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# Roleplaying to Improve Resilience

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## Abstract

This article presents an approach to improve urban resilience by examining crisis dynamics through a role-playing game. The set of exploratory exercises extend the *Archaria 2035* scenario and geographic information system model, which was developed by the North Atlantic Treaty Organization (NATO) to advance concepts that support military operations. Participants (graduate students) worked in teams to identify and map critical relationships related to health, safety and welfare through a modified version of the Political, Military, Economic, Social, Infrastructure, Information (PMESII) framework. Next, each participant was given a one-page stakeholder profile that specified motives, kinds and degrees of influence, and connections to other stakeholders. This information was used to create maps that showed how each character understood the city. Crisis event details were revealed a day-and-a-half before the game. NATO staff contributed to the event by presenting courses of action to restore security and order. Participants gave opinions on how their characters might act during the event and react to the proposed military operations. Conversations created temporary collaborations among some stakeholders but also conflicts among others that could create additional problems. A post-game assignment asked participants to write memos on specific policies and plans that would reduce vulnerability to the crisis. As a matter of pedagogy, results the demonstrate the value of role-playing to consider multiple perspectives and second- and third-order effects of a crisis. Specifically, connecting gameplay conversations and results back to initial ideas about health, safety and welfare contributed to reconsiderations of assumptions about contingent relationships.

**Keywords:** resilience; urban systems; PMESII; role-playing games; crisis planning

## Introduction

Cities have been called 'cultural crucibles'[1] and humanity's 'greatest invention'.[2] They have provided forums for trading goods and ideas,[3] enclaves for collective defence,[4] loci for spiritual practices,[5] and hubs for territorial administration.[6] The continued occupation of some cities over millennia – such as Athens (Greece), Damascus (Syria), Faiyum (Egypt), Luoyang (China), Rayy (Iran) and Varanasi (India) – gives strong evidence that people living in dense settlements have the ability to adapt to changing social and environmental conditions. However, the collapse of other large and once prosperous cities – including Angkor (present-day Cambodia), Cahokia (present-day USA), Chan Chan (present-day Peru), Kweneng (present-day South Africa), and Taxila (present-day Pakistan) – underscores the position that the endurance of urban settlements cannot be guaranteed.

Continued global population growth and the intensifying concentration of settlement patterns over the second half of the twentieth century and start of the twenty-first century have brought about a new era for cities and a renewed focus on processes of urbanization. In 2007, for the first time, more human beings lived in cities than in rural areas.[7] Looking forward, it is anticipated that by 2050 more than 65 per cent of the global population will live in urban spaces[8] and that by the end of the twenty-first century up to 80 per cent of the world's 9 billion to 11 billion people will be city dwellers.[9] In extreme instances, new megacities of more than 10 million inhabitants and mega-regions of more than 50 million will emerge.[10] The number and size of cities has also led some to consider their roles in multicultural integration and identity formation[11] and in changing geopolitical structures and power dynamics.[12] Following the general premise that quantitative change in a system leads to qualitative change in the performance and behaviour of that system, the expectation of these large urban settlements raises questions about the ways cities may evolve to meet new challenges and achieve new aspirations.

In this context, the concept of resilience has become a key goal for urban planning and design.[13] Broadly, resilience concerns abilities to withstand, recover from adapt to external shocks.[14] Bringing about the qualities of resilience in cities and urbanized regions requires not only efforts to identify possible sources of disturbance and potential direct impacts, but also ways to think through second-, third-, and subsequent order effects of the initial disruption. Understanding linkages across possible chains of impacts involves considering the ways independent or semi-independent agents (influential stakeholders and groups) act, react and counter-react to events as they unfold. One approach to develop and improve such abilities is role-playing through games. The lessons learned can help those who plan, design and manage the built environment to consider functional relationships in times of uncertainty and subsequently take proactive steps to improve resilience. This article describes the creation and use of one such exercise.

## Cities as Systems and the Pursuit of Resilience

A city can be understood as an open, complex, self-organizing and emergent system.[15] Functionally, a city enables capabilities to support the gamut of social and society goals, and its processes are evident through the concentrations, interactions and flows of people, water, food, goods, energy and information.[16] The laws of physics (that is, what must occur) and the negotiated settlement of norms (that is, what could and should be done) both contribute to a city's capacity to meet these goals and to distribute benefits across space and over time. Notably – and, arguably, critically – urban systems can exhibit non-linear dynamics, reciprocal feedback loops, time lags, heterogeneity and surprises.[17] In part, these qualities combine to create a kind of volatility. This volatility allows for the emergence of both positive outcomes, such as economic growth through innovation,[18] and negative outcomes, such as the disruption and degradation of basic services that could contribute to the formation of so-called feral cities.[19] Also, in part, the qualities of urban systems create ontological ambiguity and epistemological uncertainty for top-down urban planning efforts.[20] The recognition that command-and-control approaches to urban planning are limited in their effectiveness in such systems has led to interest in strategies and methods that can accommodate uncertainty, stress and shock. Over the past 10 to 15 years, the organizing concept of these pursuits has been resilience.

Notions of resilience can be found across numerous disciplines and policy arenas.[21] The widespread prevalence of the term and what might be considered a shared general – but fuzzy – understanding of

its meaning allows the concept to be shared by stakeholders who hold different perspectives. However, while resilience beneficially serves as the basis for multidisciplinary conversations, differences in focus can create difficulties for interdisciplinary operationalization.[22] The idea of resilience with regard to urban systems is based on several lines of thought including those from engineering, disaster planning, socio-ecological systems and governance. As a consequence of this mixed intellectual lineage, even within a relatively narrow discourse, a common definition remains elusive.[23] One proposed synthetic definition is:

> Urban resilience refers to the ability of an urban system – and all its constituent socio-ecological and socio-technical networks across temporal and spatial scales – to maintain or rapidly return to desired functions in the face of disturbance, to adapt to change, and to quickly transform systems that limit current or future adaptive capacity.[24]

The primary advantage of this definition is that it leaves open multiple and – central to open social systems – negotiable pathways for adaptation.

## Images of the Future

Creating cities that are more resilient requires identifying potential vulnerabilities that may be exposed over time as prevailing political, social and economic trends interact, strengthen or weaken, and as extreme events arise. While it can be said that people have innate abilities to envision possible alternative futures, it is also true that creating scenarios of change is cognitively demanding because it requires imagining beyond what has already existed. Further, the methods used to create scenarios can affect their assumed plausibility and, thereby, their usefulness in decision-making processes. Inductive approaches, which start in the present and imagine step-by-step changes to a possible future, typically result in very plausible, but unsurprising, scenarios. Conversely, deductive approaches, which leap to an imaginable future and reverse engineer a path to the present, tend to be judged as less plausible, but are often quite surprising.[25] Robust efforts to improve resiliency must consider not only surprise and novelty but also what continues to happen after the envisioned scenario is established and the relationships under which residents interact are restructured. This kind of speculative exploration, which is arguably the most valuable for developing resilient cities and regions, can be especially difficult.[26]

A useful framework to begin thinking about possible futures is Boulding's four-part planets, plants, plays and plagues.[27] Planets are aspects of the future that are or are expected to be stable and predictable. Boulding limits this category to celestial mechanics and other basic laws of physics. Plants are aspects of the future that follow a pre-established plan. An acorn becoming a mature oak tree can serve as a model, but this category more broadly includes societal plans that are put into effect over time. Importantly, Boulding assumes that plants/plans are not entirely predetermined. While an acorn may follow its genetic coding and develop into a tree, there are no guarantees about how large the tree will become, how many acorns it will produce or how long it will live. As a plant/plan becomes more complex, so does the uncertainty of its final form and its performance. Plays concern the interactions of individuals and groups. Here, uncertainty stems from the back-and-forth of provisional and contingent negotiations. Finally, plagues are highly impactful, but difficult if not impossible to predict, events. Plagues include natural events such as floods, droughts, earthquakes and pandemics, and anthropogenic events such as industrial disasters and wars.

The benefit of using Boulding's framework to consider the topic of resilience for urban areas stems from the reflexive interrelationships among the categories. The civic drama of plays often leads to plants/plans, and plants/plans sometimes foster (or constrain) the topics for subsequent plays. Additionally, plants/plans may pre-emptively limit the effects of plagues or may introduce new societal risks.[28] Explicitly engaging the reflexive relationships between and among these kinds of change can advance efforts to improve resilience in two ways: First, it supports thinking across different time spans and speeds of change. Urban plans typically evolve over years, and their effects can persist for decades;[29] the plays of civic politics often take place over months or municipal budget cycles; and plagues can emerge in hours, days or weeks. Thinking in and across different units of time allows for a more robust understanding of

causation.[30] Second, it calls attention to the ways social activities in urban settings are embedded within broader socio-technical systems (especially urban infrastructure)[31] and natural-social systems (including the provision of ecosystem services and vulnerability to natural disasters).[32] Thinking in and through such systems' frameworks allows for a more comprehensive identification of second- and third-order consequences of change and disruption.[33]

**Pedagogic Context and Method**

The exercises discussed in this article took place as part of a graduate-level seminar that examined urban futures. The course had two primary assignments. One was a semester-long project in which small teams identified critical uncertainties (that is, issues that were most uncertain and could have the greatest positive or negative impacts) currently facing a large city located outside the USA and then developed a set of scenarios that explored how those uncertainties might develop over the next 25 years. The other primary assignment, which is described in this article, was a set of exercises involving a crisis in a fictional city. These exercises included preliminary analysis through mapping, role-playing and making policy proposals to improve resilience. Development of the case studies of actual cities and the crisis exercises were viewed as complementary. The background work for the scenario investigation provided a grounding for how to frame pressing concerns and assess facts. The role-playing exercise raised important questions about what might be believed and the demands for supporting plausible conjectures about possible actions. Perhaps most importantly, the fictional status of the role-playing city provided a neutral platform that allowed students to question personal preconceptions of complex and contested societal issues. A particular learning objective of the role-playing exercise was to enable individual students to come to recognize priorities that were different from their own and to incorporate these and other views into a more holistic effort to improve the city's resilience.

The use of games to understand dynamics of chaotic real-world situations can be traced to the late eighteenth and early nineteenth centuries when formal table-top military wargames were introduced in Germany.[34] In the 1960s, the techniques were applied to broader, non-military engagements among nations.[35] Today, such games, often aided with computer simulations, are used to learn about a variety of complex challenges and are often referred to as serious games.[36]

Games, in general, are structured situations in which a series of interactions between or among players leads to some kind of resolution. Wargames and other role-playing games are weakly structured in terms of the kinds of uncertainties players encounter. Games to examine crisis dynamics may include strategic uncertainty (uncertainty about what individual players might do), stochastic indeterminacy (uncertainty about the likelihood results will be as intended), and/or structural indeterminacy (uncertainties of the starting conditions or accepted rules of conduct).[37] The imprecision of such games allows for the possibility that processes that lead to success or to failure can emerge. But because each iteration of play is different, the knowledge gained is also weakly structured and should be understood as providing insight to a problem, not a prediction or proof of an outcome.[38]

The advantages of game-based learning as an educational process are that it provides intrinsic motivation, generates cognitive conflicts and provides situated learning.[39] In urban planning and design, games also provide a basis for public participation.[40] Additionally, role-playing can contribute to participants developing empathy across diverse populations for more inclusive collective (even if not unanimously agreed upon) action.[41]

**Game Environment**

The role-playing exercise was created as an extension to the *Archaria 2035* scenario, which was developed by the North Atlantic Treaty Organization's (NATO) Urbanisation Project as a means to consider future operational challenges and to advance concepts that will support military missions ranging from humanitarian assistance and disaster response, to stability policing, war fighting and counter-insurgency and counter-terrorism.[42] Fictional Archaria is a port city of 5.5 million inhabitants and the national capital of Positania. Geopolitically, Positania recently re-established independence from its more powerful neighbour Catan. Archaria is an advanced smart city with high-tech industries and connections to financial

centres around the world; but it also has a weak government, strong crime families and slum areas so dangerous that the police will not enter. Additionally, Archaria suffers from ethnically driven political tensions between native Positanians/Neapolitans (the ethnicity of Positanians in the Archaria scenario) and a large population of ethnic Catanians, many of whom come from families that have lived in Positania for generations. