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2005

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INTERPRETING CULTURAL AND PSYCHOLOGICAL DIFFERENCES
BETWEEN USA AND EASTERN COUNTRIES

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The interpretation and explanation of mainly Western cultures with reference to family configuration may help developing theory and practice concerning mistakes and errors, right decisions and good choices.

Introduction

Purpose and Scope

A purpose of present article (see also G. Sacco, 2003) is to briefly illustrate the different kinds of family configuration, and their involvement in personality and culture development. The inherent most direct concern is search for right behavior and good choices, plus avoidance or management of errors and mistakes respectively, with special reference to aviation safety. There are signs that improvements in such field would be worth wishing for, see e.g. S. Dekker (2003), and this article is aimed at making a step towards such improvements.

Methodological Considerations

Quite coherently with the civil aviation context the address of present article is multi/intercultural and multi/interdisciplinary, in other words is considering both differentiation and integration between cultures and between scientific-professional disciplines, as applicable. Within that address a methodological aspect is using further approximations. G. Hofstede (2001: 177-179, 181), while proposing a polarization between grand-theory model and empiricism, attributes the grand theory to the High Uncertainty Avoidance Index (UAI) values, unlike empiricism. Beyond Hofstede's evaluations the theoretical certainties of grand theory would address to think that deterministic reasoning would be more properly assigned to High UAI cultures. An example may be the case of the Japanese, where the conduct of each person must be foreseeable. Such divergence between theory and practice is however not without some inconvenience: Grand theory, not doing deviations, from principles and consequences, may fail as correspondence to facts, while the empiricism scheme may fail as grasping here and there, avoiding to make preliminary assumptions. In any case both grand theory and empiricism could have their induction and deduction aspects. With that perspective e.g. the fact that Gauss, the great mind of the probabilistic calculations, was borne in Austria, a High-UAI country within the Germanic Language group, seems to have a sense: his combinatory calculation theory would be a sort of grand theory, but made with the calculation instrument typical of the cultures liking stochastic reasoning. Centuries before that, Galilei was successful by experimentally observing phenomena which today are put in an easy deductive form. Both together, then, grand theory and empiricism could lead to the best results in scientific terms when a satisfactory agreement between deductive theory and facts may be reached. Just as a hint, comparisons between the (especially "soft") scientific elaboration by different cultures would lead to more complete scientific views. Even Hofstede's (id.,: 177-79, 53-56) work, based on an empiric statistical inquiry (evidencing the dimensions Individualism and Masculinity) and two theory-driven statistical inquiries, for UA and PD (Power Distance, that is the hierarchical distance perceived as existing between a powerful person of a Company and the employees), keeps into account both the above possibilities, principle-based theories (however statistically inquired) and empiric statistics, plus their integration. A composite methodology is therefore deemed necessary and opportune to deal with the subjects included in the present article.

Deep Down Terminology

Words and their definition, meaning, are the necessary elementary tools of this and any exercise of verbal logic. Let's try to consider here even their deepest and most ancient features.

Anthropology-based Terminology

Connected directly to psychological considerations may be the distinction between tendencies to generalization and differentiation with reference to the terminology for agnates and affines (see G.P. Murdock, 1949, Ch. 7). Roughly, a distinction can be made between: terms based on identity (e.g. father's brother called even father), which would express an ethnic (mechanical) solidarity, and terms based on differentiation, which would be more inherent to marriage, civil life. They would also respectively be inherent to a conduct following the customs line, and to a "normal" conquest of the "object", that is, which doesn't jeopardize the needed solidarity above. A

note may be that, while in the contemporary Western world there is a general diffusion of terminology based on differentiation, examples and cases which could virtually be represented by terminology based on identity may still exist. Let's think to the psychological growth and forming: such characteristics could be useful in determining the possible kinds of a child's psychological growth process within his family, if practically ending with an identification with other significant people or institutional structures, or in a readiness to common work, or in a more or less happy compromise between these two extremes.

