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## TRENDS

### TOP DOWN OR BOTTOM UP? A TALE OF TWO STANDARDS SYSTEMS

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**Introduction:** National standards systems typically echo the political methodologies of the countries in which they operate. This is hardly surprising, in that the consensus-based process of developing standards is in many respects political in nature. As a result, those countries that exercise the most centralized federal control are more likely to have a single national standards organization, while those that have political systems that are more locally responsive are apt to have distributed infrastructures that evolve more organically and dynamically.

The two countries that perhaps most dramatically exemplify this observation are the Peoples Republic of China and the United States. In the nomenclature most often used in American standards circles, the two countries have adopted “top down” and “bottom up” approaches, respectively.

The question of which system (if either) is “better” than the other is an interesting one. Equally significant are the related questions of whether, if one system indeed is better, when is that the case, and why? Examining these questions is the subject of this article.

**In this corner, China:** While private enterprise now flourishes in China, the invisible hand of capitalism has hardly succeeded in replacing centralized direction of the national economy by China’s communist leadership. Nor have private companies been encouraged by that government to engage in standards activities, other than in a manner consistent with and supportive of national standards policies.

As examined in some detail in the previous article (*The Yin and Yang of China’s Trade Strategy: Developing a Standards Strategy in Compliance with the WTO*), China has created an enormous, centrally-managed standards infrastructure employing (in 2003) an astonishing 27,800 government employees in 260 technical committees and 422 subcommittees. This vast apparatus is directed at achieving the goals of the current PRC five year plan, which has a focus on research and development in order to transform China from a low-cost, low margin workshop building products to foreign orders into a global manufacturer of its own high margin, domestically branded goods.

The strategy for achieving this goal tasks the Chinese standards infrastructure with:

- The creation of a list of technologies in areas such as telecommunications and consumer electronics that are vital to building a national infrastructure and a higher-margin manufacturing base.
- Identifying those standards in place or under development elsewhere in these areas that would require the payment of significant royalties by Chinese manufacturers.
- Deploying technical staff in relevant ministries (such as the Ministry of Information Industry, or MII) to create new standards, either in whole or in part, to avoid the need to pay such royalties, and filing domestic patents under these standards when possible.
- Approving these standards when completed; requiring their implementation in domestic products; and licensing patent rights under these standards on a limited basis that favors domestic manufacturers.

While implementing all elements of this grand strategy is difficult to accomplish under the World Trade Organizations' (WTO) Agreement on Technical Barriers to Trade (TBT), China appears to be pursuing this goal to the maximum extent possible.

**And in this corner, the United States:** The standard setting system in the United States could scarcely be more different. Instead of government tasking its employees to create standards, private citizens create them (and other commonalities, such as open source software), either at the behest of their employers through consortia, accredited standards development organizations (SDOs), and (more recently) open source projects, or of their own volition as individual members of SDOs and open source projects.

Moreover, there is no central direction of the standard setting process whatsoever by Federal or state governments, nor is there any systemic, direct economic support from public sources. Such benefits as the U.S. government does provide are instead indirect, and include:

- Pre-standardization funded research (e.g., through the National Institute of Science and Technology and grants to fund test bed projects in certain consortia).
- Direction of government procurement (through the passage of the Technology Transfer and Advancement Act of 1995 (TTA), which requires government agencies to participate in standard setting organizations, as well as to purchase products that conform to open industry, rather than government-unique, standards whenever possible).
- Legislation to lessen the antitrust risks of collaboration (through the National Cooperative Research and Production Act, as from time to time amended).
- Voicing objections and filing complaints against violations by other countries of rules against erecting technical barriers to trade through abuse of standard setting and conformance testing.

While each of these efforts (and most particularly the passage of the TTA) is significant and helpful, they collectively demonstrate a "hands off" approach to standard setting that allows the marketplace to determine what types of standards are needed, and what types of organizations may best be employed to create them.

