

The Invisible Meets the Intangible: Culture's Impact on Intellectual Property Protection

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Abstract In the global marketplace of ideas, accusations are often made that certain countries refuse to protect intellectual property (IP). This accusation fails to account for cultural differences in the recognition of IP. This paper considers the impact of cultural variables upon a nation's level of (IP) protection. Cultural variables such as humane orientation and in-group collectivism have a negative impact upon IP protection, while uncertainty avoidance and future orientation have a positive impact upon IP protection. Managerial implications of these findings are discussed.

Keywords Culture · Intellectual property · International business · GLOBE study · Cross-cultural legal standards · Software piracy · Counterfeit goods · Patents

Introduction

Intellectual property is a topic often included in discussions of national competitiveness in global business. When knowledge is the intangible product that provides the firm with its competitive advantage, that competitive advantage is vulnerable to imitation without some form of protection. Intellectual property protection is the system of rules and laws in which the “state prevents the unauthorized exploitation of intellectual property for a limited period of time” (Husted 2000, p. 197). In the global marketplace of ideas, accusations are often made suggesting that certain countries refuse to protect intellectual property (IP). In

popular business literature, one often reads grumblings about differing levels of intellectual property protection, recently along the lines of “China doesn't protect intellectual property rights” (e.g., Bai 2010). But, such accusations, often given from a Western Anglo business perspective accusing various countries of refusing to protect foreign (Anglo) intellectual property in favor of domestic industries, miss the larger picture—the very concept of intellectual property, and thus its protection, may be culturally construed. Thus, rather than being a nationalistic protective measure, the strength or weakness of intellectual property protection may instead be culturally derived. An understanding of this issue is critical to firms wishing to devise culturally appropriate strategies to protect their intellectual assets across borders. This paper considers culture's impact on the level of protection that nation opts to offer intellectual property within its borders.

Culture is both invisible and pervasive, affecting our belief systems, norms, and values (Trompenaars and Hampden-Turner 1998; Hofstede 2001), which, in turn, affect our systems and rules. The subject of national culture and attitudes toward systems and rules has been discussed in the literature, such as Gray's study of culture's influence on accounting rules and values (Gray 1988) and Mentzer's study of culture's influence upon employment law (Mentzer 2007). This paper explores the impact national cultural factors have upon intellectual property protection. While the creation of a favorable environment for innovation is something that most, if not all, national governments pursue (e.g., Griffiths and Zammuto 2005), cultural roots and historic traditions may impede their efforts.

Prior research on intellectual property has often considered the violations of IP laws, rather than the acknowledgement of intangible ideas as being property worthy of protection. For example, IP rights have been

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considered in research on piracy and copyright violations (e.g., Moores 2008; Ki et al. 2006; Husted 2000; Whitman et al. 1999). Violations of laws are quite different from the existence of laws, and nations that have strong patent laws may in fact have weak copyright laws. Indeed, the US is an example of this situation, having historically argued in favor of strong patent laws, but pushed against strong copyright laws (Khan 2005). This paper takes a different perspective from the above streams of literature and looks at the existence of strong IP laws across all forms of IP, including trademarks, copyrights, and patents. Many questions remain about the topic of intellectual property protection, especially from a historic and cultural perspective. This paper aims to fill that gap by looking at the impact of cultural dimensions upon the level of intellectual property protection a nation offers.

Many studies involving culture have used Hofstede's four original cultural dimensions (Hofstede 1980, 2001) in their methodologies. Hofstede's work has received much criticism regarding his methodological limitations; while it is outside the scope of this paper to add to or subtract from those criticisms, we do note that Hofstede's original data collection was conducted over 40 years ago. While acknowledging that cultural changes can happen very slowly, this paper endeavors to consider cultural variables using more recent data. The GLOBE study (House et al. 2004) is a more recent comprehensive cultural survey, and includes more societies than did Hofstede's original study. Moreover, the GLOBE study used nine different cultural dimensions, and studied each dimension from at least two different perspectives: as the value manifests itself in current society (practice), and as the value should be in current society (values). Hofstede's study compared 40 different cultures at IBM, which by location omitted much of the developing world from its sample. By contrast, the GLOBE study considered 62 different cultures across three different industries and nearly 1,000 organizations, and included at least three societies from every geographic region in the world, for a truly global perspective. Thus, it could be argued that the GLOBE study is a more comprehensive, and certainly more modern, global cultural survey than Hofstede's study. Many recent papers in business have used the GLOBE study cultural values when assessing cultural variables, including research on corruption (e.g., Li et al. 2008; Martin et al. 2007), performance and turnover (e.g., Peretz and Fried 2012), and social networks (e.g., Ma et al. 2011), and this paper will follow in that pursuit, as well, for a more current look at culture's influence on intellectual property.

The rest of the paper will be organized as follows: first, we review theory and develop hypotheses. This will be followed by a description of the data and methods. Finally, the quantitative results and discussion will be presented.

Culture and Intellectual Property

Culture has been linked to one aspect of intellectual property: that of piracy, including software piracy and music piracy. Cultural norms may act either as enablers of piracy or as discouragers of that piracy, as those norms influence the perception of intellectual property protection and its appropriateness in a given situation (Ki et al. 2006). Yang et al. (2009) observed that people's individual decisions regarding the ethics of intellectual property violations such as digital piracy may be more an influence of macro-level factors, such as cultural attributes, than of individual attributes. A 2007 study found that cultural variables could explain 76 % of variation in worldwide software piracy (Yang and Sonmez 2007). Another study found a negative relationship between individualism (as based on Hofstede 2001) and national levels of software piracy, as well as a negative relationship between masculinity and national levels of music piracy (Ki et al. 2006). This study found that individualism influences music piracy, and suggested that this cultural dimension may reflect a Chinese proverb: "he that shares is to be rewarded; he that does not, condemned" (Ki et al. 2006, p. 409). In this manner, the concept of "sharing" intellectual property, for the good of the group, may be valued more highly than the concept of individual reward for the creation of that intellectual property.