Application to errors and mistakes. Mistake and error could then be two aspects of the same wrong, abnormal fact, whose corresponding right, normal reference would be typical of a certain culture. Therefore it could be not much proper or useful trying to determine mistakes and errors independently from a defined set of rights and laws, a certain culture. However they can be included in a comparison between cultural traits and characteristics of different cultures. While doing that a notion of "composite systems", e.g. systems composed by a "mechanical" and an "organic" part, could be found suitable and useful.

Field-dependence and not. Witkin did introduce the notion of field dependence (see e.g. Okonji,1980, Nisbett et Al.,2001), where field independence would correspond to the above mentioned differentiation, to a more articulated personality. Field dependence instead would be more archaic, and would have also some feminine characteristics. Anyway, being such aspects applicable to the above described fundamental language characteristics, it should be possible to conjugate them conforming to the many different Murdock's types of primitive social structure. In a culture more based on identification ties, and therefore on generalization, there would be more tendency to neglecting empirical aspects. On the contrary in a culture much using differentiation there would be a tendency to avoiding theorization. This second category of facts would be the most promising for the evolution into a civility, even with the defect of avoiding principles and their consequent grand theories, and also if corresponding to migrants. In such kind of society, mostly based on contracts concerning "external objects", venalities, a definition of Mistake with reference to contracts stating the right "takes" seems to be quite acceptable. The same way blames, as more inherent to generalization, would be su bject to be possibly avoided. Hence would derive the possibility to build entire organizational systems based on such aspects: contracts, empiricism, avoidance of grand theories and of blames. A different if not opposite way was followed by ancient China: in fact Confucius was successful in changing customs of his society from external to internal values, from guilt to shame. An additional contribution in that sense was that of the Yin-Yang philosophy. At the level of stress elaboration something similar appears: in Low IDV cultures (see e.g. many Oriental countries) people are more self-adaptive, in High IDV cultures people are more seeking to change the environment, (from Olah, and from Essau & Trummensdorf, both cited in Hofstede, 2001: 242, 518). Accordingly, while Oriental religions are greatly reciprocally tolerant, Western monotheistic religions are much intolerant. Even speaking about internalization (see Lynn & Hampson, cit. in Hofs.: 188), introversion appears to be correlated to High PDI, with an implication of High UAI. At that point it appears opportune to note that field-dependence, conjugated as above, would encourage to see similarities between at least High PD, UA, Collectivism, as all referable to different identification structures, but similar as elementary identification mechanism. Independence, search for change, individualism, would even be someway related each other.

Error and Fall. Known sentences by Cicero, St. Augustin, Benjamin Franklin, distinguish two degrees in Error: one, quite easy to be forgiven, the other, concerning persistence in error, would imply social degradation, rejection. This difference remembers a bit that between the different phases of Selye's General Adaptation Syndrome (GAS): quick correction or chronic incapability to recover from certain kinds of error. Where impossible to recover from errors a condition of resistance would succeed. That is quite clear even at the social level, in the hierarchy of social classes defined by the Christian Church in the middle Age. Of course the GAS has its particular cultural fields of applicability. Just to have some reference, Neuroticism is correlated mostly to High UAI, see Lynn et al., cited in Hofstede, 2001: 155-57, 514-15; conversely, there would be a positive correlation of psychosis incidence with Low UAI.
 The above further way of considering the error would be quite in agreement with the aeromedical perspective illustrated by Wiegmann and Shappell (2001), which would be favorable to the possible consideration of fatigue and stress as causes of accidents. It also would suggest a comparison beyond the limits of Western culture, with systems like the Indian stratification into different Castes, or with the above mentioned Oriental characteristics.

Western facts. The health-stress-morale complex has been found influencing the rate of maintenance errors (Fogarty, 2001). Aircraft pilots' stress and fatigue have been the subject of thorough campaigns in USA for the reduction of pilots' flight hours.

Towards a definition of error. A fully satisfactory definition of error would be still not stated, see D. Wiegmann and S. Shappell (2001), in addition to S. Dekker (2003). Interior forms of error are deliberately avoided (Hollnagel, 1998: 26). There is no need to go beyond the limits of the Western Civility to say something more on that subject: in fact the definition of a contractual systemic world is already an effort against certain characteristics of the Western culture itself, e.g. Human Relations and further developments in the same sense against Taylorism. Let's however return later to the subject of errors and mistakes.

