
Culture and Innovation

Paul Herbig and Steve Dunphy

The Authors

Paul Herbig is Managing Director, Herbig & Sons Marketing Consultants, 13818 Shavano Ridge, San Antonio, Texas 78230, USA.

Steve Dunphy is in the Department of Management and Marketing, Northeastern Illinois University, 5550 North St. Louis Avenue, Chicago, Illinois 60625, USA.

Abstract

Culture is an all inclusive system of communications which incorporates the biological and technical behaviour of human beings with their verbal and nonverbal systems of expressive behaviour. Culture is the sum total of a way of life: it is the pattern of values, traits, or behaviours shared by the people within a region. The article examines the relationship between culture and innovation.

Introduction - Culture

Culture is an all inclusive system of communications which incorporates the biological and technical behaviour of human beings with their verbal and nonverbal systems of expressive behaviour. Culture is the sum total of a way of life, including such things as expected behaviour, beliefs, values, language, and living practices shared by members of a society; it is the pattern of values, traits, or behaviours shared by the people within a region.

Some catalyst must exist that is capable of transforming private meanings into public meanings so they become understood by other members of the society; culture is that catalyst. Culture consists of both explicit and implicit rules through which experience is interpreted. The function of culture is to establish modes of conduct, standards of performance, and ways of dealing with interpersonal and environmental relations that will reduce uncertainty, increase predictability, and thereby promote survival and growth among the members of any society. Culture influences behaviour and explains how a group filters information; cultural meanings render some forms of activity normal and natural and others strange or wrong.

Human societies create a hierarchy of codes for regulating human interaction which offers order, direction, and guidance in all phases of human problem solving by providing "tried and true" methods of satisfying physiological, personal, and social needs. For example, culture provides standards and "rules" regarding when to eat and what is appropriate to eat for breakfast, lunch, dinner, and snacks, and what to serve to guests at a dinner party, a picnic, or a wedding. Shared cultural norms give the people of any society a sense of their common identity and a means of relating to one another. Cultural beliefs, values, and customs continue to be followed so long as they yield satisfaction. However, when a specific standard no longer fully satisfies the members of a society, it is modified or replaced, so that the resulting standard is more in line with the current needs and desires of the so-

ciety. Thus, culture gradually but continually evolves to meet the needs of society.

In this process of social evolution, people find certain behaviours and values to be adaptive and helpful; others, nonadaptive and even harmful. Helpful practices are shared and rewarded; harmful practices are discouraged or discarded. Over a period of time, useful behaviours, values, and artifacts become institutionalised and incorporated as part of the cultural traditions. The individual internalises these institutionalised practices and often forgets their origin. Shaking hands, a characteristic form of greeting in many Western cultures, may have originated in the primitive practice of strangers clasp each other's weapon arm, both as a sign of friendship and as a protection from attack. Its original function had considerable usefulness and was therefore institutionalised as a social tradition; now, hundreds of years later, it is functionally obsolete, but it still survives as a valued custom. Likewise, many of any society's cultural behaviours and traditions have outlived their original purposes and survive as symbolic acts - "cultural baggage."

One culture may focus on different aspects of an agreement (legal, financial) rather than another (personal, relationships). Some cultures focus on the specific details of the agreement (documenting the agreement), while other cultures focus on how the promises can be kept (process and implementation). Americans negotiate a contract; Japanese negotiate a personal relationship. Culture forces people to view and to value differently the many social interactions inherent in fashioning an agreement.

One example of differences in culture lies in the importance attached to the group versus the individual. In Japan, the impulses and needs of the individual tend to be subordinated to the good of the group; in the United States, any intrusion by the group on the rights of the individual is regarded as unwarranted. (One is the land of the big WE, the other is the land of the big I). Compatible with these orientations is a concern in Japan for minimising differences, preserving harmony, and reinforcing group loyalty; these customs are derived from ancient Japan where a nation short on resources but long on people required the participation of all its members in an orderly manner if survival were to result - hence a heavily collectivist tradition evolved. In the United States, the prevailing customs tend to maximise difference, confrontation, and compromise. This individualistic approach may be derived from the frontier days when one's nearest neighbour was miles away and one had to be driven, self-oriented, and individualistic to survive. The aim of decision making in Japan is to avoid discord in pursuit of consensus, while in the United States it is to promote competition in ideas in pursuit of objective truth. Despite equally pragmatic goals, decisions in Japan tend to be based on "mood" but in the United States on "arguments." Vastly different philosophies but equally reasonable based upon their own respective geographical parameters and historical background.