The perspective on the ethics of intellectual property's protection, ownership, and exploitation may be linked to philosophical and religious differences. Kuanpoth (2002) noted that many Buddhist countries, influenced by Confucian ethics, may perceive imitation of creative endeavor as praise for their work, and that this imitation may help the overall society to learn and improve. Confucian ideals, as manifested in Buddhist countries such as Vietnam, were discussed by Smith (1999), who suggested that the cultural ideals of continuity with the past and identification with the larger group were difficult to reconcile with the legal and commercial protection of ideas, when those ideas could serve to better all of society. Moores and Esichaikul (2011) suggested that intellectual property violations occur within a larger cultural environment that accepts, if not encourages, these violations, and thus society-wide socialization efforts might help curb violations such as piracy behaviors.

Individualism and Collectivism

Altbach (1988) argued that East Asian nations, which are generally more collectivistic than Western nations, often regard copyright protection as a Western-derived concept, which allows one party to wield monopoly power of knowledge over other parties. Steidlmeier (1993) concurred, suggesting that the entire concept of intellectual

property protection stems from Western culture. Regarding software piracy, several studies have found support for the argument that cultural differences, especially along the dimension of individualism-collectivism, influence attitudes toward copyrights and computer-use ethics (e.g., Husted 2000; Marron and Steel 2000; Whitman et al. 1999; Whitman et al. 1998; Swinyard et al. 1990).

The history of intellectual property, and its recognition, figures prominently in the dimension of individualism-collectivism. European countries were the first to offer patents for inventions. As mentioned above, the recognition of intellectual property as something that (1) belongs to someone and (2) requires protection may be a function of individualism. The first patent statute on record is the 1474 Patent Statute in Venice, Italy. Early English patent law was modeled after the Venetian system, giving exclusive monopolies, limited by time, to innovators. The English Statute of Monopolies was enacted in 1624, and allowed for the granting of patents for specified time periods “to the true and first inventor or inventors” for the innovation, provided that the innovation “be not contrary to the law nor mischievous to the state, by raising prices of commodities at home, or hurt of trade, or generally inconvenient” (Statute of Monopolies, 1624, Chap. 5). More individualistic European nations followed England in enacting similar patent laws to encourage industrial innovation by giving patentees exclusive monopolies to practice their arts.

By contrast, collectivistic Japan refrained from passing patent laws to protect intellectual property until 1885. China was first introduced to the western notion of intellectual property at the end of the 19th century, and the emperor of China attempted to pass the Regulations on Rewards for the Promotion of Technology in 1898, but its implementation was impeded by the court system. The lack of enforcement of protection of intellectual property in China was exacerbated by the arrival of Mao Zedong on the political scene, as Mao strongly denounced individual ownership of any type of property, including intellectual property (Ganea and Haijun 2009).

As discussed, individualism appears to be a cultural dimension associated with the emphasis on the rights of the individual—in this case, the inventor—over the rights of the group. The cultural variables which this study uses measure collectivism, rather than individualism, and collectivism is often used as the alternative to individualism; that is, nations that are less individualistic are more collectivistic, and vice versa. Cultures that are more collectivistic tend to value the good of the group and society at large over individual people or organizations (e.g., Parboteeah et al. 2012) and might thus be expected to value the contribution of intellectual property to society over the individual right of a person or organization to own and/or profit from that intellectual property.

While Hofstede (2001) and other cultural scholars (e.g., Trompenaars and Hampden-Turner 1998) identify one construct of collectivism; the GLOBE study identified and measured two types of collectivism: in-group and institutional. The labels of these dimensions suggest that one is measured at the societal level, and one is measured at the smaller, organizational or family level. In actuality, both aspects of this dimension were measured at both the societal level as well as at the organizational level. Institutional collectivism assesses the degree to which institutions and societies encourage and reward collective actions and in which economic systems reward collective interests over individual ones, whereas in-group collectivism assesses the degree to which individuals value loyalty and cohesiveness in their organizations and families, in which there are close ties among family members, and in which authority is respected but there are fewer rules (Javidan et al. 2006). Institutional collectivism has theoretic overlaps with Triandis and Gelfand’s (1998) vertical individualism with societies scoring highly on institutional collectivism exhibiting greater performance orientation and future orientation, but preferring to achieve the desired enhanced performance through collective efforts. In-group collectivism, by contrast, refers to cultures that value equality among all group members and expect to care for, and be cared for by, other group members. Societies with high in-group collectivism scores tend to be characterized by “practices wherein authority is respected and wherein there are few rules and little structure” (Gelfand et al. 2004, p. 474). Given that this study is concerned with rules and legal systems and this dimension emphasizes rules, the inclusion of the in-group collectivism dimension measured at the societal level is theoretically justified. However, the emphasis of institutional collectivism upon economic systems that rewards collective interests over individual ones also merits consideration.

This study, in hypothesizing a positive relationship between individualism and intellectual property protection, also hypothesizes a negative relationship between collectivism and intellectual property protection for both measures of collectivism. Thus:

H1a Nations with higher rankings on institutional collectivism will have weaker intellectual property protection.

H1b Nations with higher rankings on in-group collectivism will have weaker intellectual property protection.

Performance Orientation

While the cultural construct of individualism-collectivism has been explored in the literature on software piracy, other cultural dimensions have received less attention. According to the GLOBE study, the cultural dimension of

performance orientation reflects the “extent to which a community encourages and rewards innovation, high standards, and performance improvement” (Javidan 2004, p. 239). This dimension, rarely discussed in the management literature (Javidan 2004) applies directly to the concept of innovation and intellectual property. Intellectual property protection positions the rights of inventors and creators to control and profit from their intellectual property against the rights of the larger society to benefit from wide distribution of these inventions and creations. Countries that wish to reward innovation would be expected to have strong intellectual property protection for that innovation so that it can be commercialized. Schwartz and Bilsky (1990) studied the issue of personal achievement, and found that cultures scoring highly on dimensions of personal achievement tend to be negatively correlated with pro-social domains, which are reflected in a society’s humane orientation score. Posthuma (2009) found a negative relationship between performance orientation and union membership, suggesting a cultural emphasis on individual roles over communal or collective roles. Akkermans et al. (2010) found that performance orientation was negatively correlated with cooperative behavior among students playing a prisoner’s dilemma game, underscoring the value of competition over cooperation inherent in the dimension of performance orientation. Wollan et al. (2009) note that societies scoring highly on performance orientation value competitiveness and individuals within those societies seek out competitive environments that emphasize material gain. At the individual level, performance orientation, as a goal orientation (Dweck 1986) was found to be negatively related to knowledge-sharing behavior within organizations (Matzler and Mueller 2011). Societies scoring higher on performance orientation are thus expected to value innovation and results, and value comparatively less cooperation and altruism between society members, suggesting that intellectual properties should be rewarded with protection for commercialization, rather than freely shared among society members. This leads to the following hypothesis:

H2 Nations that score highly on performance orientation will have stronger intellectual property protection.

