis;
- providing sustained high quality deal flow, including feasibility studies, investment advice and management services;
- working with investors to increase participation, including philanthropic institutions, bilateral agencies, regional development banks, national governmental agencies to leverage ODA, and private investors;

⁷ Krattiger, A.F. 2002. Public-Private Partnerships for Efficient Proprietary Biotech Management and Transfer, and Increased Private Sector Investments. A Briefings Paper with Six Proposals Commissioned by UNIDO. *IP Strategy Today* No. 4-2002. www.biodevelopments.org/ip/index.htm

Thrust 1 relates to the need for localized business development, the reduction of both risks and costs for investors, and the costs for entrepreneurs to access capital. A service that specializes in a particular geographic region is needed for local businesses. Thrust 2 and thrust 3 are closely related but require different approaches. Credible investment services can only be provided if well conceived, feasible, and financially sustainable investment opportunities are described and valued. Traditionally, business growth has occurred a) through mergers and acquisitions of operating assets, leading to short-term growth, or b) traditional market development *de novo*. Acquisition strategies for life science activities have overall been unsatisfactory in many developing countries due to a lack of sound indigenous companies available for acquisition or licensing deals. This forces the corporate sector into the slow, expensive, and risky process of development *de novo*. This limitation is particularly apparent in agriculture. Investors have a low interest in this area due to complications arising from shortcomings in management, the lack of trained managers, the need for technological upgrading, the lack of plant breeders' rights, and high risk exit strategies.

Proposal 2: The Need for a WAO—The World Agriculture Organization

The Consultative Group on International Agricultural Research (CGIAR) was immensely successful, particularly during the 1970s through the 1980s when it built on the success of its predecessor institutions that led to the Green Revolution. But the rate of return is arguably declining, not least because of the “top heavy” institutional structure of the CGIAR. Its investment (US\$340 million) pales in comparison to corporate investments in agricultural R&D (estimated by the author to be in the range of US\$5 billion; Monsanto alone spends over US\$1 billion). To optimize the returns on this small—but very strategic—investment, the CGIAR has always been faced with a dilemma: should the Centers focus on areas with high potential productivity gains or should they focus on the needs of marginal areas and least developed countries where poverty is highest?

As more advanced developing countries are served by a more vibrant private sector, a process accelerated through Proposal 1 above, the CGIAR could re-focus its attention on two strategic areas: the poorer developing countries with weak agricultural research and extension programs, and crops of specific importance to resource poor and subsistence farmers. Neither of these crucial areas will be addressed by the private sector. But such reform will require a major re-structuring of the Center. For as the last decade has shown, gradual re-structuring is not leading to any fundamental change. A radically new institutional framework is needed that would permit the Center to focus not only on the geographic areas outlined above, but also on two other strategic areas: the “public good” and public-private partnerships.

The latter will allow a re-structured CGIAR to specifically harness the capacities of global science (corporate and academic) by “channeling” existing technologies to the specific needs and priorities of the least developed countries and regions. Such an entity would negotiate with technology owners and seek licenses with the right to sublicense on a crop-by-crop, market-by-market, or technology-by-technology basis (i.e., market segmentation). This can be done by granting royalty-free licenses in some cases and royalty-bearing licenses in others. Policies that promote different pricing strategies across markets, based on price elasticity, will lead to higher technology use and thus higher overall societal welfare and greater equity, all of which are also in the interest of the national and multinational corporate world. The challenge is to manage these pricing strategies and ensure that technologies licensed for free to one country do not spill-over to others. In the countries in which this organization operates, it would truly focus on addressing the public good.

The above agenda could be implemented cost-effectively by combining all of the sixteen centers of the CGIAR into one global World Agriculture Organization (WAO) that would negotiate bilaterally with science and technology providers to access technologies for the global public good. As long as nation-states and their ever less efficient (and gradually redundant) intergovernmental systems are solely responsible for policy leadership and global agricultural food security, we cannot expect to find our urgently needed solutions. A WAO must embrace a new agenda, one led by a coalition of actors in civil society, individuals, and academia, as well as the global corporate community.

Science plays an increasingly vital role in agricultural development, but today science and technological progress no longer fit with established political and institutional boundaries. This is but one reason why a supra-national institution, such as the proposed WAO, is required to deal with the nexus of public and private goods.