Families Throughout the World

People normally grow in families, and this may shape their minds. Family kinds may then be a reference for both cultural and psychological features.

Stem Families and Their Derivations

With reference to the contemporary Germanic Language group, to which belong populations of partly common origins, the generation of social differences in the last centuries may be at least partly referred to the stem family and absolute nuclear family (i. e. the nuclear family based on inequality) dynamics (for such names and other surrounding notions see E. Todd, 1983, 1990). In fact the connection between those family systems, both based on inequality among brothers, and the inherent social system appears to be quite direct. The work of F. Sulloway (1996) for the contemporary Western brothers' groups may give an idea of the inequalities between brothers, which appear to be determined spontaneously, as a function of birth order only. That would correspond also to differentiation between social categories, and, as a likely hypothesis, even between entire populations. As of the countries belonging to the Germanic languages group a certain comparison on family structure may be done between it and the Slavic populations. The traditional Slavic family would include quite matriarchal aspects (see E. Gasparini, 1973). The initial regime of the Germanic populations seems to be similar to the quite egalitarian Slavic regime, see Laura Thompson (1969, Ch. 10), E. Gasparini (1973: 267), and the custom of the Borough English (see on the other side the case of Slovaks). Franks did introduce primogeniture and Feudalism. In at least some Nordic countries the passage to Christian religion was done by the creation of christianized kings, who by the Church's consensus and authority would have strengthened their position (see some example in G. Jones, 1968, 1973). On the other side the personal characteristics of the Protestant religion did favor even migrants, in this case favoring the heads of each single family. The inclination of the monotheistic Western religions to Manichaean distinctions and externalization of the Evil with respect to the Good did probably favor the creation and consolidation of a partial fracture between the American Anglos and many of their European relatives. In sum, the overlap of Christian religion and its annexes to other more ancient cultures did often lead to noticeably peculiar compromises which don't help at all in distinguishing e.g. between error and mistake, in the sense shown above. Nevertheless the consideration of this maze and its derivations may help in understanding and explaining many single aspects of contemporary Western culture. Much clearer is the stem family system of the Oriental countries, to which corresponds a characteristic decrease of UAI with the increase of PDI and 100-IDV (here indicated as COLL). A hypothesis on it may be that there is a sort of potential competition between the father–heir alliance and a potential group of brothers. The underlying economical scheme is agricultural. Hints in favor of a similar transversal growth (UAI normally grows with PDI) appear to exist among some countries of the Germanic language group, however in the opposite sense with respect to a central strip including the other populations in a PDIxUAI plot (see Hofstede, 2001: 152) .

Organizations. At the level of industrial activities an example of religious influence is Taylorism, one of whose organizational features was avoidance of errors at the level of common workers. The further intervention of remedies in the Human Relations' sense appears to be consistent with the consideration of motivation, and then choices, mistakes. Probably the differentiation between Direction and Management, Decision and Choice, may correspond to such different and complementary tendencies, especially in the USA. Blame to the individual or criticism to the system, a not much dissimilar polarization which has signed the recent history of thought on human error, appears to be consistent with PD (Hofs.: 97, 98), in the sense that a low PDI would be favorable to a criticism towards the system (see also on Organization Development, Hofstede, 2001: 390). In other words blame to individual could be connected to field dependence, but as a rejection from a field-dependent group, as for a sort of

scapegoat, or reality denial. A note concerning PD is that USA PDI value is relatively high with respect to some European countries within the Germanic Language group: that would be in agreement with a greater religiosity of the USA (see Inglehart, 1997, fig. 3.3), and therefore with the said spirit of Taylorism. The history of such questions would be also in agreement with the fact that the technological design would still be the hard, "deterministic", grandtheory-like nucleus, and other more choice-oriented considerations would be the surrounding part. So it is also for the UK socio-technical theory. High expectations on the benefits of technology result to be correlated mostly to High PDI (and quite high UAI), and negatively to high IDV, even if technology is more used in lower PDI societies (Hofstede, 2001: 101, 107, 506, citing Inglehart). The same is for automation: as R. Helmreich and A. Merritt (1997: 97) refer, pilots who like/ prefer automation correspond to high PDI, quite high UAI values, and negatively to IDV values. This would lead to think that an aspect of technology would be a sort of combine involving "mechanical" aspects, even in a cultural sense, and that consistent with it would be error, in the mechanical sense, not mistake.

Juridical systems and contracts. Some comparison between juridical systems (see Hampden-Turner & Trompenaars, 1997: Ch. 8; Hofstede, 2001: 174, 180-81, 505), or anyway considerations concerning rights (Trompenaars, 1998: Ch.. 4) may also be hinted. They may also be done in a way quite parallel to the distinction between Error and Mistake. That is, there would be systems based mainly on inter-individual object-based contracts (that is lacking of emphasis on genetic similarities) and systems based more largely on ethnic solidarity (e.g. the brotherhood-based gentilitial Latin system, and the unilineal descent characteristics of the Chinese complex). The advent of civilization has led to a strong increase of sub-systems and regulations based on the above contracts, however they are normally part of systems which include at least small nuclei of ethnic solidarity. But it is probably the case to illustrate how different can be the Latin and the German models of law. A quite high UAI value of Germany is not to be deemed equivalent to the typical Latin one. In fact the German model of law is known as being mostly prohibitive, unlike the English one. An interpretation of this fact may be that one of its aims would be that of creating and conserving differences between the roles of heirs and non-heirs, and possibly between the corresponding different social classes which may be generated by that. A concern for errors and mistakes is: while speaking about rule-based behavior, about which rules is one speaking? More widely, one

should better clarify what would be meant when speaking about "familiarity" for the SRK taxonomy. Another consideration, which would become more evident just by speaking about legal systems, is that the comparison between Eastern countries and USA is not so easy. Doing that on the basis of a cultural dimension alone, the Individualism (IDV), appears to be not enough. The characteristic favorable inclination towards Rules and Categories of the ancient Greeks and Romans (see e.g. Nisbett, R. et Al., 2001) would appear to be referred to another cultural dimension, UA, which would imply the above differences in law structure. China's equivalent of law would be referred directly to a sort of almost religious, knowledge-based power. PD and UA in fact appear to be referable to generalized Knowledge and Rule dimensions respectively.

The "East to West" Composite Scheme
Hofstede's (2001: 152) UAI x PDI plot (see also Fig. 1) is taken as reference for the representation on a plane. In it a main area appears to be made by the two

High PDI	Low PDI	
Stem family with Low IDV *Excessive dependence, introversion* China	Absolute nuclear family *Mistake, lack of theory* Denmark, Sweden Ireland, UK, USA	Low UAI
Egalitarian nuclear family *Scarce consideration of experience* Romans, Greece	Stem family with High IDV *Neuroticism, GAS* Germany, Austria.	High UAI

Table 1. *UAI x PDI plot (schematic)*

sections Low PDI Low UAI and High PDI High UAI. With respect to it the other two sections would appear lateral and less balanced, and a minor number of countries is found in them. The High PDI Low UAI (and Low IDV) section would be characterized by high sensitivity, low level of activity, while on the opposite the Low PDI High UAI (and High IDV) section would be characterized by high activity, e.g. wars. The most distinguishing characteristic of the plot appears to be PD. To its stripe would appear to be more properly connected the word Family. The High PDI sections would address to an interesting comparison between China and Ancient Romans, the power of the single governor against the "law equal for all" model of the Romans (see in Hofstede, 2001: 181). The low PDI sections are occupied almost

entirely by the Germanic language populations. In them two different tendencies, towards low and high MAS (Masculinity), are quite intermixed, but still distinguishable. They are instead well distinguished on a IDV x MAS plot, Tab. 2 (see also Hofstede, 2001: 294), while the Low IDV area is not so much polarized by MAS. In it Low MAS countries may be easily attributed to the Nordic culture, while high MAS countries are placed in the geographic areas previously occupied by the Celts, whose culture is possibly partly still living. Different original mythologies (lunar male and prevalence of number three, solar male and prevalence of number four) would correspond to the different MAS values. A possible hypothesis about would be that, while the Lunar cultures would be originally more inherent to agriculture, the Solar cultures would be inherent to herders, at least within the Germanic Language group. This distinction is valid also for the USA, where in the north there would be more peasants of UK, Dutch and German origin and in the South more herders, of Irish and Scottish origin, see Nisbett, R. and Cohen, D., 1996. The aim of these considerations would be the individuation of different family configurations, for the concern of the attribution of characteristic errors and mistakes to them. In Tab. 1 are added hints on the most significant family kinds, and on possible or real kinds of mistake/error.

As hinted above families would be at the confluence between National and psychological characteristics.

	Low MAS	High MAS
Low IDV	Portugal	High traffic deaths China
High IDV	Nordic culture Denmark, Norway, Sweden	Celtic tendencies Stress, burnout Austria, Germany Ireland, UK, USA

Table 2. *IDV x MAS plot (schematic)*

E.g mistakes could correspond to an externalization of psychological facts which in other cultures would be more unconscious, a known fact for e.g. the USA. But the clearest one is about stem families: in the Chinese culture by Low IDV there would be harmonization between male and female, possibly both peasants at the origin, while in a soldier-based configuration one could conflict with own parents, especially father. A similar condition would exist in Japan, for the Samurai. In the Western countries it is

traditionally associated with Error, in the Biblic sense of being expelled from the Eden and searching for a new place. Its place in Table 1 would be in the High UAI Low PDI section, quite coherently together with Neuroticism. On the opposite side, High PDI Low UAI quadrant, the inherent characteristics should be: staying resigned and peaceful with own father, ignoring the temptations of too incongruous external objects. Partly similar features exist even in the Western society: Smith (1986) found a tendency to vertical ordering in the civil society (High PDI), and lateral in the aristocratic and military society (High UAI, however distinguishing the cases of the Latin and Germanic language groups).

Possible integration. In many Eastern cultures a double mindset does exist: individualistic people and not, externalized yin-yang and not. That probably corresponds to the presence of both heirs and not heirs in the same region. In other words, while, due to migration in USA and Canada, a stronger division does exist between Anglos and e.g. Germany, in those Eastern countries the two possibilities are more reciprocally integrated. Aviation, together with the development of other communication means, should favor a better integration between those elements, whose separation is enhanced by some characteristics of the Christian religion (remember also the above subsection "*Field-dependence and not*").

Mistakes, Errors and So On

Accident Data

Low IDV, in relation to High UAI and MAS, corresponds to high traffic deaths. Notwithstanding a quite high IDV Austria has the highest traffic death rate (Id: 199, 243, on United Nations' data, 1973, concerning 14 European Nations). That would confirm some hypotheses on the High UAI Low PDI section. In addition High MAS would be correlated to high stress and burnout (Id.: 316, 318, citing Schaufeli and Van Dierendonk), and that would contribute to explain the above data on Austria. Soeters & Boer (2000) found a correlation of European military aviation accidents also with High UAI. Also Lynn & Hampson (cited in Hofstede, 2001: 156, 188) list a high accident death rate as a component of a "neuroticism factor" correlated with High UAI. On the opposite side high civil aviation accident rates were found related to High PDI, Low IDV(the last overwhelmed by Low GNP) (Weener & Russell, Ramsden, see for both in Hofstede: 131, 115). The exemplar case would be that of many Oriental countries, see e.g. H-S Jing (2002). That would be very good for the following subsection, however obviously stronger confirmation would be needed.

Perrow. A comparison with Perrow's theory seems at this point almost unavoidable, at least as a hint. In fact UA should be comparable to Perrow's fixedness of the elements, and PD, that is the degree of obedience, to the linearity of action following a command, and also to the degree of centralization. Two cases would appear more critical, of an excess of PD with respect to UA and vice versa. In the other two cases the existence of a nuclear family would warrant a greater equilibrium. The existence of at least two other Hofstede's dimensions would show the limits of C. Perrow's theory.

Error. It seems now possible to give at least a more complete description of error, that is including the socially-relevant systematic aspects, a continuous state in error. That would include many forms of divine punishment which may be encountered in histories and mythologies. Especially under this form the error would be mainly a consequence, typically the consequence of a mistake in a culture which would someway foresee it and its consequences. Typical would be the wandering consequent to a mistake, a sort of exile. However migration in many cultures wouldn't correspond to unsustainable mistakes, and also often the migrants are more lucky than the heirs. But in some cases a deep state of error would be the consequence of a very heavy guilt. In those cases a full definition of error wouldn't be recommended, because the most exemplar cases would risk to be even the most unbalanced, which couldn't be a good example for other aspects.

Concluding Remarks

It isn't scope of this article to define that some cultures would be better than others, at least from the viewpoint of errors, mistakes, safety. However it seems that on the basis of the above notes, especially those concerning the comparison with C. Perrow's theory, some favor may be given to the cultures having more confidence with some form of nuclear family. In fact, at least on the basis of qualitative considerations, this would be a warranty of a better psychological and social equilibrium. From the statistical viewpoint a note is spent in favor of the less rigid cultural forms, that is corresponding to high values of IDV, low values of PDI, UAI. However it is possible that this is a result of a transient cultural situation, and that new tendencies towards different ways to consider science and technology may lead to further and different contributions to safety and safety culture. Throughout the article many important points have been touched: on the nature of science, on mistakes and errors, on different cultures for the concern of safety. None of them has been dealt with

to arrive at specific final conclusions, also for the intrinsic limits of the kind of article, and for the possibilities of subsequent further developments.

Bibliography

Dekker, S. (2003) *Illusions of Explanation: A Critical Essay on Error Classification.* Int. J. Av. Psych. Vol. 13, No. 2, Pages 95-106.

Fogarty, G.J. (2001) *The role of individual and organisational factors in aviation maintenance.* 11th ISAP Proceedings.

Gasparini, E. (1973) *Il matriarcato slavo.* Sansoni .

Hampden-Turner, C. & Trompenaars, F. (1997) *Mastering the infinite game.* Capstone.

Helmreich, R. and Merritt, A. (1997) *Culture at Work in Aviation and Medicine.* Ashgate.

Hofstede, G. (2001) *Culture's Consequences.* Sage.

Hollnagel, E. (1998) *Cognitive Reliability and Error Analysis Method.* CREAM. Elsevier.

Inglehart, R. (1997) *Modernization and post-modernization: Cultural, economic, and political change in 43 societies.* Princeton University Press. Princeton, NJ

Jing, H.-S. (2002) *The Dragon in the Cockpit.* Human Factors and Aerospace Safety 2(3), 257-275

Jones, G. (1968, 1973) *A History of the Vikings.* Oxford University Press.

Murdock, G. P. (1949) *Social Structure.* The Macmillan Co., NY.

Nisbett, R. et Al. (2001) *Culture and systems of thought: holistic vs. analytic cognition.* Psychological Review, 108, 291-310

Nisbett, R. and Cohen, D. (1996) *Culture of Honor: The Psychology of Violence in the South.* Westview Press.

Okonji, M. O. (1980) *Cognitive styles across cultures.* In: N. Warren (Ed.), *Studies in Cross-cultural psychology.* Vol. 2. Academic Press.

Sacco, G. (2003) *Errors, Mistakes, Cultures.* Proceedings of the 12th ISAP, Dayton, OH.

Smith, A. (1986) *The ethnic origins of nations.* Basil Blackwell, Oxford.

Soeters, J. & Boer, P. (2000) *Culture and Flight Safety in Military Aviation.* IJAP 10(2),111-33.

Sulloway, F. (Ed.) (1996) *Born to Rebel.* Random House.

Thompson, Laura (1969) *The secret of culture. Nine community studies.* Random House.

Todd, E. (1983) *La diversité du monde.* Seuil.

Todd, E. (1990) *L'invention de l'Europe.* Seuil.

Trompenaars, F and. Hampden-Turner, C. (1998) *Riding the waves of culture.* McGraw-Hill.

Wiegmann, D. and Shappell, S. (2001) *Human error perspectives in aviation.* International Journal of Aviation Psychology 11(4), 341-357.