Humane Orientation

While it may be true that high performance-oriented societies may be more amenable to rewarding the individual over society at large, others may not. As Schwartz and Bilsky (1990) suggest, a society which scores highly on humane orientation might view the trade-off from a different perspective. Humane orientation is defined by the GLOBE study as “the degree to which an organization or

society encourages and rewards individuals for being fair, altruistic, friendly, generous, caring, and kind to others” (Kabasakal and Bodur 2004, p. 569). A society with a low score on humane orientation might have values skewed toward material success (Allardt 1993) rather than toward social concern, suggesting a greater focus on profits than on people. By contrast, a society that scores highly on humane orientation might have an opposite orientation. Kennedy (2002) gave the example of Malaysia as a culture scoring highly on humane orientation, noting that the Malay government’s goals are to increase the overall well-being of society by encouraging the collective redistribution of resources. Wollan et al. (2009) discussed humane orientation’s emphasis upon social support of all members of a society, in which the well-being of the members of that society supersedes the individual material gains a person or organization might achieve. For example, India, which scores highly on humane orientation practices, has historically been opposed to granting patents on pharmaceutical products. In fact, India did not offer patent protection on pharmaceutical products until it became a signatory to the Trade Related Aspects of Intellectual Property Rights Agreement (TRIPS) by joining the World Trade Organization (WTO) in 1995, and had 10 years to bring its patent laws into compliance with the TRIPS requirements, passing the Patents Amendment Act in 2005. Until that time, India had not offered patent protection on pharmaceutical products, which had strongly encouraged its domestic generic pharmaceutical industry.

Indian policymakers were fearful that passing the Patents Act might handicap its massive generic drug industry (De and Baskaran 2005; FoxMandal Little 2010). Sheehee (2009) argues that India’s attitude toward patenting pharmaceutical products goes beyond commercial protection, and extends into culture and values. “India’s strong anti-patent sentiment is clearly illustrated by former Indian Prime Minister Indira Gandhi’s...assertion that ‘a better-ordered world is one in which medical discoveries will be free of patents and there will be no profiteering for life and death’” (Sheehee 2009, p. 580). Indian society worried about the passage of the amended Act, stressing concern for poor citizens who could not afford drugs that are under patent protection (De and Baskaran 2005). Patented drugs do, indeed, cost more, as pharmaceutical companies endeavor to recoup their costs of development during the limited monopoly period. A society that scores highly on humane orientation, such as India, might echo concerns expressed by Ms. Gandhi, that the profit value should not supersede public rights to health, and thus, offer less protection of intellectual property.

If a humane orientation suggests that a society will place people and the public good before profits, then we may expect a lower level of intellectual property protection in those cultures. Thus,

H3 Nations that score highly on humane orientation will have weaker intellectual property protection.

Uncertainty Avoidance

Uncertainty avoidance is defined by the GLOBE study as “the extent to which ambiguous situations are threatening to individuals, to which rules and order are preferred, and to which uncertainty is tolerated in a society” (Sully de Luque and Javidan 2004, p. 602). Cultures with high levels of uncertainty avoidance tend to embrace greater levels of bureaucracy, rules, and codified rituals than do those with lower levels of uncertainty (Wollan et al. 2009). Societies that find ambiguity threatening, and which prefer established rules and order, may have cultural incentives to enact strict intellectual property protection laws. This outcome may be the result of a desire to reduce uncertainty regarding ownership or use of intellectual property and to minimize disputes over that ownership or use. Moreover, studies have indicated that uncertainty avoidance is related to the perception of business ethics. For example, Swaidan (2012) suggested that people with higher levels of uncertainty avoidance tend to reject ethically questionable business activities. Basta (2011) found that uncertainty avoidance, as conceptualized by Hofstede (2001), influences the legal framework a nation establishes to deal with hazardous sites. Moores (2008) found that higher levels of uncertainty avoidance, again as conceptualized by Hofstede (2001), were associated with declining levels of software piracy. Beyond an ethical perspective regarding the protection of intellectual property, innovation, particularly high-tech innovation, has the potential to bring high economic rewards to a society. A 2006 report for the Biotechnology Industry Organization in the US found that the average wages for biotechnology employees was nearly twice the national average wage (Battelle 2006). As this economic incentive may encourage national governments around the world to act to enhance and promote high-tech industries, those nations with high uncertainty avoidance scores may reduce ambiguity in that area by enacting strict intellectual property protection laws, suggesting

H4 Nations that score highly on uncertainty avoidance will have stronger intellectual property protection.

Future Orientation

Future orientation, defined by the GLOBE study as “the extent to which members of a society or an organization believe that their current actions will influence their future, focus on investment in their future, believe that they will have a future that matters, believe in planning for developing their future, and look far into the future for assessing

the effects of their current actions” (Ashkanasy et al. 2004, p. 285), may also impact intellectual property protection. This dimension echoes Hofstede and Bond’s (1988) dimension of Confucian Dynamism, which Hofstede later reinterpreted to mean long-term orientation, emphasizing a cultural tendency to save for the future, rather than spend and enjoy leisure in the present. The GLOBE study found that countries which score highly on future orientation also tend to have a large number of trademarks per capita. A higher score on future orientation might predict a greater level of intellectual property protection, given that the goal of strong intellectual property protection laws is to enable inventors to reap the benefits of their inventions for long enough to both recoup the costs of that invention, as well as give culturally accepted economic returns on that invention, for a limited period of time.

Patents and copyrights are granted by governments in exchange for public disclosure of innovations; in other words, the government will grant inventors a limited monopoly, for a specified period of time, in exchange for the greater public good in the long run. Applicants for patents must divulge the specifications of their innovations in their patent applications. If a patent is granted for said innovation, the patent assignee has a limited time monopoly (20 years in WTO countries) to exact economic returns on that innovation, after which time the innovation falls into the public domain, accessible to all in society who wish to make use of it. Copyrights function in the same way—a limited-time monopoly is given for the use of the copyrighted material with the understanding that once the copyright time frame has expired, the material falls into the public domain, thus benefitting society as a whole. It thus follows that a higher score on future orientation, which focus upon investment for the future, would be positively correlated with greater intellectual property protection, leading to

H5 Nations that score higher on future orientation will have stronger intellectual property protection than nations that score lower on this dimension.

Assertiveness

A final cultural dimension that may impact the level of intellectual property protection in a society is assertiveness, which the GLOBE study defines as “the degree to which individuals in organizations or societies are assertive, tough, dominant, and aggressive in social relationships” (Den Hartog 2004, p. 395). Less used in management literature than some of its sibling cultural dimensions, the dimension of assertiveness provides a unique perspective on cultural expectations of how people should interact with one another. This cultural dimension has similarities to

other cultural dimensions, such as Kluckhohn and Strodtbeck's (1961) being versus doing cultural orientation and Trompenaars and Hampden-Turner's (1997) internal versus external control cultural emphasis. The cultural dimension of assertiveness focuses upon how people within a culture relate to each other. Assertiveness, as defined by the GLOBE study, has been suggested to influence the effectiveness of advertising (e.g., Terlutter et al. 2010), diversity management initiatives (e.g., Herrera et al. 2011), international auditing standards compliance (e.g., Abdolmohammadi and Sarens 2011), and retention strategies in human resource management (Hytter 2009). People in more assertive cultures tend to value competition and success, and encourage ambition (Parboteeah et al. 2012). Moreover, cultures that are more assertive tend to have lowered emphasis on quality of life, and higher emphasis on competitiveness and achievement (Hytter 2009). Assertive cultures value direct, explicit communications of expectations (e.g., Holtgraves, 1997). Abdolmohammadi and Sarens (2011) found that assertiveness was positively correlated with compliance with international standards of internal auditing, suggesting a relationship between compliance with rules and cultural assertiveness. This rule-stating and rule-compliance aspect of assertiveness may also play a role in the level of intellectual property protection a society gives its inventors, in that high levels of assertiveness are associated with competition, rather than cooperation, and countries wishing to both protect their own inventors, as well as give their own high-tech industries a competitive edge, may opt for stronger levels of intellectual property protection within their borders and a stronger expectation of compliance with those rules. Thus

H6 Nations that score highly on assertiveness will have stronger intellectual property protection.

Excluded Cultural Variables

Prior research has indicated mixed results for power distance upon digital piracy. Some studies show an indirect effect, via power distance's effect upon corruption rates in a society (e.g., Moores 2008) and the dimension's effect upon economic wealth (e.g., Moores 2010). Other studies have found power distance to have an insignificant impact upon piracy rates (e.g., Husted 2000). In addition, there is no theoretic rationale for predicting power distance's impact upon IP protection. The GLOBE study defines power distance as "the degree to which members of an organization or society expect and agree that power should be shared unequally" (Carl et al. 2004, p. 517). While at the organizational level, power distance might have some bearing upon the rates of music or software piracy, for example, in a subordinate reporting or not reporting the

piracy activities of a supervisor, at the societal level, the extent to which members of a society share power or opt not to do so is not expected to impact the overall importance a culture gives to intellectual property protection. Moreover, the GLOBE dimension of power distance has high correlation with other variables, such as future orientation practices (significantly correlated at -0.52), and uncertainty avoidance practices (significantly correlated at -0.50). In pursuit of a parsimonious model, given the lack of theoretic justification for the inclusion of this dimension and the overlap between this dimension and other cultural dimensions, power distance was not considered in this study.

The remaining cultural dimension of the GLOBE study, gender egalitarianism, was not included in this study, as there is currently no theoretic justification for its inclusion. Gender egalitarianism, defined as "the degree to which a collective minimizes (and should minimize) gender inequality" (Javidan et al. 2006, p. 70) may have many impacts upon the choices that a society makes regarding work distribution and consumption choices, but it is not theoretically or practically tied to the issue of intellectual property protection.

The research model, summarizing the effects of cultural dimensions upon intellectual property protection strength and expected direction of correlations, is illustrated in Table 1.

Data Sources and Measures

Dependent Variable

Ostergard (2000) discussed the problems of identifying the strength of IP rights relying only on the existence of laws, noting that a more comprehensive measure of IP laws would include enforcement of laws, in addition to the existence of those laws. This paper uses secondary data which address those concerns. Intellectual property protection rankings used in this research were compiled by the World Economic Forum in its Global Competitiveness

Table 1 Hypothesized cultural impact model

	IP Protection
Institutional collectivism	–
In-group collectivism	–
Performance orientation	+
Humane orientation	–
Uncertainty avoidance	+
Future orientation	+
Assertiveness	+

Report, for each of the years. This annual compilation is based upon managerial perceptions of the strength of IP protection in a given country, perceptions which include both the existence of IP laws as well as the enforcement of those laws, and which cover all forms of IP. This report has been produced for over 30 years by the World Economic Forum, and now considers over 100 economic and competitive indicators. Over 10,000 business leaders in over 130 countries are surveyed yearly to compile the rankings. 57 of the countries included in the Global Competitiveness Report were also included in the GLOBE study, so the final sample size of this paper is 57 countries.

This source of data yields the current study an advantage: rather than considering the existence of intellectual property laws, or the reported enforcement of these laws, which might mask the overall level of IP protection, this survey asks about perceived and actual protection afforded to IP in each given country. This difference is important, given notable discrepancies between existing IP laws and actual enforcement of those laws. For example, in 2009, Canada was placed on the US Priority Watch list of countries with inadequate IP enforcement. Canada ranked among such nations as China, Russia, and Indonesia, outranking nations on the non-priority Watch List, such as Brazil, Columbia, and Vietnam. In placing Canada on its Priority Watch List, the US urged Canada to improve its IP protection system by increasing its enforcement of copyrights and its actions against purveyors of pirated products. Indeed, the Taylor Wessing Global IP Index Report (2009) also noted that Canada lags behind many other countries in its copyright enforcement, ranking the country at 11 out of 24. The report included quotes from surveyed managers about Canada's copyright problems: "Canada is becoming a haven for pirate websites" (Taylor Wessing Global IP Index Report 2009, p. 20).

