GLOBALIZATION, STANDARDS AND INTELLECTUAL PROPERTY RIGHTS

The developed world enjoys many advantages over developing nations, including some that are not so obvious — such as disproportionate benefits from standard setting, fueled in part by the vast patent portfolios of multinational corporations. Unless a greater effort is made to adopt royalty free standards, the result may be a future filled with international standards wars.

In centuries past, colonial powers used the cheap labor provided by their new subjects to extract resources, and their new colonies as captive markets for their own manufactured goods. Today, similar results can be achieved with much less effort when royalty bearing patent claims are embedded in the standards for products such as DVD players and cellular phones. If the royalties are high enough, the patent owners can have such products built in emerging countries using cheap local labor, and sell them there and globally under their own brands. Meanwhile, emerging company manufacturers can't afford to build similar products at all. Governments in developed nations should use their purchasing power to impede, rather than support, such "standards based neocolonialism."

China has long been the scene of piracy for software such as Microsoft Office. Recently, though, the Chinese government has begun cracking down on illegal

copying of copyrighted works. That sounded like good news for Microsoft — until the Chinese government signaled its intention to promote local efforts to replace, rather than copy, Microsoft's dominant Office suite, using a new home grown standard called UOF.

The designers of virtual worlds have the freedom to specify whatever rules they wish for their creations, whereas our physical world must obey real, inviolable laws that have logical explanations. Right? Now let's see, what exactly did I do with all that Dark Matter, anyway?

Changing Times / Time for Changes

The current standards infrastructure has its roots not just in the last century, but in the one before. Over the last 125 years or so, that structure has been through some changes, such as the founding of global standards bodies like ISO, IEC and the ITU. More recently, the information and communication technology (ICT) industries have seen the formation of the hundreds of consortia that now provide the majority of ICT standards.

All of these changes, however, have been accomplished largely at the behest of stakeholders in the developed nations.

Does that matter?

In this issue, I suggest that it does, and explore whether the structure that has evolved to meet the standardization requirements of the First World is adequate to meet the needs of the rest of humanity, and in particular of the rapidly emerging economies of China and India, among other nations.

I begin this discussion in my *Editorial*, where I highlight the disproportionate advantage that the corporations headquartered in long-developed countries enjoy over those based in developing nations as they seek to make their way into the global marketplace. In particular, I focus on the formidible patent portfolios owned by the traditional market leaders, and the prospect for a succession of international standards wars unless greater emphasis is placed on adoption of royalty-free standards by the ICT industry.

In this month's *Feature Article*, I expand on this inquiry by analogizing the current situation to the colonialism of the past. In prior times, developed nations extracted resources from the colonies that they seized, and also used these new territories as captive markets into which they could sell European goods. Today, a sort of patent-based neocolonialism allows the corporations in developed nations to subcontract manufacturing to factories in developing countries. There, cheap labor can produce inexpensive products which can then be sold at a healthy markup both locally and around the world under the brand of the foreign patent owner. Meanwhile, high standards-related royalties effectively bar the same factories from selling similar products under their own brands. The results are predictable, and I suggest a number of ways in which the rules might be changed to level the playing field for the ultimate benefit of all.

I provide a specific example of these predictable results in my *Standards Blog* selection, which focuses on a Chinese "home grown" (and patented) document standard called the Unified Office Format. That standard has been created in order to permit and promote the development of office productivity software by Chinese companies, in order to take marketshare from Microsoft's dominant Office suite.

I complete this issue on a lighter note with the usual **Consider This...** essay, which this month departs from the serious study of this world to look at the increasingly popular realm of virtual worlds. Or perhaps I haven't left the study of our world at all.

In any event, I invite you with this issue to see once again how the world in which we live is one increasingly interconnected community. Even in the world of standards, we are reminded that what benefits us most is what benefits us all.

As always, I hope you enjoy this issue.

<div align="right">

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Editor and Publisher
2005 ANSI President's
Award for Journalism

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It's Time for IPR Equal Opportunity
in International Standard Setting

Andrew Updegrove

Standards occupy what may be a unique niche at the intersection of society, government, commerce and opportunity. That's because safety, health and technical standards of all types touch every aspect of our daily lives. One would think that governments would therefore take great interest in how they are developed and deployed. Curiously enough, however, they largely don't. While this hands off attitude has worked reasonably well in the past, the increasing importance of technology in the modern day world may be ushering in an era when international standards wars will become increasingly common, unless efforts are undertaken now to level the playing field.

How disconnected are governments? In some nations, the role of government is very significant. But in others (such as the United States), government involvement is largely at the technical committee participation level, rather than as an overseer or accreditor. And with the exception of a few organizations such as the International Telecommunication Union (which operates under the aegis of the United Nations), the bodies that globally adopt standards are non-governmental entities rather than than treaty organizations as well.

This is rather surprising, because despite their nominal status as technical specifications, standards can provide commercial and social benefits at many levels that would not be otherwise attainable. At the global level, standards are capable of creating markets for new products and services that would not otherwise exist. For those in developing nations, telecommunications standards (for example) can bring educational and other benefits that would be impossible to provide absent the existence and broad adoption of standards-based technologies. For vendors as a group, standards can lower risk while expanding opportunties. And when the implementation of a standard infringes upon a patent, the singular owner of that patent may gain great monetary and other advantages as a result.

This ability of a single patent owner to influence so powerful a tool has always been problematic, and the rules of national and sectoral standard setting organizations, as well as those of global standards bodies like ISO, IEC and the ITU, have therefore sought to balance the rights of the property owner with the benefits to be gained from standards. Less well recognized, however, is the impact that classes of patent owners can have over other classes that are "patent poor." The most obvious effect can be found in the ability of developed nations to benefit from the standardization process to a disproportionate extent when compared to developing countries.