Existing cultural conditions determine whether, when, how, and in what form a new innovation will be adopted. If the behaviour, ideas, and material apparatus which must accompany the use of innovation can affect improvements along lines already laid down in the culture, the possibilities of acceptance are much greater (Saxon, 1954). An attempt to introduce boiling water into the habits of rural peasants in Peru only had an adoption rate of five percent over a two year period. The reasons for such a low rate

were: "only the sick drink boiled water," the peasants lacked an understanding of germ theory (because germs are so small and not directly immediately observable to the peasants), and no surplus time nor adequate means existed to gather the extra firewood necessary to create the fire needed to boil the water (Rogers and Shoemaker, 1971).

Culture and Innovation

Culture has a profound influence on the innovative capacity of a society. A society's values provide social direction to the process of technological development. The social organisation of a culture may either foster or inhibit technological development. It tends to operate as a source of authority, responsibility, and aspiration, thus influencing the course of technological advance and the creation of material culture. Says Margaret Mead on the cultural costs of an innovation:

"To the Chinese, the introduction of power machinery meant that he had to throw over not only habits of work but a whole ideology; for dissatisfaction with the ways of his fathers in one particular meant doubt of the father's way of life in all its aspects. If the old loom must be discarded, then 100 other things must be discarded with it, for there are somehow no adequate substitutions."

The barriers to technological change can be conceptualised in cultural terms; the basic values of the group, the concepts of right and wrong, the nature of the articulation of the elements of the culture, and the fundamental fit or integration of its parts. Other barriers can be found in the nature of the social structure of the group, the prevailing type of family, the relationship of its members, the factors of caste and class, the locus of authority in familial and political units, the nature of factions, the individual and group motivations, the nature of perception, and the characteristics of the learning process (Foster, 1962). Those cultures which value creativity will have a greater number and quality of innovations, and those countries that reward technical ability and higher education will prosper in innovative pursuits. The level of innovation within a society is directly proportional to the encouragement and status given to entrepreneurial efforts within the culture and to the emphasis given it relative to the survival of the culture (national goal).

Wallace (1970) found that culture influences tolerance of new ideas and inquisitiveness. Shapero and Sokol (1982) observed that different cultures have different attitudes towards business formation. Moulin (1961) found that per capita number of Nobel Prize winners in the sciences differed across cultures. Barnett (1953) postulates a positive correlation between the individualism of a society and its innovative potential; the greater the freedom of the individual to explore and express opinions, the greater the likelihood of new ideas coming into being. Individualistic societies value freedom more than collectivist societies and freedom is necessary for creativity. Individualistic societies do not stress loyalty to the extent that collectivist societies do, so they are able to gather more information necessary for invention. People in individualistic societies prefer small firms whereas those in collectivist societies prefer large firms. The compensation and recognition that inventors require is more likely in individualistic societies which are typically more willing to single people out. The psychological characteristics of independence, achievement, and nonconformity, all of which have been found to encourage innovation, are more common in individualistic societies (Shane, 1992).

Rothwell and Wissema (1986) reported nine important factors of innovation, three of which were directly culturally bound and several others indirectly influenced by culture. The required cultural characteristics of innovating societies included: willingness to face uncertainties and take balanced risks; urgency and timeliness and readiness to accept change; and a dynamic long-term orientation. In a static society which encourages the status quo, innovation will be difficult or occur only under acute conditions. Innovations require perseverance and entrepreneurship. "These talents are available in any society but *whether or not they are mobilized is very much culturally determined*" (their italics!).

Hofstede (1984) indicated that societies which score high on individualism and low on the power dimension have a higher economic growth and a greater tendency to innovate, a finding confirmed by Shane (1992). High-power distance cultures (Latin) prefer centralised hierarchical structures whereas low-power distance cultures (Anglo) prefer decentralised hierarchical structures; the latter climate is more conducive to innovation. The greater a society stresses social hierarchy, the less the innate inventiveness of that society tends to be (Shane, 1992). Inventiveness is more likely to occur in less bureaucratic surroundings, since bureaucracy reduces creative activity. Innovation requires decentralised authority. Hierarchical societies tend to have control systems based more on rules and procedures, which inhibit creativity and inventiveness. Hierarchical societies tend to be more fatalistic and thus less inclined to undertake the hard work necessary for innovation. As innovation is change and hierarchies tend to minimise change, the two elements tend to be mutually exclusive.