While culture changes slowly, the level of intellectual property protection a society offers (measured as an IP score) can vary from year to year. To avoid the effects of any current events in one given year impacting the level of IP protection, the IP scores were averaged across six consecutive years, 2006, 2007, 2008, 2009, 2010, and 2011, for each of the countries in the GLOBE study. This time frame provides a unique opportunity to look at culture's influence on IP laws in the post-TRIPS agreement world. Developing countries, such as India, were given until the end of 2005 to bring their nations' intellectual property laws into compliance with the TRIPS agreement, and although the least developed nations have additional extensions on that deadline, most major markets for intellectual property adapted their legal rules to comply with the TRIPS agreement by 2006.

The Global Competitiveness Report scores each country on the strength of its intellectual property protection.

Switzerland earned the highest 6-year average score, with 6.20, and Venezuela had the lowest average score, with 1.98. There was not a great deal of variation in the highest and lowest-scoring countries across the 6 years. Switzerland was ranked either first or second every year; Bolivia was ranked last in five out of the 6 years.

Independent Variables

Whereas many previous studies involving cultural dimensions use Hofstede's (1980) cultural dimension scores, this study opted to use the more modern, more comprehensive GLOBE study cultural dimension scores (House et al. 2004). The GLOBE study compiled data on nine different cultural dimensions, surveying managers in 62 different societies in the mid to late 1990s. This study used seven of those cultural dimensions: performance orientation, future orientation, humane orientation, uncertainty avoidance, assertiveness, in-group collectivism, and institutional collectivism.

The GLOBE study measured each cultural dimension at both a values level, or how a culture *should be*, according to respondents, and at a practices level, or how a culture *currently is*. This study opted to use the practices scores for the independent variables, as the system of laws and norms tends to be based upon current reality, rather than a more intangible version of a desirable future.

Control Variables

Economic development has been shown in the literature to be related to intellectual property with wealthier countries having lower levels of digital piracy (e.g., Moores 2008; Ki et al. 2006; Husted 2000). Certainly, economic factors play a role in intellectual property protection issues; however, this study aimed to consider the impact that culture had above and beyond the impact of culture so economic variables were used as control variables. One control variable used in the models is gross domestic product (GDP), measured by the World Bank. GDP has been found to be correlated with individualism, and Hofstede noted that as a country's wealth rises, so does its level of individualism. Other recent studies have also noted the impact that rising wealth has upon cultural values (e.g., Munusamy et al. 2009). Noting GDP's impact upon culture, it made theoretic sense to control for GDP's impact on the cultural variables used in the model. In addition to the overall GDP, the GDP per capita for the countries included in the study was included as an economic variable, as well. This control variable was included for a comprehensive consideration of economic variables in the model. Some of the world's wealthiest countries, as measured by GDP per capita, rank fairly low on overall GDP rankings, given their small

populations, and the reverse can be true for countries with large populations. One example is of China, which as the world's largest country, ranks second in the world for total GDP, but 84th for GDP per capita.

In addition to GDP, the average GDP growth rate over the six-year period was used as a control variable. While wealthier countries tend to offer greater intellectual property protection, it is also true that some economies, in the process of becoming wealthy, have not increased their intellectual property protection levels. An example of this is again China, which has had no change in intellectual property protection rankings and remains a continued presence on the US Priority Watch List, despite double-digit economic growth in the past few years. To see culture's impacts, it was important to control for average GDP growth.

Just as wealthier nations with technology-based economies might have more reasons to protect intellectual property, experience in protecting that property might be expected to result in greater levels of effective protection. Experience with intellectual property was controlled for in the model using the age of a country's patent law, measured from the year of the passage of the nation's first patent law through 2011. While the presence of an intellectual property law in a nation does not guarantee enforcement of that law, a longer period in which a nation has been concerned with intellectual property protection might suggest that the cultural consciousness of that nation has at least given thought to the issue for a longer period of time. Patent law was chosen for this variable over copyright or trademark law for practical reasons. Technological innovations are most often protected using patents, rather than copyrights or trademarks, and the World Economic Forum's survey questions were concerned mainly with business-related IP protection, which is generally in the form of patents. In addition, a patent must be applied for and approved, thus requiring greater governmental involvement than a copyright, which can be said to exist from the moment of the literary or artistic creation.

Two additional control variables were also considered and then dropped from the final model. In discussing the perceived level of intellectual property protection, the rule of law, as well as perceived level of corruption in a given country, might influence that level. However, when these two variables (World Bank 2008) were included, they were highly correlated with the dependent variable, as well as with each other, and thus obscured the effects of the independent variables. This finding is not unexpected, as the nature of the data in the dependent variable is based upon managerial perceptions of intellectual property protection; certainly, a country's level of corruption, or its rule of law, would strongly impact upon a manager's

perceptions of the protection the country's government could offer for intellectual property.

Data Analysis

Multiple regression was used to predict the relationships between the dependent variables and the independent variables, and descriptive statistics were used to consider correlations. Multiple regression is an appropriate statistical tool to use in this study, as both the dependent as well as the independent variables are quantitative. The data were checked to insure that the assumptions of linear regression were not violated: a scatterplot of the standardized predicted values versus the standardized residuals showed no heteroscedasticity; a histogram of standardized residuals indicated a normal distribution of errors; and the independent errors assumption was tested with an acceptable Durbin–Watson test, which tests for serial correlation between errors. In general, Durbin–Watson values of less than 1 or greater than 3 may indicate correlated errors (Field 2005); the Durbin–Watson test value for the final, full model was 1.691, an acceptable value to indicate independence of errors. For the dependent variable intellectual property protection, a stepwise regression model was estimated. Some of the cultural variables had high correlations with each other, which would result in insignificant results in some of the regression models. For example, despite both performance orientation and future orientation having significant and positive correlations with the dependent variable, one or both of these variables would become insignificant when put into a regression model together. Therefore, a series of regression models were estimated, beginning with the control variables, then adding more dependent variables, until all cultural variables were used. Model 1 is the first step model with only the control variables used. Models 2a–2d are partial, stepwise models, and Model 3 is the full model, with all control and independent variables.