The advantages of developed nations are many in this regard. The corporations headquartered within their boundaries are often powerful and multinational, with

long traditions of research and development, as well as legal staffs trained to globally protect the intellectual property rights that these corporations create. The patent portfolios so accumulated provide assets that can be bartered in cross licensing transactions with the other well established companies that are their main competitiors. The result is that smaller domestic, as well as emerging foreign competitors, are at a competitive disadvantage, and can find it difficult or impossible to enter the markets that the incumbents have come to dominate.

Well established companies are also more adept at participating in standard setting activities, whether they be hosted by consortia, national standards bodies, or *de jure* global organizations. Many national governments, especially in regions such as Europe, recognize the international trade advantages that can be gained through effective participation in such bodies, and incorporate standards strategy into their international trade policies. Global treaties, such as the Agreement on Technical Barriers to Trade under the the World Trade Organization, have also been drafted to prevent individual nations from erecting standards-based barriers intended to keep foreign goods from gaining access to domestic markets.

Today, information and communications technology (ICT) is becoming increasingly important in many ways. Not only does the revenue attributable to ICT products and services constitute an ever larger percentage of the global economy, but new job creation and the economic advantages that accompany such jobs form one of the greatest areas of opportunity for emerging and developing nations alike. But because most technology is patentable, many of the standards that must be created to realize the full potential of technological innovations will inevitably infringe upon patent claims. And therein lies the rub.

Because the corporations headquartered in developed nations are more likely to protect their new technology on a global basis and to participate most heavily in the standard setting process, these vendors are gaining significant, long term commercial advantages over their existing and potential competitors in developing nations. Due to the short life span of technology and the long-term monopoly granted by a patent, these advantages will be far reaching, and will replicate through successive generations of technology until the businesses based in emerging countries become similarly adept.

The result, as explored in greater depth in the feature article of this issue, is the likelihood that we will face more and more standards wars between opposing vendor factions based in developed and developing nations. Already, China is creating multiple "home grown" standards in order to level the playing field in product areas typified by heavy royalty requirements tied to globally adopted standards. Chinese companies and universities are also dramatically increasing the filing of patents.

Such actions are understandable and predictable under current circumstances. Simply tightening up the Agreement on Technical Barriers to Trade would not appear to be the answer, as this would simply institutionalize the advantage of developed nations over developing countries, and would likely prove to be ineffective in any event. Nor does a spiral into mutually assured patent destruction

through an increasing blizzard of global patent filings appear to be the right answer, either.

Instead, I suggest that the time has come for ISO, IEC and ITU, as well as for governments in general, to act to readjust the balance between the rights of intellectual property rights owners and those of standards implementers and end users. If standards bodies were to change their policies to require disclosure of patents and licensing terms at an earlier point in the standards development process, fewer royalty bearing standards would result. And if governments limited their purchasing to products that comply with royalty-free standards, then there would be greater incentives for patent owners to settle for the other benefits that can accompany inclusion of their technology in a standard in addition to royalties.

Absent such changes in policy, globalization will doubtless become an even more contentious process than it already is. And those in the developing world will have one more justification to accuse those in developed nations of being too focused on their own own welfare, to the disadvantage of those that are still struggling to share in the benefits of the modern world.

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Government Policy and "Standards – Based Neo-Colonialism"

Andrew Updegrove

Abstract: *From the sixteenth through the nineteenth centuries, European powers colonized most of the rest of the world in order to exploit the natural resources, inexpensive labor, and new markets that became available in the wake of the great voyages of discovery. These comparativley more developed nations were able to do so in part as a result of their superior technology and capital resources. Today, the developed world and its institutions are sometimes criticized for "neocolonial" activities that allow them still to exploit, or unduly influence, their former colonies.   One manner in which multinational corporations can engage in similar conduct is through their control of the patents that underlie many important standards. When such standards bear royalties, the patent owners can relegate emerging nations to low-cost job shops that are able to build products, on order and at low profit margins, for foreign brands, but not to sell similar products under their own brands at higher profit margins. The predictable result is the development by nations (most notably China) of duplicative "home grown" standards. Unless greater efforts are made to avoid royalties and other restrictive terms in standards-related patent licenses, it is therefore likely that increasing numbers of standards wars will break out in the future, obstructing international trade. In this article, I explore the roots of this phenomenon, and suggest ways in which the situation might be redressed.*

Introduction: The great Age of Discovery launched by Portugal's Henry the Navigator in the 15th century opened up an ever-expanding new world to Europeans. As each expedition penetrated further to the south, new curiosities were discovered, and in 1488, Bartholomeau Dias finally rounded the Cape of Hope. Only a few years thereafter, Columbus, in the name of Spain, and Vasco Da Gama, for Portugal, opened the way to the Indies – both West and East. In the years that followed detailed coastlines progressively emerged out of the blank areas long marked as *terra incognita* on western charts.

These explorers were closely followed by merchants, who in turn were supported by naval and military forces sufficient to protect them as they sought the spices, precious metals and other desirable commodities that were the original inspiration for the voyages of exploration. In due course, the new regions opened up to trade also became attractive markets for European goods.

The endgame of this process saw the active extension of sovereignty by individual European nations over subject territories throughout the world, in what came to be called colonialism. The mechanisms employed by the colonial powers to exploit their new spheres of influence varied, with some colonies becoming the homes of

large numbers of European emigrants and others being controlled as dependencies or through trading and military outposts. But in each case, the European power that had succeeded in establishing its rights on the ground could extract the colony's renewable as well as finite resources using the cheaper labor of the indigenous peoples. At the same time, the colonial power obtained a largely captive and sometimes exclusive market for its own finished goods.