Hofstede (1980) also indicated that weak Uncertainty Avoidance (high-risk tolerance) societies tend to take risks easier, are relatively tolerant of behaviours and opinions different from their own, and are enamoured of technology, traits which encourage entrepreneurship and innovation. Hofstede found that high-uncertainty avoidance cultures seek more control over their environments. Masculine cultures show a strong preference for outputs and emphasise performance versus preference for feminine cultures for processes and aesthetics, indicating differences in product innovation expertise (Haiss, 1990; Schneider, 1989; Hofstede, 1980). Beteille (1977) stressed the correspondence between democracy, capitalism, competition, and individualism. Mokyr (1991) indicated openness to new information, willingness to bear risks, religion, and value of education all matter in generating technological progress within a society.

Herbig and Miller (1991) argue that cultural attributes are the primary difference between the different innovative expertise seen in the United States and Japan. These cultural factors have resulted in a marked trend towards miniaturisation of technology-based consumer products in Japan. The cultural tendency towards group working and group solidarity seen in that country has contributed towards the Japanese stressing mass production and total quality control, emphasising process innovations, while these same factors have inhibited independent entrepreneurship and individual creativity, resulting in a detrimental effect upon radical innovations and inventions (Twaalfhoven and Hattori, 1982). Table 1 shows various studies on cultural traits and their reported influence on the innovation process.

A study by Chol Lee (1990) indicated that while early adopters were innovative, laggards were not. High levels of innovativeness were associated

Table 1: Previous Studies' Conclusions on Cultural Influences on Innovation	
Cultural Traits	Affects on Innovation
Barnett (1953) Higher Individualism	Higher Innovation Capacity
Rothwell and Wissema (1986) Willingness to Take Risks Readiness to Accept Change Long-Term Orientation	Higher Innovation Capacity
Hofstede (1984); Shane (1992) High Individualism Low on Power/Status/Hierarchy	Higher Innovation Capacity
Hofstede (1980) Weak Uncertainty Avoidance Haiss, 1990; Schneider, 1989; Hofstede, 1980 Masculine versus Feminine	Higher Entrepreneurship Innovation Differences
Beteille (1977) Political Democracy, Capitalism Competition and Individualism	Related Variables
Mokyr (1991) Openness to New Information Willingness to Bear Risks Religion Value of Education to a Society	Higher Innovation Capacity
Herbig and Miller (1991) Individualism Low Power Distance Homogeneous Society Innovations	Higher Radical Innovations Higher Radical Innovations More Lower Order
Twaalfhoven and Hattori (1982) Collectivist	Higher Process Less Radical Innovations
Chol Lee (1990) Early Adopters High Education Levels Low Levels of Centralised Government, A Positive Attitude Towards Science Frequent Travel.	Higher Innovation Capacity

with high levels of education, low levels of centralised government, positive attitudes towards science, and frequent travel. Although the emphasis in this book is more towards sourcing than adoption, Lee's study indicates that sourcing, the generation of innovation, is related to the adoption of innovation. It is not so much early adopters are very innovative as the innovators are early adopters. In order to source, one must already be at the frontier of science. To become sourcers at the frontiers of science, one must necessarily be ready and willing adopters. Lee categorised countries as to their adopter category: Innovators were Japan and the United States; Early Adopters included Canada, Denmark, Sweden, Switzerland, and the former West Germany; Early Majority countries included the other industrialised countries and NIEs; Late Majority countries included most other third world countries.

What traits do productive cultures have in common? Gunnar Myrdal (1971), in his book *Asian Drama*, concentrated on culture to find those differentiating factors. He attempted to distill those cultural traits which were useful for economic development. Thirteen items were on his list: efficiency, diligence, orderliness, punctuality, frugality, scrupulous honesty, rationality in decisions on actions, change, alertness to opportunities as they arise in a

changing world, energetic enterprise, integrity and self-reliance, cooperativeness, and the willingness to take the long view.

Myrdal attempted to explain the roots of poverty in India. If ever there was a country, apart from China, with the potential to prosper simply by giving ordinary people a chance, it would seem to be India. It has so many people, and Indian emigrants have been well noted as merchants, scientists, and professionals. Britain shipped them to Africa and Southeast Asia to help administer the empire. Emergency rooms in many US hospitals ran on Indian and Pakistani manpower during the 1960s and early 1970s. Yet India itself has been slower to take off than other lesser endowed East Asian economies (Fallows, 1989b).

Myrdal argued that the Indian system, rather than promoting productive economic traits, encouraged unproductive behaviour by ordinary Indians. Because the caste system froze most people in position, those in the higher castes had better educational opportunities and went into the professions; those in the lower castes had no chance to rise. Religion became a destructive force towards social inertia for those Indians who remained in their native land. Indians came to distrust anyone not of their own caste or tribe. Indian emigrants behaved in many of the ways Myrdal endorsed - unlike their cousins and countrymen at home.

Most people work in the hope of reward. The tighter the connection between effort and reward, the harder ordinary people will try. Exploitative class systems that freeze people in place become disincentives to work hard. Lack of trust in institutions also kills incentives to work hard. People will not care as much about traffic laws if they know they can bribe the police; they will not trust the laws if they think the courts are crooked. When the radius of trust is broad and when people think they can affect their destiny, then people will make the society rich, strong, and fair by innovating and developing it (Fallows, 1989b).

Religion and Culture

Religion is a socially shared set of beliefs, ideas, and actions which relate to a reality that can not be verified empirically yet is believed to affect the course of natural and human events. Religion can be viewed as an interpreter of the social order or as a means of societal control. Because such beliefs condition people's motivations and priorities, religion affects their actions. Religious institutions serve to influence the nature, development, and application of technology by propagating norms, customs, prohibitions, and standards of conduct which serve to influence the nature, development, and application of technology. Ruttan (1988) indicated that a society's dominant religion and ideology affects its inherent level of innovative capacity.

Religion affects people in many ways because it prescribes proper behaviour, including work habits. Many Americans and Europeans believe work is a moral virtue and disapprove of the idle. In Hinduism and Buddhism, the emphasis is on the elimination of desires because desires cause worries; not striving brings peace and a person at peace does not suffer. The entanglements and preoccupations of material things are to be avoided. Limited material aspirations do not provide wide incentives to innovate. Often, religious values are biased against technological change and the likely effects of this change. Mahatma Gandhi, considering technological industri-

alisation a negation of human values, said, "The machine should not be allowed to cripple the limbs of man...by working with machines we have become machines ourselves, having lost all sense of art and handiwork." (Mukerji, 1954). Superstitious religions, which assert that fate cannot be understood and is beyond earthly control, break the connection between effort and reward.

Medieval historian Lynn White, Jr., claims that the spectacular success of the West in cultivating science and technology is rooted in the Judeo-Christian belief that the domination of nature is sanctioned by religion. Judaism provides the religious basis for high achievement orientation; the religion stresses that perfection in conduct (following God's commandments) will result in God's rewarding one some day. Judaism has an individualistic self-reliant aspect with a high regard for time (McClelland, 1961). The persistent, aggressive effort made by Westerners to exploit every possible natural force and resource resulted in their becoming the world's leaders in technology. Those whose religions taught them to take a more benign attitude towards nature failed to develop technology to its full potential. The Judeo-Christian viewpoint was augmented and elaborated upon in the seventeenth century by philosophers and essayists who held that nature should be made "to serve the business and conveniences of man." Thus, modern science, which provided a superior means of understanding the natural world, would ensure it would be mastered more thoroughly.

Contrast these achievement-oriented, materialistic, "God helps him who helps himself," Western values to those of Islam. The Islamic value system requires a commitment to God and a constant awareness of God's presence even while engaged in material work. Wealth is considered a favour of God to be appreciated. Wealth is to be used to satisfy basic needs in moderation. With the real ownership of wealth belonging to God, man is considered only a temporary trustee. Material advancement does not entail higher status or merit. Mohammed is reported to have said: "all innovation is the work of the devil." "Bukra insha Allah," a favourite expression for the traditional Arab, means "tomorrow if Allah wills." "Inshallah" means "God willing." Arabs believe their time is controlled, to a certain extent, by an outside force - namely Allah; nothing happens unless Allah wills it. This results in their being very fatalistic in their view of life, even to the point of some Muslims rejecting insurance policies as an attempt to defy the working of Allah's will (Harris and Moran, 1987).

Islam also contains several elements which mitigate against change. Islam is not only a faith but a political community with integration, rather than separation, of church and state. It is a way of life with every activity, down to the smallest detail, regulated by the Koran. This complete integration of life makes it extremely difficult to alter the institutions of Muslim countries unless the priests or *ulema*, who interpret the Koran, are favourable to proposed changes. If they oppose changes, they can become a fanatical opposition, a result which has led to many assassinations of reformers in Arab countries (Dean, 1956). Change becomes a high risk; as a result, Islamic beliefs have a detrimental effect upon the innovative potential of Islamic states.

The obscurantist influence of Islam was the stronger for two considerations that distinguished sharply East and West. The first was the all-pervasive role of the Muslim religion, which reigned sovereign even in those

spheres that had long been reserved in the West to secular authorities. The dichotomy between church and state was never established in Islam, perhaps because the Muslim people and their world were a creation of the faith, whereas Christianity had had to make a place for itself in the powerful Roman state. No legitimate source of sanction and authority in Islam existed outside the teachings of the Prophet. The second was the unity of Islam in the matter of intellectual inquiry which worked against the success of deviant patterns of thought or behaviour, at best unfavourable, at worst hostile to scientific endeavour. The pragmatic creativity of European science, like the vitality of the European business community, was linked to the separation of spiritual and temporal (Landes, 1969).

Often where religious and political systems are intertwined, definite cultural bias exists against technology that might affect tradition. This usually occurs in undeveloped, not technically progressive societies. Many examples can be cited (Islam and Arab nations; Catholicism and Ireland, Spain, Latin American nations) where state mandated religion exists. More often than not, the educational level and general intellectual environment in such states is not conducive to innovation.

References

- Barnett, H.G. (1953). *Innovation: The Basis of Cultural Change*. New York: McGraw Hill.
- Beteille, A. (1977). *Inequality among Men*. Oxford: Blackwell.
- Dean, Vera Micheles (1956). *The Nature of the Non-Western World*. New York: Mentor Books.
- Fallows, James (1989a). "Containing Japan," *The Atlantic Monthly*, May, pp.40-59.
- Fallows, James (1989b). *More Like Us: Making America Great Again*. Boston: Houghton Mifflin Company.
- Foster, George M. (1962). *Traditional Cultures and the Impact of Technological Change*. New York: Harper & Row.
- Harris, Philip R. and Robert T. Moran (1987). *Managing Cultural Differences*. Houston: Gulf Publishing Company.
- Herbig, Paul A. and Joseph C. Miller (1992). "Cultural Aspects of Innovation," *Journal of Global Marketing*, 6/3, pp.23-45.
- Hofstede, Geert (1988). "The Confucius Connection: From Cultural Roots to Economic Growth," *Organizational Dynamics*, 16/4, Spring, pp.4-21.
- Hofstede, Geert (1980), *Culture's Consequences*. London: Sage.
- Hofstede, Geert, and Michael H. Bond (1992). *Cultures and Organizations*. London: McGraw-Hill Europe.
- Landes, David S. (1969). *Unbound Prometheus*. London: Cambridge University Press.
- Lee, Chol (1998). "Determinants of National Innovativeness and International Market Segments," *International Marketing Review*, 7/5, pp.39-49.
- McClelland, David C. (1961). *The Achieving Society*. Princeton: Van Nostrand.
- Mokyr, Joel (1991). *The Lever of Riches: Technological Creativity and Economic Progress*. London: Oxford University Press.
- Moulin, L. (1961). "La nationalite des Prix Nobel de 1901 a 1960." *Cahiers Internationaux de Sociologie*, 31, pp.145-163.
- Mukerji, D.P. (1954). "Mahatma Ghandi's Views on Machines and Technology," *International Social Science Bulletin*, 6/3, pp.441-424.
- Myrdal, Gunnar J. (1971). *Asian Drama: An Inquiry into the Poverty of Nations*, New York: Pantheon, pages 39-50.