Model 1 Intellectual Property Protection Score = $f(\beta_0 + \beta_1 \text{GDP} + \beta_2 \text{GDP growth} + \beta_3 \text{GDP per capita} + \beta_4 \text{IP Experience})$.

Model 2a Intellectual Property Protection Score = $f(\beta_0 + \beta_1 \text{In-Group Collectivism} + \beta_2 \text{Institutional Collectivism} + \beta_3 \text{Humane Orientation} + \beta_4 \text{Uncertainty Avoidance})$.

Model 2b Intellectual Property Protection Score = $f(\beta_0 + \beta_1 \text{In-Group Collectivism} + \beta_2 \text{Institutional Collectivism} + \beta_3 \text{Performance Orientation} + \beta_4 \text{Humane Orientation} + \beta_5 \text{Future Orientation})$.

Model 2c Intellectual Property Protection Score = $f(\beta_0 + \beta_1 \text{ In-Group Collectivism} + \beta_2 \text{ Institutional Collectivism} + \beta_3 \text{ Humane Orientation} + \beta_4 \text{ Future Orientation} + \beta_5 \text{ Uncertainty Avoidance} + \beta_6 \text{ Assertiveness})$.

Model 2d Intellectual Property Protection Score = $f(\beta_0 + \beta_1 \text{ In-Group Collectivism} + \beta_2 \text{ Institutional Collectivism} + \beta_3 \text{ Performance Orientation} + \beta_4 \text{ Humane Orientation} + \beta_5 \text{ Uncertainty Avoidance} + \beta_6 \text{ Future Orientation} + \beta_7 \text{ Assertiveness})$.

Model 3 Intellectual Property Protection Score = $f(\beta_0 + \beta_1 \text{ In-Group Collectivism} + \beta_2 \text{ Institutional Collectivism} + \beta_3 \text{ Performance Orientation} + \beta_4 \text{ Humane Orientation} + \beta_5 \text{ Uncertainty Avoidance} + \beta_6 \text{ Future Orientation} + \beta_7 \text{ Assertiveness} + \beta_8 \text{ GDP} + \beta_9 \text{ GDP Growth} + \beta_{10} \text{ IP GDP per capita} + \beta_{11} \text{ IP Experience})$.

The main investigation used an average of each country's IP protection scores across the years considered as the dependent variable. To further investigate the impact of culture on the dependent variable, a separate regression was run with each individual year's IP scores for each country as the dependent variable, to insure that the average did not mask any trends or obscure relationships. The step-wise regression allowed for a comprehensive investigation of the relationships between the dependent and independent variables. This methodological rigor helped to assure robustness of the results.

Results

In-group collectivism, humane orientation, uncertainty avoidance, and future orientation all impacted intellectual property protection scores as predicted. Assertiveness was a negative predictor of intellectual property protection. Institutional collectivism is positively correlated with the dependent variable, rather than the expected negative correlation, and it is not significant in all models. In-group collectivism emerges as the most powerful of the significant independent variables in the models, with the largest correlation coefficient, followed very closely by humane orientation. Both are strongly and negatively correlated with the dependent variable. Table 2 shows the descriptive statistics and correlations between the independent variables and intellectual property protection.

H1b was supported in all models with in-group collectivism having a strong and significant negative relationship with intellectual property protection. H1a was not supported. Interestingly, institutional collectivism is positively correlated with the dependent variable although it becomes insignificant as a predictor in the regression models when future orientation is introduced into the model. The

Table 2 Correlations and descriptive statistics: IP protection and cultural variables

	Mean	SD	IP avg.	GDP	GDP growth	GDP/capita	Exp.	In-group	Inst. Coll.	Perform	Humane	U.A.	Future	Assert.
IP avg	4.23	1.27	1.0											
GDP	971039	2082602	.242*	1.0										
GDP growth	5.48	2.76	-.387**	-.203 [†]	1.0									
GDP/capita	23711.58	21713.75	.790**	.218*	-.222*	1.0								
Experience	116.35	71.97	.150	.339*	-.339*	.182 [†]	1.0							
In-Group Coll.	5.16	.729	-.782**	-.265*	.444**	-.699**	-.355*	1.0						
Inst. Coll.	4.26	.422	.383*	.048	.065	.232*	-.200 [†]	-.221*	1.0					
Perform	4.08	.415	.388**	.165*	-.223*	.145	-.157	-.109	.436**	1.0				
Humane	4.09	.470	-.234*	-.101*	.225*	-.181 [†]	-.393*	.276*	.401**	.248*	1.0			
U.A.	4.12	.595	.747**	.110*	-.221*	.551**	.031	-.581**	.479**	.590**	.052	1.0		
Future	3.82	.462	.637**	.147*	-.217*	.422**	.037	-.437**	.476**	.612**	.071	.772**	1.0	
Assert.	4.14	.365	-.088	.074	.013	-.064	.047	.063	-.413**	.057	-.426**	-.097	.075	1.0

[†] $p < .10$; * $p < .05$; ** $p < .01$

interactive effect of future orientation and institutional collectivism is not surprising, given the earlier discussion of the different manifestations of in-group collectivism and institutional collectivism. Gelfand et al. (2004) noted that institutional collectivism encompasses degrees of future orientation and performance orientation so it is unsurprising to find that the introduction of future orientation into the model impacts institutional collectivism's effect. Notably, while the introduction of future orientation decreases the significance of institutional collectivism as a predictor variable in the model, it does not decrease the direction of prediction, which remains solidly positive. As expected, higher scores on humane orientation are also negatively correlated with intellectual property protection, supporting H3. H4 mostly receives support with uncertainty avoidance being a positive and significant predictor of intellectual property protection. However, an interesting aspect of uncertainty avoidance emerged in the models: it became insignificant when GDP per capita was introduced as a control variable in the full model (Model 3), despite being significant in all other models, and with all other control variables. H5 receives support in models without performance orientation, as future orientation is a positive and significant predictor of IP protection as long as performance orientation is not included in the model. The high correlations between these two variables necessitate including them in separate models. H2 receives partial support. Performance orientation is positively and significantly correlated with the dependent variable, except in models which introduce uncertainty avoidance. Absent uncertainty avoidance, performance orientation is a strong predictor of a nation's IP protection, and as expected, societies that aim to encourage innovativeness may be expected to have governmental policies or programs that facilitate and reward innovation. Performance orientation is highly correlated with uncertainty avoidance (correlation of .590), and the introduction of uncertainty avoidance into the model decreases the significance, although not the direction, of the variable performance orientation. It may be that these two variables work in tandem in a given society, as the explanatory power of the model (adjusted R^2) increases with the addition of both variables. Performance orientation may encourage the desire to innovate, while the protection of that innovation may lie within the realm of uncertainty avoidance.

The effect of collectivism in the model is complex. H1a predicted a negative relationship between institutional collectivism and IP protection, while H1b predicted the same relationship between in-group collectivism and IP protection. While H1b was supported in all models, institutional collectivism (H1a) was positively related to the dependent variable, and was significant in only some of the models. Moreover, it was not significant in any of the single-year models. This split in the impact of collectivism, between in-group and institutional collectivism is a remarkable finding, one that is not yet

fully addressed in the literature. These results echo what Gelfand et al. (2004) suggested about horizontal versus vertical individualism: cultures that are institutionally collectivistic place great emphasis upon the collective competitiveness of their people and institutions, whereas cultures that are more in-group collectivistic prefer to reduce the formal rules and structural institutions of society, while focusing upon group pride and overall equality.

H6 is not supported. Assertiveness is not significantly correlated with the dependent variable in a correlation table, but it is a *negative* predictor of the dependent variable in two of the individual years, as well as in the final, full model. According to the GLOBE study, people in societies with high assertiveness scores tend to enjoy competition and value aggressiveness (Javidan et al. 2006) so it is surprising that assertiveness was found to be a negative and significant predictor of intellectual property protection. However, an explanation for this unusual finding may lie in the subtle cultural differences that the GLOBE study was able to tease out, which previous cultural studies were not. Hofstede, for example, included assertiveness in his dimension of masculinity/femininity. The GLOBE study parceled different attributes inherent in that dimension out into separate constructs.

The “aggressively focused on performance” aspect of culture, encompassed in Hofstede's masculinity dimension, is not included in the GLOBE study's measure of assertiveness; rather, it is included in its measure of performance orientation. The gender roles aspect of Hofstede's masculinity/femininity dimension is represented in the GLOBE study's gender egalitarianism dimension. The part of this area that is included in the GLOBE study's measure of assertiveness; then, is a more abstract, John Wayne-style focus on aggressiveness and combativeness. An explanation for this paper's finding of assertiveness being negatively related to IP protection may lie within the behaviors that manifest themselves in a society with high assertiveness scores. This study originally included a measure for the rule of law, as estimated by the World Bank, as a control variable, but as was explained earlier, this variable opened multicollinearity problems in the model, and was also insignificant in the regression model, and was thus dropped. However, it is worth noting that rule of law was positively correlated with assertiveness. This correlation may partially explain the finding, in that societies with less respect for the rule of law, and higher assertiveness scores, may have members who feel unbound by laws relating to IP protection. Future studies would do well to further investigate this phenomenon.

A unique contribution of this paper concerns the control variables. While previous studies have found strong relationships between economic variables and intellectual property strength, this paper finds that excepting GDP per capita, economic variables do not contribute as much to the model as do cultural variables. When Model 1 was run,

incorporating only the control variables, the adjusted R^2 is 0.654, and overall GDP was not significant. Models incorporating only the cultural variables, without the economic control variables, raise the adjusted R^2 to 0.763. Model 3, incorporating all cultural variables and reintroducing the economic control variables, has an adjusted R^2 of 0.838 with only the experience variable and GDP per capita emerging as significant control variables. The increase in adjusted R^2 from 0.763 to 0.838 with the addition of economic variables suggests that while economic factors certainly play a role in overall intellectual property protection, that role is minimized by the greater cultural environment within a given country.

The regression results for H1 through H6 are shown in Tables 3 and 4.

Discussion and Conclusions

In this paper, the impact of culture upon the level of intellectual property a society gives its innovations were considered and measured. While some previous studies have considered culture and violations of intellectual property, such as piracy, this is the first study to consider culture's impact upon the overall level of intellectual property protection a society opts to grant its innovators.

Theoretic Implications

Previous studies found that individualism was negatively correlated with both music and software piracy; this paper offers broad support for those previous findings by showing that in-group collectivism is negatively correlated with the intellectual property protection a society offers. The finding of

humane orientation as having a strong impact upon a country's IP protection is noteworthy. Few studies have highlighted the impact of humane orientation upon macro-level business issues, but this study suggests that future studies may want to give greater consideration to this cultural variable. Previous studies suggested that culture may impact the violation of intellectual property laws; this study finds support for the notion that culture also impacts the existence and enforcement of strong intellectual property laws. This study also deepens our understanding of how culture affects intellectual property using the GLOBE study cultural dimensions (House et al. 2004) instead of the more commonly used cultural dimensions by Hofstede (1980). The use of the GLOBE dimensions gives us more modern cultural dimensions as well as a greater number of cultural dimensions, which helps us tease out the subtle differences in impact that various aspects of culture can have upon the notion of intellectual property protection.

Practical Implications

This paper opens up new areas in considering cultural dimensions in macrolevel management topics. Firms that produce intellectual property as their end product need to protect that product from theft. Intellectual products are easier to steal, and replicate, than are physical products. When a firm's competitive advantage rests upon its intellectual property, the salience of laws and systems protecting that property grows. The findings of this study contribute to the international management literature by adding new insight into how culture may affect those laws and systems.

