

## CULTURAL LENS OF CRITICAL INFRASTRUCTURE PROTECTION

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**Abstract:** *The modern diversification of nowadays risks and threats has led to an expansion of the significance of the concept of national security which is including today elements from the economic, social, technological fields. The importance of critical infrastructure issues was originally discussed by the United States that included it among national security issues as early as the '90s. This good practice was soon generalized worldwide, with each state being concerned about developing its own strategy to protect critical national infrastructures and about participating in the optimal operation of transnational ones. However, the mere reading of the legislative texts devoted to critical infrastructures reveals some significant differences between states in the way of approaching this issue. In this study, we propose to conduct a comparative analysis of the critical infrastructure protection strategies of the United States, Germany, Australia, Japan and Romania, having as a filter the model of cultural dimensions proposed by Geert Hofstede (1981). From this perspective, we will try to highlight how the dimensions of cultural software has shaped the way this issue is addressed. We will also analyze the extent to which these differences are elements that facilitate or endanger the protection of critical infrastructure at national and international level.*

**Keywords:** *critical infrastructure; intercultural context; cultural legislation*

### 1. INTRODUCTION

The issue of critical infrastructure has become a hot topic of security-related discussions over the last decades. Initiated in the United States as a field of study, critical infrastructure issues have been analyzed from different angles and perspectives. Gradually, the subject was populated by concept such as resilience, criticality, national infrastructure, European infrastructure, deterrence, partnership. Defined as

built-in systems that work interdependently for the production and distribution of essential goods (such as energy, water and information) and services (such as transport, banking and healthcare). An infrastructure is marked as critical if its incapacity or destruction has a significant impact on health, safety, security, economy and well-being of people (Zio, 2016:3).

Critical infrastructures have crossed national boundaries in the same way globalization did. Each country has built its own protection strategies and has also established frameworks for international cooperation.

Our objective is to analyze throughout this paper strategies aiming at protecting critical

infrastructures from the point of view of cultural studies, in the sense that we will try to identify the national cultural footprint in critical infrastructure protection strategies.

The existence of such a fingerprint is welcomed in the case of national strategies, because respecting the values of national culture increases the chances for a strategy to be accepted and respected by the average population. On the other hand, cultural lens can be a serious impediment if we are talking about a strategy that targets joint interstate effort. Understanding the cultural footprint has become one of the stakes in the studies.

### 2. CULTURAL ANALYSIS OF HOFSTEDE'S THEORY

Each historical age and each ethnicity presents certain specific features that become the particular soul of that community. Of course, the issue of culture has concerned many scholars who have tried to understand how culture works and influences community life. In *The Decline of the West*, Oswald Spengler takes over Goethe's morphological method to identify and characterize different cultures and, at the same time, to identify the main traits of the Western culture of the time. Its opinion is that any

culture has a phase of civilization, which is in fact its decadence phase, characterized by an intellectual, utilitarian, opportunistic and pragmatic spirit; the soul-related explanations was replaced by those based on intellect. The history of Chinese, Indian, Arab, Egyptian, or other Ancient culture supports this thesis, because these civilizations have shown an increasing interest in science and rational knowledge only towards their sunset.

But the various attempts to understand the culture have struck the difficulty of systematizing in a rational manner the complexity of the elements included in a cultural ensemble and processing them algorithmically.

From this point of view, a turning point in the understanding of the cultural specificity was marked by the appearance in 1980 of the book *Management of Multicultural Structure. Software of the mind* belonging to the Dutch scientist Geert Hofstede. The stake of this book was the description and differentiation between systems of values, beliefs and behavioral patterns of people who represent different cultures, according to certain classes of values brought together in five bipolar scales. Subsequently, dimensions that allow culture evaluation were complemented by additional analysis plans.

Investigating the organizational culture of several IBM affiliates, Hofstede made a major observation: organizational culture was enormously imprinted by national culture. Using a comprehensive questionnaire he identified these differences and grouped them into a few pairs of antagonists categories, which in fact represented the axes where each culture could be located: high power distance – low power distance, individualism - collectivism, masculinity - femininity, great avoidance of uncertainty – little avoidance of uncertainty, long term orientation – short term orientation, to which was added later the degree of indulgence in socializing children.

1. Power Distance Scale is the extent to which people expect power to be unevenly distributed. In countries with a high power distance, people find it natural for the power to be held by a small number of people and to be a significant difference between them and the average citizen. The power distance is also dependent on the social class, the level of education and the occupation of individuals.

The power distance influences the behavior of people on different levels. Thus, in India it is expected that friendship and romantic relations will take place within the class of membership, while in Sweden such a criterion is non-existent. Also in countries characterized by high power distance,

power symbols such as academic titles, uniforms are intensively used.

2. Masculinity – Femininity Scale: in masculine cultures, people are assertive, ambitious, competitive, strong, accepting direct conflicts and have well-defined gender roles (Japan, Austria, Venezuela, Italy, Switzerland, Mexico, Ireland, Jamaica, United Kingdom, Germany). In the feminine cultures, people are encouraged to be fashionable, oriented to the quality of life, to value interpersonal relationships, tenderness, to negotiate and even compromise, overlap sex roles, have good relationships with superiors and, in general, to choose win-win solutions (Sweden, Norway, Holland, Denmark, Costa Rica, Yugoslavia, Finland, Chile, Portugal, Thailand).

Organizations can be also evaluated in terms of masculinity and femininity. Thus, in male organizations, competition is encouraged, and workers are rewarded according to their contribution to the development of organizations, while feminist organizations distribute resources according to worker satisfaction and needs.

Hofstede believes that over time, all countries will embrace feminine values which are more suited to the new type of world-wide jobs with a high percentage of human factor focused service.

3. Individualism – Collectivism Scale: in individualistic cultures, the person is oriented towards individual success and independence from others, relies on himself and emphasizes privileges rather than duties. Individualistic values are power, personal achievement, hedonism and stimulation. On the contrary, the collectivist societies are characterized by a strong sense of solidarity with those belonging to the same group, respect for tradition and goodwill towards others. The individual is perceived as part of a larger whole and feels the need to obey the group's norms.

Collectivist mentality is specific to agricultural societies, where land is a limited resource that cannot be multiplied by each individual. Survival is thus ensured by the existence of extended families and joint work. An interesting observation, in support of the previous one, is that in collectives closer to the Equator, social values are predominantly collectivist due to the preponderance of agriculture in the respective regions.

4. The Uncertainty Avoidance Scale refers to the extent to which members of society feel threatened by ambiguous, uncertain, unknown and new situations and also how much they try to avoid these situations by ensuring greater stability of the career, adopting more formal rules, rejecting ideas

that deviate from standards and accepting absolute truths.

5. The long term orientation scale was later added by Hofstede and Bond (1988) and refers to people's preference to focus their efforts on the present or on the future. Communities that shape their future in the long run are geared towards future rewards and they value ambition, savings, and increased adaptability to changing circumstances. Communities characterized by a short-term approach are proud of their past and present, have strong national pride and respect for social traditions and rules.

For our paper, we will apply this theory to understanding how the cultural specificity has imprinted legislation on the protection of critical infrastructures. For this purpose, we chose to compare the strategies regarding critical infrastructure in some of the most representative countries around the world including Romanian legislation in the field.

### 3. PROTECTION OF CRITICAL INFRASTRUCTURES – CULTURAL SPECIFIC DYAD AROUND THE WORLD

**3.1 United States Of America** illustrated an unusual combination of low power distance (40) and high individualism (91). Therefore, Americans are very eager to reach high performance and recognition while hierarchy is in most of the cases a convenience, as managers are very accessible and they rely on their team for better results. Also people do not rely too much on authorities for support.

For our paper we analyzed *Homeland Security Presidential Directive 7* (2003), which is one of the major American legislative texts regarding critical infrastructure protection. With respect the cultural specific, Americans precisely expressed in the acknowledgement of the strategy that

Individual efforts to manage risk are enhanced by a collaborative public-private partnership that operates as a unified national effort, as opposed to a hierarchical, command-and-control structure.

and

Voluntary collaboration between private sector owners and operators (including their partner associations, vendors, and others) and their government counterparts has been and will remain the primary mechanism for advancing collective action toward national critical infrastructure security

and resilience. (Homeland Security Presidential Directive 7, 2003, 10).

The legislation nominees also a responsible person for critical infrastructure protection, but he

...shall serve as the principal Federal official to lead, integrate, and coordinate implementation of efforts among Federal departments and agencies, State and local governments, and the private sector to protect critical infrastructure and key resources. (Homeland Security Presidential Directive 7, art.12).

All over the strategy, the Secretary is referred in relation with maintaining a partnership framework for achieving security.

According to Hofstede's theory, the score of the US on Masculinity is 62, and this also must be interpreted in connection with the highest individualistic drive of the world. Americans consider that people have to work hard to be the best they can be. They are fairly open to new ideas and experiments, as uncertainty avoidance shows 46, but the moment 9/11 provoked a lot of fear for Americans – they were culturally switched from a fairly naïve culture to the tendency to monitor everything.

Their drive to get results is clear expressed in the executive summary of *NIPP 2013 Partnership for Critical Infrastructure Security and Resilience*:

The heart of the National Plan is the Call to Action, which guides the collaborative efforts of the critical infrastructure community to advance security and resilience under three broad activity categories: building upon partnership efforts; innovating in managing risk; and focusing on outcomes. (...) To achieve this end, critical infrastructure partners must collectively identify national priorities; articulate clear goals; mitigate risk; measure progress; and adapt based on feedback and the changing environment. Success in this complex endeavor leverages the full spectrum of capabilities, expertise, and experience from across a robust partnership.

As for the long term orientation, Americans are measuring their performance on a short time basis, while they are striving for best results. This drive them to choose behavioral path that bring them quick results.

**3.2 Germany.** Highly performant, German cultural style is a low power distance one. Performance is achieved because of a leadership is challenged to show its expertise within a participative communication framework. While the power distance is very low, people see themselves

in terms of I, as the society is highly individualistic (67). An important feature of the relation manager-employee is responsibility and trust.

In line with their law power distance in the German *National Strategy for Critical Infrastructure Protection* (2009:3) it is underlined that

Critical infrastructure protection is a task of society as a whole, which calls for coordinated action supported by all players – government, business and industry, and the general public.

According to Hofstede, the German society is driven by competition, performance and achievement. Performance is encouraged and valued and people rather live in order to work. But they like to work in a secure environment as their need for uncertainty avoidance is really high (65).

This urge to avoid uncertainty is clear in their *CIP Strategy*:

the functions incumbent on the state and/or public authorities are primarily directed at making provisions for, or - at the most - safeguarding and controlling, the supply of goods and services in times of crisis when regular market mechanisms no longer function. Therefore, as a precaution against, and in view of coping with, serious disruptions and severe disasters/emergencies, the requirement is for institutionalized, organized co-operation of the state and business and industry within the frame-work of established security partnerships. (National Strategy for Critical Infrastructure Protection, 2009, 8).

It is obvious that the German legislative was aware of the country cultural specific and included recommendations for mentality changing in order to better suit the present-day challenges as

The present security mentality must be converted into a new "risk culture" (National Strategy for Critical Infrastructure Protection, 2009, 11)

that should encourage open risk communication, cooperation, commitment for incident prevention and management.

Their long term orientation (83) make German society a very flexible one, opened to new ideas and to innovation, coming from academic community and industry including through their national programme "Research for Civil Security" supported by the Federal Ministry of Education and Research. Their findings are encouraged to be implemented by critical infrastructure operators (*National Strategy for Critical Infrastructure Protection*, 2009, 14-15).

**3.3 Canada.** Having a 39 score on power distance Canadian culture place a big emphasis on egalitarianism. Hierarchy is a convenience and managers are accessible and informal. They have informal interpersonal relationship and use a straightforward exchange of information.

This is the spirit of Canadian National Strategy for Critical Infrastructure (2009, 2) that assumes that

The National Strategy establishes a framework for cooperation in which governments and owners and operators can work together to prevent, mitigate, prepare for, respond to, and recover from disruptions of critical infrastructure and thereby safeguard the foundations of our country and way of life

and highlights that

Responsibilities for critical infrastructure in Canada are shared by federal, provincial and territorial governments, local authorities and critical infrastructure owners and operators – who bear the primary responsibility for protecting their assets and services. (Canadian National Strategy for Critical Infrastructure, 2009, 2).

Canadian are individualist (80) and they are self-reliant looking after themselves and their families. This is why

Canadians also have a responsibility to be prepared for a disruption and to ensure that they and their families are ready to cope for at least the first 72 hours of an emergency" (Canadian National Strategy for Critical Infrastructure, 2009, 2).

Canadians are an intermediate uncertainty accepting society (48) which suggest relatively easy acceptance of new ideas and products. They are not rule oriented although they are a short term orientation society, that is a normative culture having little concern for future.

**3.4 Australia.** In Australia the power distance is low (36) as the bosses are accessible and relying on their team to perform while the communication between them is direct and informal.

Their *Critical Infrastructure Resilience Strategy* (2010, 4) states that

The Australian Government recognises that the best way to enhance the resilience of critical infrastructure is to partner with owners and operators to share information, raise the awareness of dependencies and vulnerabilities, and facilitate collaboration to address any impediments. The Australian Government has established the Trusted Information Sharing Network (TISN) for Critical Infrastructure Resilience (CIR) as

its primary mechanism to build a partnership approach between business and government for CIR.

The society is highly individualistic taking care of their nuclear family but being especially self-reliant. Also they are a masculine society (61) the main value being that people should strive for the best. Australians are very determined to have success and are very proud of it:

The Australian Government has the unique ability to bring critical infrastructure sectors together in a non-competitive environment to discuss and address vulnerabilities within sectors on a national or cross-jurisdictional basis as well as enabling the identification of cross-sector dependencies. (Critical Infrastructure Resilience Strategy, 2010, 4).

While uncertainty avoidance is very intermediate (51) Australians have a long term orientation:

All decision makers, however, need to see all hazard risk mitigation and response as part of their role, and be empowered to carry it out. Tools and techniques that are part of normal business will be more successful than those that are only used when a specific plan is activated" (Critical Infrastructure Resilience Strategy, 2010:13).

They need to establish which is the absolute truth and have a great respect for traditions and norms, but a little interest to save for the future.

**3.5 Romania.** To highlight how the Romanian legislation carries the footprint of the cultural specificity, we will analyze the Critical Infrastructure Protection Strategy approved by GD 718/2011. Romania scores very high on the power distance dimension (score of 90), therefore people accept the hierarchical order without further justification. It is accepted that people are not equal and they expect to be told what to do.

This is how protection of critical infrastructure is approached by the Strategy which refers to the responsibilities of the Inter-institutional Working Group on Critical Infrastructure Protection, established by GD 1110/2010. In the same time, all over the Strategy there are many very reverent references to European authorities, being somewhat transparent the idea that they are considered to be the higher authority (Romanian Official Journal, Part I, No. 555 / 4.VIII.2011:11).

Through the theory of multicultural structures lens Romania is evaluated as a collectivistic society. The Romanians are deeply attached to family, relatives and friends. Responsibility is shared

among group members, and management has to consider the group, not the individuals.

Thus, the Strategy emphasizes the role of cooperation in a very substantial way. The Critical Infrastructure Protection Working Group has the task of providing the institutional framework for critical infrastructure protection cooperation:

there is a need to step up critical infrastructure protection measures, namely: a. Increasing the level of communication and cooperation between state authorities and the Union Economic operators and the population, taking into account the sensitivity of certain categories of information; b. Optimizing cooperation between crisis management crisis prevention and management; c. Operating the public-private partnership in the field of critical infrastructure protection; d. Increasing the potential of self-protection, self-guarantee of individual or institutional capacities affected by dysfunctions or that may compromise the operation of critical infrastructures e. prioritization of the accepted risk level according to the cost-benefit determined by the probability of occurrence and its impact." (Official Gazette of Romania, Part I, No. 555 / 4.VIII.2011:12).

The assumption of the principle of cooperation between the responsible social actors can be identified on several dimensions: e.g. according to the law it is important to create a national network of critical infrastructure liaison officers, an effective communication mechanism between them and the responsible national authorities (Monitorul Oficial Journal of Romania, Part I, No 555 / 4.VIII.2011:13-14). Therefore, solutions are considered possible with the help of experts working groups that should include not only Romanians but also international experts.

In terms of society values, Romania scored 42 on the masculinity - femininity dimension, being rather a Feminine society. Therefore, Romanian works as much as they need to live and they value equality, solidarity and quality at jobs, but also free time and flexibility.

The extent to which Romanians feel threatened by ambiguous or unknown situations is very high (90), therefore it is very important for them to avoid uncertainty. This is why unorthodox ideas are rejected and people need rules, rigid codes of belief and behaviors and security is an important element in individual motivation.

Also Romania score average on long term orientation showing that it maintains some links with the past but also having a half pragmatic approach to the present and the future. The strategy

is in agreement with this dimension of cultural characteristics deemed important

the development of adequate capacity response to all structures that could be affected by the design of intervention measures in emergency situations (including physical protection) and management crisis (Official Gazette of Romania, part I, no. 555 / 4.VIII.2011, 14).

#### 4. CONCLUSIONS

The study of legislation on the protection of critical infrastructures in parallel with the theory of multicultural structures throughout this paper allowed us to observe that, almost without exception, legislation is created independently of the understanding of the cultural specificity of the countries in which they are to be applied.

Generally, the legislative texts follow a common line, which implies observance of some guiding principles: cooperation, private-public duality, efficient communication. As we have shown, these principles may or may not coincide with cultural specificity and we have highlighted the situations in which the legislation conforms to the cultural specifics. In only one case we could notice that the legislature was aware of the cultural element and recommended its conscious change in order to succeed in protecting high-level critical infrastructure (Germany).

Our proposal is to further review the legislation to be in line with the cultural specifics of the reference communities, while maintaining the fund of common elements that will allow the protection of critical European and international infrastructures.

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