Over time, the colonial tide was turned, and the subject territories achieved self-government. In some cases, local control was complete, as in North America, while in other areas, such as the former Belgian Congo, the former colonizer retained significant economic control in what came to be called the assertion of "neocolonialism."

Today, neocolonialism remains an emotional topic, arising in situations as diverse as African nations accusing the International Monetary Fund of demanding undue control over their economies and France decrying the encroachment of all things American on Gallic culture and language.

Perhaps it is not surprising, then, that the development of standards should have the potential to become a subject of contention as well, due to the profound impact that standards can have on global trade, and the fact that international economic treaties impose obligations relating to standards as well.

In this article, I will discuss the basis for such concerns. I also suggest certain modifications to the current international standard setting infrastructure that could provide a more equitable and appropriate system for emerging as well as first world nations in our increasingly globalized world.

The current system: The operation of today's *de jure* standards system in some ways replicates the United Nations. Nominally, all nations may participate and vote. But most of the standards that are voted upon still originate from the industries of the developed nations. More tellingly, most of the patents that may be infringed by the implementation of the standards that are adopted are also controlled by corporate owners in those countries. This is particularly the case in high-tech areas such as consumer electronics and information and communications technology (ITC).

Moreover, as vendors in emerging countries strive to achieve equal status with corporations based in what are often their former colonial masters, they may run afoul of treaty obligations as well. In the case of communications, the treaty organization known as the International Telecommunication Union, or ITU, dominates. And if a nation wishes to accede to the World Trade Organization (WTO), it encounters the Agreement on Technical Barriers to Trade (ATBT).[1] One focus of that agreement is to prevent nations from excluding or disadvantaging foreign goods through the creation of artificial standards-related barriers. Such barriers can include requiring compliance with unnecessary domestic standards that

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[1] The Agreement on Technical Barriers to Trade can be downloaded at http://www.wto.org/english/docs_e/legal_e/17-tbt.pdf The WTO maintains a general resource page with additional information and links at http://www.wto.org/english/tratop_e/tbt_e/tbt_e.htm

overlap with already existing global standards, and conformity testing requirements that are unnecessary and burdensome.

Unfortunately, while the ATBT is targeted at avoiding one problem, it can also create another when the implementation of an already-adopted global standard necessarily infringes upon a royalty-bearing patent. Nominally, such a problem would be internationally neutral, since the patent will have a single owner that may only (in the case of almost all *de jure* and consortium-adopted standards) levy royalties on a reasonable and non-discriminatory basis. But in a consolidated marketplace such as consumer electronics, the multinational corporations that already control most of the marketplace are likely to have cross license agreements in place that lower, or eliminate, the per-item royalties that may be payable among them on many types of standardized technology.[2]

The result for an emerging nation can be harsh. On the one hand, it may enjoy the benefits of a skilled and much lower cost workforce, and therefore be able to secure the manufacturing contracts to produce goods for sale under the brand of a foreign contract party that owns the patent(s) in question. But at the same time, the patent royalties that would be payable if it built similar goods under its own brand may be prohibitively high. As a result, it may be restricted as a practical matter to manufacturing such products only for foreign corporations, which will reap much higher profits on the sale of the goods to end users than those earned by the off-shore manufacturer itself.

This is the situation that China faces today, especially after acceding to the WTO. As a result it has adopted a policy of utilizing foreign standards that can be implemented without payment of royalties, while developing so-called "home grown" standards for products when it feels that the royalties and other license terms demanded by foreign corporations are overly burdensome.[3]

This unequal situation in some ways parallels the colonial experience of the same countries. For most of the 20th century, former colonial powers and other modern nations enjoyed a significant lead over emerging nations in technical design expertise, productive capacity, capital resources and workforce skills. These factors provided already developed nations with overwhelming commercial advantages, just as the European powers had earlier enjoyed decisive economic, military and technological leads over many of the societies that they came to control through direct possession (as in the majority of cases) or to greatly influence (as in China) through other means.

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[2] It would be logical to ask whether such practices are in fact "non-discriminatory," at least when examined in the context of a single standardized product. I am not aware that this argument has successfully been made with respect to any standard, and such practices appear to be accepted as consistent with a RAND licensing commitment.

[3] China has developed many such standards, with mixed success on the implementation side. They include alternative standards in areas such as wireless communication, video compression, document formats, and 3G telephones. For more on China's standards efforts in this regard, *see* Updegrove, Andrew, The Yin and Yang of China's Trade Strategy: Deploying an Aggressive Standards Strategy Under the WTO, the ConsortiumInfo.org *Consortium Standards Bulletin*, Vol. IV, No. 4, April 2005, and sources cited therein, *at* http://www.consortiuminfo.org/bulletins/apr05.php#feature.

And just as those European powers could (and did) divide the undeveloped world among themselves, the multinational corporations of today can (and do) form commercial alliances involving patent cross licenses, comarketing activities and other agreements that increase their competitive advantages over their smaller competitors.

The potential for IPR neocolonialism: The influence of a corporation can be amplified dramatically in the case of a given product niche due to the fact that it has the right to file a patent anywhere in the world – and indeed everywhere in the world – to protect most types of inventions.[4] In the case of a narrow patent, this right may be of limited import. But if that same patent is necessarily infringed by a globally adopted standard, then the filings securing that patent have the ability to replicate with startling thoroughness the impact of territorial colonialism, and at breathtakingly lower cost.

For example: in the past, a nation interested in the cheap labor, rich natural resources and large market potential of a territory available for colonization would need to embark upon a long and difficult series of steps to reap the benefit of such control, of which the following are merely the highpoints:

- Conquer or otherwise achieve influence over the target territory
- Secure the new colony militarily through the establishment and maintenance of military and police garrisons
- Create an administrative, transportation and commercial infrastructure capable of supporting resource extraction, keeping the peace, and managing export and import funcitons
- Recruit (and in some cases import), train and supervise a labor force to extract the resources in question and distribute manufactured goods
- Defend the colony against internal uprisings and external rivals

While the potential rewards of such a process were great, the costs and risks of acquisition were also substantial. Nor were the results always certain, especially if a rival power coveted the same territory. Moreover, many of a colonizer's own people usually died in the process of securing, defending, and simply surviving in the inhospitable conditions of such colonies.

In contrast, a modern multinational company can secure most, or all, of the same advantages at vastly lower cost and commercial risk, through the exercise of its greater level of experience, resources and patents.

A single example clearly makes the point. Consider the inventors of the technology underlying a modern DVD player. Such a player implements many standards, including, most obviously, the DVD format itself. Today, virtually all DVD players are built in Pacific Rim countries, such as China. Foreign corporations contract with Chinese manufacturers to produce these DVD at a very low cost using China's abundant, inexpensive labor force, and at a very low profit for the owner of the

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[4] Software is a notable exception. While inventions implemented in software became generally eligible for patent protection in the United States by the early 1990s, software that executes business tasks remains generally unpatentable in Europe, despite repeated and ongoing efforts by industry efforts to reverse this rule.

Chinese manufacturing plant, due to local competition. The goods are then sold throughout the world, under foreign brand names, by the companies that hold the patents on the underlying standardized technology. They are also sold in China itself, again at a greater profit to the patent owners than is reaped by the Chinese manufacturer that produced them, who clearly cannot afford to pay the c. $20 in royalties that would be payable on a device with a retail price of c. $49.

Because the content that must be purchased[5] in order to make the DVD player useful has been created using the same format, the foreign patent owner has effectively "colonized" China with respect to both DVD players and content. Without ever having to take control of the Chinese market physically, the foreign patent ower can now harvest Chinese resources (China's labor force) from afar, and it can also control the Chinese market with respect to its purchasing (of DVD players) through enforecement of its patents. Moreover, using China's accession to the WTO as a lever, China's trading partners can (and do) bring pressure on China to use its own legal system to protect foreign manufacturers from domestic patent infringement.

Indeed, the multinational corporation that owns a patent underyling the DVD format need not even export its goods to the market that it has colonized. Instead, it can simply have the DVD players manufactured close to the customer, enjoying a larger profit due not only to lower costs of production, but to reduced transportation costs as well.

The backlash: The predictable result is that any emerging country – and especially one that has already experienced traditional colonial rule – will be unlikely to submit to such treatment in the long term. As earlier noted, China in particular has been chaffing under the effects of the current standards regime, and has a number of advantages at its disposal that it can use to counter the disproportionate power bestowed by the embedding of royalty-bearing patents in standardized products.

First and foremost is the enormity of the Chinese marketplace itself. If goods built to a Chinese standard are as good or better than those that implement a global standard, and are cheaper besides, then it is not likely that the Chinese marketplace will find products built to the foreign standard to be attractive, all other things being equal.

In the first, widely publicized clash between a domestic and a foreign standard, the Chinese government asserted that the globally-adopted WiFi standard was deficient, particularly as respects its security capabilities, in comparison to the comparable features of the Chinese WAPI specification – which was protected by multiple Chinese patents. The Chinese government announced that all wireless-enabled laptops to be sold in China would be required to be WAPI compliant, and also that only a limited number of Chinese vendors would receive the required patent licenses required to build compliant chipsets. Foreign companies would need

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[5] Or pirated, as the case may be. But in either case, the result is the same.

to contract with those licensees, and domestic manufacturers would enjoy a significant cost advantage due to the discriminatory impact of related taxes.[6]

The second significant advantage enjoyed by China is the control exercised by the federal government over the still largely centrally controlled economy. In the case of regulated areas such as telecommunications, the government has the right to grant licenses to telecom carriers – and to specify what standard those licenses must implement. Once again, China has developed its own 3G mobile phone standard (called TD-SCDMA). At least some of the first round of 3G licenses will be written on this standard when the next generation of handsets are sold into this largest of all cell phone markets. And once again, a portfolio of Chinese patent claims read on that standard. Foreign telecom vendors will be required to pay royalties on those patents – perhaps once again at a higher rate than domestic manufacturers.[7]

China's size matters in a third way as well. As in any other country, the government is a very significant purchaser of goods and services, as well as the other side of many transactions in which the citizenry must participate, such as transactions involving documents. Here, too, there is now a Chinese standard in place, called the Unified Office Format (UOF). And once again, there are claims in seven separate patents that read on compliant implementations of that standard. China's licensing intentions have not yet been announced, but it is anticipated that foreign vendors will be required to obtain royalty-bearing licenses in order to implement the standard. Moreover, China voted in ISO/IEC JTC1 against adoption of a document standard based upon Microsoft's OfficeOpen XML formats in the round of balloting that closed on September 2 of this year.[8]

Nor are these the only examples. China also now has, or shortly will have, its own video as well as audio compression standards for use on DVDs,[9] two mobile television standards,[10] and multiple home-grown distributions of Linux, among other home grown standards and open source software.

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[6] The reaction from western manufacturers such as Intel and Texas Instruments was energetic and decisive: each announced that it would not sell wireless chipsets into the Chinese market until the policy was reversed. The resulting trade dispute was escalated to the highest levels of government, and eventually defused (although not finally resolved) when the deadline for WAPI adoption was indefinitely postponed. The dispute continues to simmer today. For further details, see *The Yin and Yang of China's Trade Policy: Deploying an Aggressive Standards Strategy Under the WTO*, cited above.

[7] For a detailed and current update on the status of TD-SCDMA and China's overall domestic licensing intentions, *see* Asakawa, Naoki, TD-SCDMA: More Standards to Come, Nikkei Electronics Asia, August 2007, at http://techon.nikkeibp.co.jp/article/HONSHI/20070725/136763/

[8] Shortly before China cast its vote in JTC1, several English text articles were released by China's official Xinhua News Agency with critical titles such as Microsoft's 'Monopoly' Comes Under Fire. See Updegrove, Andrew, OOXML, ODF and UOF: What's Up in China?, ConsortiumInfo.org, The Standards Blog, August 17, 2007, and other sources cited therein, at http://www.consortiuminfo.org/standardsblog/article.php?story=20070817070419313.

[9] *See* Garg, Sachin, China's AVS Specifications Available, the Data Compression News Blog, September 4, 2007, *at* http://www.c10n.info/archives/668. According to this entry, implementing the new Chinese standards will be far cheaper than using the western standards: only 13 cents, in comparison to a typical $2.50 license payment per unit based upon MPEG-2 compression technology.

[10] *See* Yoshida, Junko, China Narrows Final Mobile TV Spec to CMMB, TDBM, EETimes, September 7, 2007, *at* http://www.eetimes.com/news/latest/showArticle.jhtml?articleID=201804774

While China has gone farthest in creating home grown standards in reaction to royalty-bearing foreign-origin standards, it cannot be assumed that other nations may not embark upon similar programs in the future. Most obviously, India has a population that now exceeds 1 billion individuals, a vibrant technology industry, and increasingly large numbers of middle and upper class consumers. In a related development, other countries around the world, including Brazil, Malaysia and many others have shown increasing interest in open source software, in large part to avoid dependency on, and lock in by, the proprietary products developed by dominant vendors such as Microsoft.

The problem: It would be highly regrettable if fragmentation in ICT standards becomes more widespread just as open standards become more credible and in demand than they have ever been before. And yet presumably this is exactly what will happen, unless the standards that are adopted by both the accredited and the unaccredited standards processes consistently avoid high royalties and/or undesirably restrictive licensing terms. It will be equally likely that a new rush to patent offices worldwide will occur, both defensively as offensively, if core standards are too often so encumbered.

Already, there is evidence of such activity, with the number of patents being filed in (for example) China dramatically increasing on a year to year basis. Such escalation in a global war of standards, patents and royalties would severely undercut not only prospects for pervasive interoperability, but globalization and the efforts of the WTO to avoid barriers to the free flow of goods and services.

Unfortunately, finding a resolution to this problem runs afoul of long-held tenets of the traditional standard setting infrastructure. That regime has long recognized the validity of IPR, and has sought to find a balance between honoring the rights of inventors to receive fair value for the implementation of their inventions with the need to make such inventions available to standards implementers on acceptable terms.

Historically, that balancing has been possible, in part because most stakeholders could be found in modern countries that were at a roughly similar stage of economic and technological development, and had equal access to participation in the standards development process. Indeed, many vendors participated in standard setting activities with the goal of reaping royalties or other benefits from the inclusion of their patented technology in the standards that were developed. Where the large vendors had all been building up their patent portfolios over long periods of time, there was rough parity of position in the marketplace, and the costs of licensing could be built into the pricing of the goods that the marketplace was willing to buy.

With the entry of so many new companies into the marketplace in emerging countries, however, the patent landscape is woefully disproportionate, placing new vendors at a huge disadvantage, with piracy by small vendors often being the result in some nations. But as these economies mature and piracy is gradually eradicated, the imbalance will return. Even as large a company as Lenovo will be hard pressed to acquire patent portfolios in western nations to rival those of Pacific Rim rivals such as NEC or Samsung, let alone western behomets like IBM, Phillips

Electronics or Siemens. Presumably, Lenovo's recent purchase of IBM's laptop business was motivated as much (or more) by a desire to acquire IBM's related patents and trademarks, and therefore higher profit margin opportunities, than by the underlying value of the product designs and technology.

If parity can never be reached other than through such exceptional means, how can a level playing field be found in order to remove the incentive to engage in an endless series of standards wars?

A possible solution: The logical, if not necessarily easy, solution would be to drive global standard setting towards royalty-free, and not simply reasonable and non-discriminatory, terms (sometimes referred to as "RAND-Zero" (or simply RANDZ) as in "zero cost"). Obviously, this would require a rebalancing of the rights of IPR owners and implementers, at least as regards those that choose to participate in the development of the standards themselves. But how can this be achieved?

The most effective means would be for all standards organizations to convert to mandate RANDZ licensing of essential patent claims. That outcome, however, would likely result in many large patent owners simply refusing to participate in standard setting at all, thus plaicing their patent portfolios out of reach and still likely to be infringed.

A less radical and more feasible step would be to encourage individual countries to adopt a policy that requires government purchasing of products that implement RANDZ standards whenever those standards are available. Already there are nations that show a purchasing preference or requirement for products that implement ISO/IEC adopted standards, and the commercial impact of this preference on vendors can be easily recognized in the marketplace, notwithstanding the fact that ISO/IEC adoption has little or no impact on sales in some other large markets, such as the United States.[11]

Were such a policy to be adopted by many nations, the purchasing power at play would be very considerable. The resulting benefits could also be substantial, and include favorable impacts in each of the following areas:

- Greater numerical as well as cost competition in the marketplace, due to greater cost parity between competitors
- More innovation, due to greater incentives to compete on additional functionalities and services lying above the standardized design layer
- Lower barriers of entry, especially for small companies that lack the patents needed to cross license with other companies in order to equalize their cost of goods
- Freer global trade, due to reducing the incentives to create "home grown" standards
- Fewer trade disputes between nations involving technology-based products

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[11] A current example of this influence can be found in the effort that Microsoft is dedicating towards adoption of its OOXML formats by ISO/IEC JTC1, following the earlier adoption of the OASIS OpenDocument Format by the same committee. This is especially significant given the near-total monopoly that Microsoft Office already enjoys in the global marketplace.

- More rapid development of larger global markets based upon single standards
- Less game playing in the standard setting process, due to there being fewer benefits to reap from embedding patents
- Greater economic opportunities for entrepreneurs and workers in emerging nations, through the creation of more and better paying jobs
- Faster rising salaries in emerging nations, benefiting not only workers and families in those nations, but decreasing the attractiveness of exporting production jobs from developed nations
- Greater political stability and expectations for democratic reforms as the standard of living rises in developing nations
- Decreasing incentives for illegal imigration into developing nations

Summary: Of course, simply changing government purchasing policies would hardly solve all of the world's problems overnight. But as the value of technology-based products and services continues to grow, as it surely will, a greater and greater percentage of the gross national products and jobs of all nations, both developed and developing, will be dependent on how quickly the standards upon which those products and services are based are developed, and how uniformly they are adopted.

Market forces that lend to the creation of (otherwise) superfluous standards should therefore be countered whenever possible if truly free markets and global trade are to be encouraged. By going to the IPR-based core of some "neocolonialist" market forces and excising the motivation for duplicative standards, many damaging standard wars might be averted, and positive results encouraged.

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OOXML, ODF and UOF:
What's Up in China?

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Microsoft has seemed to be flying high in the Peoples Republic of China lately. Bill Gates spent several days in Beijing earlier this year in meetings with high-level officials, after hosting Chinese President Hu Jintao the spring before at Gate's own home. And legitimate copies of Microsoft products appear to be at last gaining ground in comparison to pirated copies, albeit at the price of discounting them to almost unimaginable levels (students can now reportedly obtain a Windows/Office bundle for the incredibly low price of $3).   Some commentators complimented Microsoft's pragmatic decision to accept Chinese realities and not insist on having everything its own way.
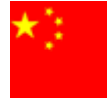
Others, though, wonder whether the Chinese are smiling all the way to the bank, taking everything they can get, and giving little in return. David Kirkpatrick asked that question in the title of his April *Fortune* piece, titled How Microsoft conquered China: Or is it the other way around? Kirkpatrick hitched a ride on Gates' April trip to Beijing, and witnessed the rock star status and high level access Gates enjoyed in the Chinese capital . In the end, Kirkpatrick concluded that both sides are doing just fine, thank you, even if China may be doing a bit "finer."

But perhaps not. One story I've been following in China for some time is the development of China's own home-grown open document format standard, called UOF (for Unified Office Format). Now, two stories involving UOF, OOXML (a Microsoft-backed XML format that is currently seeking adoption in ISO/IEC JTC1) and ODF (an already ISO/IEC JTC1-adopted XML format that is backed by IBM and Sun, among others) have appeared in the last ten days in the English language version of the state-owned Xinhua news service. Together, they provide an interesting temperature reading on the warmth of the Redmond-Beijing relationship. (You can read more about UOF here and here.)

First, some background. China has embarked upon a very aggressive state-sponsored, and state funded, standards strategy. That strategy is staffed by a multitude of government and academic employees, with estimates of their total number running into the many thousands. At the heart of the matter is an understandable resentment by China to be relegated to the status of a low-cost, low margin job shop for Western, patent-owning companies that have their products built in China, and then mark them up significantly for sale all over the world. China is barred from selling similar products by the high patent licensing fees that it would need to pay to sell such products under it's own brand. The best

example can be found in DVD players, where the licensing fees would be almost equal to the retail price of a low-end unit.

As a result, China has evolved a two-pronged approach: use western standards with abandon, when they can be implemented for free, and develop its own standards in select, high volume areas, such as wireless technology, 3G telephones – and office suite formats - when they can't. UOF was adopted as a Chinese National Standard in May of this year, and implementers will need to obtain a license to multiple Chinese patents in order to implement it.

In short, Microsoft is facing a situation in China analogous to what it is facing with ODF. Except in this case, it is dealing not with a handful of vendors, most with a tiny fraction of Microsoft's own resources, but with a sovereign nation with the largest population on earth, a determined and powerful central government, and a detailed and comprehensive national standards strategy.

Microsoft's own strategy in the face of UOF has been similar to its approach to ODF. In April, Microsoft announced that it would fund the creation of an open source translator project intended to enable UOF to OOXML document exchanges. eWEEK.com's Peter Galli quoted Jean Paoli, Microsoft's general manager for interoperability and XML architecture as follows: "This Open XML-UOF translator will be similar to the Open XML-ODF translator that has already been developed and will follow the same model." Microsoft presumably hoped that this approach would assuage the Chinese government, just as it hoped its ODF translator project would comfort European antitrust regulators.

That hope appears not to be maturing at the moment in the case of OOXML. Or at least so the tea leaves at People's Daily Online would indicate, as this is where China shows the English speaking world what it wishes it to see online. The first of the two articles, titled Microsoft 'monopoly' comes under fire, is brief, and appeared on August 7. It states in part:

> Chinese academics and software developers gathered in Beijing yesterday to voice their opposition to Microsoft's latest standard document format Office Open XML (OOXML). Major software developers, academics and industry associations spoke out against Microsoft's "monopoly" on the format of digital documents….[Microsoft's] document format has helped it to unprecedented success, setting a formidable barrier for other software companies, who must make Microsoft-compatible products and cannot access the core code of the format.

The article goes on to quote Ni Guangnan, a professor at the Chinese Academy of Engineering, as follows: "Microsoft's move to make its OOXML format the international standard is an extension of its goal to maintain its monopoly in the world's software market. We are calling on the government to veto the OOXML format at the International Organization for Standardization (ISO)." According to the article, Ni wrote an open letter to Chinese Media on July 17, which Tim Chen, senior vice-president of Microsoft and chairman and CEO of its China operation, answered on July 31. Chen called Ni's assertions "unfair," and continued, "We are promoting the new format in response to our users' needs."

I was not sure how much to make of this single article, notwithstanding its posting at the state information agency's English news site, given its brevity and the fact that its quotes were attributed to a single "academic." Chinese news stories make statements to the world, and how – and by whom – those statements are made are intended to signal the seriousness with which they should be taken.

The next article appeared on August 13, and this article was not only more forceful, but quoted several industry sources. It was titled Microsoft doc standard meets opposition in China, and runs to almost 900 words – quite long for a People's Daily Online article. The article begins as follows:

> BEIJING, Aug. 13 (Xinhua) -- The OOXXML, Microsoft's newest document standard, is facing growing opposition as China's software producers, IT experts and netizens continue to urge the government to vote against it at the International Organization of Standardization (ISO) conference in September.
>
> "An international standard can't be built on the private technologies of a single company. If something goes wrong with the company, nobody can open files based on its standard," said Co-Create Software (CCS) vice secretary general Yang Chuanyan.
>
> "We appreciate the sophisticated technologies of the MS document, but doc standard has to be open to allow anybody, at anytime, to develop applications to operate on the saved files," Yang said.

The article goes on to note that Microsoft has already developed a converter able to convert documents based on ODF, a "standard promoted by Sun Microsystems, IBM and Oracle and approved as the international standard by the ISO," and that it is working with Chinese partners on a similar solution.

But that solution does not seem to be working any better in China than it is elsewhere. The article goes on to quote not just Ni again, but also Beijing Redflag CH2000 Software Co. Ltd. manager Hu Caiyong, who states, "The MS doc standard contains too many MS patents, which we have to get round and re-develop new protocols for compatibility. It took almost five years for Chinese software producers to develop software that is compatible with MS Office."

The article also quotes a vice president of Evermore Software, another Chinese company: "The MS will seize the entire market during our research and development period. Which means the fledging domestic producers will be destroyed and consumers will have few options," as well as an Executive Vice President of China Standard Software, who was also critical.

Intriguingly, it returns to Ni and Hu on the subject of bringing UOF and ODF into harmony, a goal called for by Sun's Scott McNealy in Beijing earlier this year:

> Ni said that the UOF and the ODF should combine to fight the OOXML since the two standards have a significant integration

potential as 70 percent of them are the same and 20 percent of them are transferable. "Although the MS Office has more than 400 million users globally, users of Star Office and Open Office, software based on ODF, have reached tens of millions worldwide," Hu Caiyong told Xinhua….

"Considering the potential Chinese market and the maturity of the self-developed software, the integration of the UOF and the ODF is quite realistic and able to gather enough strength to fight the OOXML," Hu said.

Apparently, OOXML has struck a popular nerve as well. The article says, "Enter 'resist', 'Microsoft' and 'document standard' in Baidu, the largest search engine for the Chinese language, [and] 112,000 web pages will show up."

It should be noted that the article also quotes the Secretary General of the China Software Association, who called OOXML "a very good thing" for China to vote in favor of OOXML, and something that would be good for both the government as well as Chinese software vendors. Xinhua states that it was unable to obtain a statement from the Ministry of Information Industry, which will cast China's vote on OOXML

What to make of all this? Is the government signaling that its vote can't be taken for granted? Are there concessions that it is asking for from Microsoft behind the scenes? And most intriguingly, which way will China ultimately vote?

I have no idea. But as in over a hundred countries around the world that are finalizing their votes, we should find out very soon.

Epilogue: *China cast its vote in ISO/IEC JTC1 against adoption of OOXML.*

#50   Standards, Virtual Worlds and The Big Question

Andrew Updegrove

It was not so long ago that most kids in school experienced a predictable "Oh Wow!" moment when they learned about atomic structure (that's "Oh Wow!" as in, "What if our solar system is, like, you know, just an 'atom' in this, like, *really big* 'molecule' thing called a galaxy and…").

Today, of course, that Oh Wow! moment is more likely to be sparked by a video game or, more recently, by a visit to a virtual world. And after all, the basis for the old *Oh Wow!* Concept was crumbling anyway, what with the discovery of subatomic particles, and the assumption that there's no physical "there" there at all – just electronic charges. Or whatever. Personally, I've always found the video game day dream more appealing than the atomic theory in any case. After all – how much difference is there really between what happens when you turn on a computer monitor and the Big Bang? *Oh Wow!*

The old concept of life as being something other than what we suppose returned to me just now when I read at Bob Sutor's Open Blog about a Virtual Worlds Conference held at MIT on June 15 (you can view the agenda for the event at Bob's blog here, and find a live blog entry at Virtual Worlds News on a panel that Bob moderated here). And yes, there's (of course) a standards hook in here somewhere.

You'll find the standards connection in a related article (catchily titled Standards to help users keep virtual clothes on). In that article, IDG's China Martens interviews Sutor in advance of the Virtual Worlds Conference. Given that Bob is not only a recently hooked virtual world fan but the chief standards and open source strategist at IBM as well, he had a few thoughts about why virtual worlds need standards. For example, the article includes this:

> "A lot of people are looking at Second Life and saying, 'Let's do one of those,'" said Bob Sutor…. "The last thing you want is a lot of different ways to do the same things. You need standards for how to teleport between different virtual worlds and to bring objects with you." …Besides an avatar's clothes, those objects could include the money it was using in your home virtual world as well as a presentation you might want to share with your colleagues or potential customers.

Hmm. Sounds like a real problem you'd want to tackle - who (with the possible exception of Paris Hilton) would want to arrive in a room full of people unannounced with no money and no clothes, even virtually? But as virtual worlds get fine-tuned to this degree, the old "Oh Wow! What if…?" question may be moving from the fun to the mildly uncomfortable.

Why uncomfortable? Well, have you ever noticed that no one has a clue what or why gravity is? We observe and measure its effect and try and fit it into a Grand Theory of Everything, but let's face it - we haven't got a clue what "it" really is. "It" just "is." Full Stop. In trying to quantify it and fit it into some logical relationship to other (equally unknowable) strong and weak forces, it's easy to forget that we haven't even a tentative theory to explain *what* or *why* gravity "is" at all.

Or how about mathematics? Math doesn't exist in any sense other than that physical objects often seem to be better at working with it than many of us are - and it always works. Always. Now why exactly would that be?

If an explanation for the existence of gravity cannot even be imagined, then perhaps we are left with the conclusion that gravity is simply the manifestation of a rule or standard, to which the world we observe is required to comply. In fact, making the assumption that the world is governed by *rules* instead of *laws* helps solve a lot of puzzles.

After all, Newtonian physics pretty much work, but not all the time. When you get down to the realm of the really, really small, then you have to pull out a different rule book (the quantum physics one) to explain why things happen the way they seem to. And when you get to the really, really big, how about that pesky Dark Matter? (That's "dark" like the color of fudge – as in "fudge factor.") If all physics is just a collection of imposed and not too rigid rules rather than the observable and inviolable physical laws we think we observe in action, then we never have to figure out where all that Dark Matter is hiding. It becomes just another "known issue" that the programmer fudged.

Clearly, things then become more simple. Once we quit insisting on immutable laws and think in terms of design rules, used when they're really useful and ignored when they're in the way, we don't need a Theory of Everything and bizarre patch jobs like string theory or dark matter at all. Think of it as semi-intelligent design. And if you would like to think that we really are made in someone's image, then all of the bad software design work in the world becomes a whole lot easier to live with.

Feeling uncomfortable yet? Well, let's try this then. Imagine yourself sitting with others at a white board at Linden Lab when Second Life was first being spec'ed out. All kinds of decisions would need to be made, wouldn't they? Should gravity apply, or not? If it does apply (but not so inflexibly – those lucky avatars can fly!), then we need rules for things like acceleration, or all chaos would result as Second Life becomes more densely populated. And to implement these rules in software, we'd need to have formulae, to make them feasible and predictable, wouldn't we?

Now let's say we wanted to be more conservative and anal than the Linden Lab folks were, or perhaps we just wanted to make our virtual world much more complex (as Linden Lab may itself do over time). We might then want those rules – standards, after all – to interoperate seamlessly in order to permit that complexity to operate successfully. If we wanted to allow space travel to other virtual worlds, we'd need to work that out, too.   And so on.

Viewed from that perspective, what are physics and astrophysics and the math that serves them but a set of standards for how objects and energy are *instructed* to act? And so we see that when physical laws are viewed simply as design rules, then gravity needs no more explanation or reason for existing than does math – it could be just a feature the designers found to be useful. Once described and encoded, the rule must be obeyed. "It" then just "is" because "it" is the implementation of a standard that governs the world (virtual or real).

That of course leaves open the same old Big Question: Who "wrote" the standards? A Creator in the traditional, religious sense? Some cosmic virtual world vendor? A standards committee (composed of who, or perhaps what)? I'll leave that question up to you, but I'd love to ask whoever it was a few other questions, like these: if it was all discretionary anyway, *why didn't you let me fly?* And isn't it about time to release Earth 2.0, maybe without Dick Cheney this time?

Regardless, the more detailed and finely tuned our virtual worlds become, the more uncomfortable this type of question may feel, as the similarities between our (supposedly) real world and these virtual worlds increasingly outweigh the differences. As this occurs, more questions may arise, like this one: perhaps the Kidnapped by Aliens crowd may not be so crazy after all – maybe the designers of earth just did a lousy job on the travel between virtual worlds standards Bob Sutor thinks we need. After all, a few bad standards would really add to the credibility of the theory, wouldn't it?

So there you are. Something to think about the next time you have nothing to think about. And when you do, here's one last thing to mull over: will our world (game?) really end when the sun becomes a red giant and roasts us to a cinder, or will some cosmic server with a faulty backup program simply and inevitably crash someday instead?

No burn, no bang. Just an all too imaginable whimper as the hard drives coast s-l-o-w-l-y to a halt…

Damn! I *hate* it when that happens!

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