While some managers may lament the lack of intellectual property protection they perceive foreign countries to

Table 3 Regression results: all years

	Model 1	Model 2a	Model 2b	Model 2c	Model 2d	Model 3 ^b
GDP	.062	—	—	—	—	.039
GDP growth	-.240**	—	—	—	—	-.074
GDP/capita	.739**	—	—	—	—	.367**
Experience	-.087	—	—	—	—	-.118 [†]
In-group		-.451**	-.579**	-.434**	-.469**	-.263**
Inst. Coll.		.170*	.160 [†]	.111	.089	.069
Performance		—	.166 [†]	—	.130	.120
Humane		-.205*	-.200*	-.235**	-.255**	-.250**
U.A.		.408**	—	.292*	.229 [†]	.157
Future		—	.217*	.189 [†]	.157	.150
Assert.		—	—	-.098	-.124	-.125 [†]
<i>N</i>	57	57	57	57	57	57
Adj. R^2	.654	.753	.741	.758	.763	.838
<i>F</i>	27.42	44.41	33.56	30.83	27.176	27.421

Reported coefficients have been standardized; thus, no intercept coefficients are shown

^a Durbin–Watson value for the full model (Model 3): 1.691

[†] $p < .10$; * $p < .05$; ** $p < .01$

Table 4 Regression Results: Individual Years

	Model 2 2006	Model 2 2007	Model 2 2008	Model 2 2009	Model 2 2010	Model 2 2011
GDP	.033	.053	.051	.044	.026	.004
GDP growth	−.072	−.066	−.068	−.096	−.075	−.025
GDP/capita	.315**	.392**	.394**	.351**	.352**	.382**
Experience	−.085	−.117	−.118	−.121 [†]	−.135*	−.141*
In-group	−.323	−.241*	−.240*	.222*	−.244*	−.293**
Inst. Coll.	−.102	.076	.072	.090	.081	.079
Performance	.175 [†]	.150	.149	.129	.120	.159 [†]
Humane	−.288**	−.278**	−.273**	−.242**	−.227**	−.215**
U.A.	−.025	.084	.088	.232*	.263*	.175 [†]
Future	.330**	.176 [†]	.175 [†]	.090	.064	.102
Assert.	−.229**	−.132 [†]	−.124	−.119	−.119	−.119
<i>N</i>	57	57	57	57	57	57
Adj. <i>R</i> ²	.797	.816	.813	.826	.827	.844
<i>F</i>	20.58	23.15	22.68	24.82	25.42	28.57
Durbin–Watson	1.521	1.621	1.633	1.786	1.677	1.689

^a Reported coefficients have been standardized; thus, no intercept coefficients are shown

[†] $p < .10$; * $p < .05$; ** $p < .01$

offer, savvy managers would do well to consider culturally appropriate, non-legal ways of protecting that intellectual property. Just as someone may opt to protect his/her bicycle with a lock in an individualistic culture, but with relationships and understanding in a collectivistic culture so, too, must a manager consider culture in protecting intellectual property across borders. In cultures with lower levels of IP protection, a firm, particularly a foreign firm, may not be able to rely upon the law to protect its IP (e.g., Baughn et al. 1997), but may instead need to rely on relationships and trade secrets, and models of evaluating trustworthiness (e.g., Fan et al. 2010), to safeguard those trade secrets. Harnessing the power of a location's cultural dimensions in a firm's IP strategy may enhance the effectiveness of that protection. A country with high humane orientation scores might respond well to an IP strategy emphasizing the collective good. For example, Kennedy (2002) suggests that foreign companies operating in Malaysia temper their approach to the local market and local companies with non-financial considerations to better embed themselves in the local community. A country with high humane orientation scores might be more willing to protect IP if the benefits for the local people are made clear. As with tangible assets, it is equally important for firms with intangible assets to create win–win scenarios for the local protection of those assets. For example, Indonesia has relatively low levels of IP protection, and scholars have put forth three main challenges for foreign firms in successfully protecting IP there. These are: few domestic producers of IP, low per capita purchasing power, and the

number of domestic jobs produced by piracy (Butt and Lindsey 2005). These challenges must be addressed if a firm wishes to protect its IP in Indonesia. Thus, strategies such as partnering with a local company, to reduce the liability of foreignness; pricing legal IP competitively for the local market (e.g., Yang 2005; Yang et al. 2004) and emphasizing the number of domestic jobs created by the development and protection of this intellectual property may assist foreign firms in their efforts to protect IP in markets with low IP protection levels.

Assuming that the strategy used to protect intellectual property in one culture should be applicable to, and equally effective in, all cultures is a pseudo-etic approach to international business strategy that managers must endeavor to avoid. Instead, managers may find it productive to develop emic approaches to intellectual property protection. It may be that innovations can be highly protected in a culture with a low score on intellectual property protection rankings, (indeed, many have argued that they can be), but that the manner in which that protection is sought and granted is different in that culture. In other words, it is not that one cannot protect one's intellectual property around the globe, just that how one does so may vary by cultural constraints.

Future Research

This paper has opened new areas of inquiry regarding culture and intellectual property. Although culture is often

considered in microlevel issues of international business, it is not used as often in considering macrolevel issues. Seminal papers, such as Gray (1988) and Kogut and Singh (1988) offer a glimpse into how important the cultural variable is in macrolevel research, as well.

Future research would do well to consider this issue qualitatively. Global managers working with innovations, particularly in high tech areas, might offer additional insight into proper strategies for protecting intellectual property. International lawyers with specialties in international intellectual property would be expected to give additional insight, and might shed some light on the unusual finding of assertiveness being negatively correlated with intellectual property in some of the models. In the rush to be competitive, do members of an assertive culture fall victim to hubris, and assume that their intellectual property cannot be misappropriated? Future research may wish to investigate that relationship.

This study is limited by its data. The data used for all variables was secondary data. Secondary data can be a rich source of information, but it also poses limitations. The dependent variables of intellectual property protection are based upon perceptions, and change from year to year. They are also constrained by the culture in which their questions are posed. The intellectual property protection rankings are compiled from an annual survey of top executives from around the world. While this survey achieves a broad global sample, the reliance on executives may skew the data to reflect only what top executives think about intellectual property protection and how they perceive a country to protect intellectual property. Future research may overcome this limitation of perception by administering a new, different survey, and supplementing quantitative data with qualitative context, for a more holistic understanding of which countries offer, both in laws and in actions, the strongest intellectual property protection. The results of this paper, in answering some questions, only highlight how many more questions remain unanswered in the new global marketplace of commercial ideas.

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