Overall Policy Initiatives

Today there are three fundamental problems with the way global society deals with property and IP. First, and perhaps least importantly, is the absence of strong institutions to implement and police internationally agreed upon regimes to curb abuses (e.g., anti-trust issues). For example, although there is loud lamentation about “biopiracy”, few developing countries even have laws that govern access to national genetic resources. Individuals and institutions will always try to turn established systems to their advantage. Unfortunately, the strong and powerful have even more power to do so. But clearly this should not lead us to conclude that we should abolish personal property rights or IPRs. What we need are four initiatives:

- Proposal 3: Strengthening institutions in countries that have weaker IP laws to level the playing field and minimize the possibility of abuse.
Proposals 1 and 2 would support such policy initiatives, both directly and indirectly.
- Proposal 4: Developing sound models and concrete examples of public-private interfaces to change and improve the way “business is done” and to bring about new standards.
Proposal 2 in particular supports such a policy initiative, both directly and indirectly.
- Proposal 5: Lowering agricultural trade barriers in developed countries.
Proposal 1 supports such policy initiatives, both directly and indirectly.
- Proposal 6: Judiciously implementing IP systems in developing countries and reforming the current IP system through multilateral agreements.
Proposal 1 supports such policy initiatives, primarily by allowing developing countries to benefit from stronger IPR systems.

Proposal 5 warrants more discussion. Lowering domestic trade barriers for agricultural products in developed countries would lead to near term results by leveling the playing field and it would also be much more effective—and politically more feasible—than eliminating agricultural subsidies in developed countries. Numerous studies have shown that subsidies

decrease production because the pressures to produce efficiently are reduced. The elimination of subsidies in developed countries, therefore, would, after a period of adjustment, lead to an increase in production and decrease world food prices. This is not in the interest of the rural areas where food is produced. What is in their interest, arguably, is access to export markets. Australian farmers, for example, which constitute an important and sizeable part of the national economy, enjoy very low subsidies. Yet they are rather successful in efficient producing and exporting agricultural products. New Zealand, which abolished agricultural subsidies in the early 1990s, is now beginning to see a gradual increase in production thanks to increased efficiency. This trend is likely to continue. Before liberalization, the agricultural sector had been shielded from the pressures of the market economy and had lower incentives to become more efficient.

5. Conclusion

John Barton (*op cit.*) discussed and proposed specific policy initiatives at the multilateral, global and national level. The proposals in this paper are complementary to the broader policy initiatives proposed by Barton and colleagues, which also address the more fundamental inequalities inherent in the “modern” IP system. As Sir Hugh Laddie, UK High Court Patents Judge, noted in the preface to the Barton report (*op cit.*) “higher IP standards should not be pressed on developing countries without a serious and objective assessment of their development impact.” What this paper argues is that the poor cannot wait for another study—and they do not have to. We can take action now to address the limitations of the current system not by changing it—a truly incredible task—but by changing our responses.

Globalization is not a policy anymore, but a fact. Left on its own, however, globalization will exacerbate inequality, not least because many countries are not globalizing. (Notwithstanding that the liberalization of trade should be gradual, how can a country that does not export anything benefit from the liberalization of trade?) In many economies in Central Asia, Latin America, the Middle East and across Africa, trade is decreasing in relation to national incomes. This is particularly true in Muslim countries, from Bangladesh to Morocco, and poses a special problem for global stability.

In this brave new global world, merely increasing foreign aid through traditional channels is unlikely to attack the root causes of poverty and food insecurity. What we need is better access to technologies, stronger public institutions that deliver added-value, and access to markets for the sale of surplus production. Agricultural productivity cannot be increased sustainably unless the economies of rural areas—and thus incomes of the rural poor—are increased. This requires access to markets for both inputs (especially technology and investments; Proposals 1 & 2) and outputs (Proposal 5). It also requires stronger social, political, and institutional infrastructures (Proposal 6) to ensure equitable access and distribution of the fruits of growth brought about by increased market access. All of these objectives, in turn, require closer involvement in international agriculture by companies (Proposals 1 to 5), which, in turn requires authoritative management of IP (Proposal 3 & 6).

Epilogue

Three thousand years ago Plato argued against property because it corrupts the personality by infecting it with greed. He had an important point.

Aristotle, his pupil, disagreed: according to him, property enhances an individual's sense of identity and self-esteem, provides satisfaction, and allows for the optimal economic use of "the commons". He too had an important point.

I personally agree with both viewpoints. But a property-less society, as St. Augustine of Hippo (354-430 AD) asserted, can only exist in Paradise because it requires perfection to succeed.

And in today's global world, neither extreme will be beneficial. What clearly holds the key to constructive progress is "balance", namely a better balance between the public and private, and between the developed and developing world. Regardless the length of our discussions here, and regardless the number and scope of policy initiatives, that balance will have to come from "within", from people and from institutions. And indeed, there is no substitute for practical and concrete results.

It is what we do with the results of IPRs that should be the first line of action. The proposals made here are aimed both at providing more economic incentives to transfer proprietary property to those who need it most, and at allowing the humanity in all of us to flourish.