**Top Down vs. Bottom Up:** Superficially, each strategy has its advantages and disadvantages, which may be summarized as follows, beginning with China:

**Advantages:**

- National goals can be identified, and a powerful and highly targeted approach can be designed to achieve those goals.
- Strategies can be designed that benefit identified stakeholders (e.g., citizens as consumers) and not just vendors.
- Central authority can deploy resources and enforce goals in a coordinated fashion.
- The same authority can defend against retaliatory actions, using ad hoc diplomatic as well established treaty mechanisms.
- Finely calibrated strategies can be devised that push trade treaty restrictions to maximum permissible limits.
- Alliances can be formed with other national standards bodies on a peer-to-peer basis.

**Disadvantages:**

- While building a battleship creates a formidable weapon, it is difficult to turn such a structure once under way, and even harder to re-design once it has been launched.
- Unitary strategies create blunt weapons that will, if successful, achieve large goals, but may be poor at optimizing results across the board in all situations.
- Battleships make large and visible targets that attract the attention – and retaliation – of all that feel threatened by them.
- Diplomatic capital that may be sorely needed elsewhere may need to be expended mending trade treaty fences when the strategic hand is overplayed.
- The goal of avoiding foreign royalties may result in the inclusion of "less than best" elements in standards.

The United States system, on the other hand, measures up as follows:

**Advantages:**

- With an infinite number of actors, each actor (or group of actors) can pursue a strategy that is optimized to achieve the success of its individual objectives.
- With no central planning, each actor (or group) can be more nimble, adapting in real time to changed circumstances and taking advantage of opportunities as they become visible.
- Multinational Corporations (MNCs) headquartered in the United States can pursue a global, rather than a national, strategy intended to maximize sales based on a global market.
- All available approaches can – and will be – aggressively pursued (e.g., in accredited standards development organizations, consortia, open source projects, etc.)
- Initiatives can be launched quickly and opportunistically, without the need to clear action through a central bureaucracy.
- Multiple standards efforts may be launched simultaneously, with the market choosing the best solution from the completed offerings.

**Disadvantages:**

- Except as a result of market consensus, there is little coordination in disparate efforts (often, even by the representatives of the same company acting in different standard setting venues).
- Waste of resources may result from competing, needlessly redundant initiatives.
- The assistance of government is difficult to recruit, either in a given case or in support of broad objectives.
- MNCs headquartered in the U.S. may have less influence abroad (e.g., in Europe) while receiving little support from the United States government to offset this disadvantage.
- Consumers have little influence on outcomes.

As can be expected, each system will be more advantageous in some circumstances, and less so in others.

**The right tool for the job?** With the above as prelude, it is possible to ask whether China has designed the right infrastructure to achieve its goals, and whether it has devised a strategy that is optimized to take advantage of that infrastructure? And finally, how skillfully is China playing its hand globally?

China's new strategies are still being deployed, and the jury's verdict therefore remains to be heard. But a preliminary score card might look something like this, based on the outcomes of several instances in which China has tried most visibly to deploy its standards strategy to domestic advantage:

**Structure:** The infrastructure that China has designed is formidable, and its ability to identify goals and commission standards has been demonstrated. Finally, the enormity of its resources permits a broad work program to be maintained, as well as the integration of that program into both research and development as well as final productization. It is still too early, however, to know whether this potential will be realized, or whether bureaucratic or other issues will lead to centralization being more of a curse than a blessing.

**Technical effectiveness:** There is as yet not much data upon which to judge China's technical prowess in creating robust standards, but some interesting data will become available soon. Of particular interest will be China's own decision on granting 3G telephone licenses, and specifically whether its homegrown TD-CDMA standard will be chosen. Field-testing of TD-CDMA is scheduled to be completed in June.

**Diplomatic effectiveness:** To date, China has not been successful in holding the line on enforcing its domestic WAPI wireless security standard. Instead, an international hue and cry of vendors, backed up by direct intervention by the United States at the highest diplomatic levels, resulted in the "indefinite postponement" of the required application of that standard.

**Standards body participation:** China has failed thus far to prevail in persuading the relevant ISO working group to incorporate the Chinese WAPI proposal into the wireless standard under study.

And, while China is beginning to engage in global *de jure* standards bodies, it has not yet begun broadly participating in consortia. On the other hand, a number of consortia have recently scheduled large meetings in China, indicating a recognition of the need to accommodate Chinese views and encourage Chinese participation.

In summary, it is still premature to form firm judgments on how successful China will be in deploying its recently devised standards strategy. But it is clear that if its substantial investment in infrastructure is to pay off, its political skills as they relate to the highly competitive world of standards will need to be further refined.

**Effectiveness of United States Response:** It is also interesting to ask how successful the United States has been to date, and will be in the future, in responding to China's new standards initiatives, using the same measures:

**Structure:** American's highly distributed standards infrastructure will have the advantage of speed and responsiveness to evolving market conditions, but will suffer when it comes to coordination, since every company, and every standards development organization, is a free agent in devising its own standards strategies. While such a structure can be quite effective in addressing a particular standards challenge, it is not well equipped to confront the coordinated initiatives of powerful national governments abroad.

**Technical Effectiveness:** The rough and tumble of commercial competition is notoriously apt to lead to the success of the best marketed, rather than the best technical, results. Also, standards development organizations that put the greatest emphasis on consensus may be slow to market with watered down standards, and game playing in any type of organization can result in delays.

**Diplomatic effectiveness:** As regards China, United States vendors and U.S. headquartered MNCs are in far better field position than would ordinarily be the case, due to the fact that the U.S. is entitled to monitor (and is in fact very strictly monitoring) China's compliance with its WTO and TBT obligations. This scrutiny is not likely to be relaxed even after China's WTO accession probation period expires, due to the magnitude of China's impact on the U.S. economy as both an exporter and an importer of goods, and due to its increasing role in exacerbating America's ever-widening balance of trade deficit. Still, it is unlikely that the U.S. government will become actively involved in every case, leaving China with the opportunity to probe for weaknesses across a broad front.

**Standards body effectiveness:** While China is still learning how to play the game, the United States may expect to hold the upper hand. However, given the fact that there is no current mechanism in place to coordinate the actions, positions and strategies of consortia (which are disproportionately responsible for the development of the information and communications technology standards that are most at issue), this situation may reverse as China forms closer ties with other nations and regions, such as Europe.

In summary, the United States is well positioned in the short run, but unless it embarks upon a conscious effort to craft and deploy a systemic response to China's standards strategy, it may be overtaken in the future.

**Conclusions:** The ongoing deployment of China's new standards strategy will provide a textbook test of the efficacy of "top down" standards regimes vs. their "bottom up" peers. Currently, China is in many ways still on a learning curve, as it tests its strategy in the trenches of global commerce. As a result, its early forays into standards politics would at best be expected to result in mixed success. But as its skills increase, its formidable infrastructural commitment may be expected to raise its rate of success.

Similarly, given China's manufacturing power, it may be expected that other countries that also have national strategies will (as Europe already has) make overtures that may lead to alliances that may work to U.S. disadvantage. Moreover, individual multinational corporations may opt to adopt China's domestic standards regardless of their adoption of different standards in other markets, if that is the price of admission to so vast a market.

But perhaps most tellingly, the mere fact that China has incorporated standards into its national policies and interwoven a standards-based strategy into its five year plan will be likely to put United States economic interests at a disadvantage, if there is no conscious effort to craft a responsive coordinated strategy. Unfortunately for the United States, a “bottom up” system has few mechanisms in its tool kit to devise and deploy such a strategy.

Ultimately, it is likely that there will be many variables that go beyond a simplistic evaluation of standard setting approaches that will affect final outcomes. But United States industry would be unwise to ignore the challenge that China's coordinated approach may present to the more casual and chaotic approach to standards that the United States has traditionally adopted.

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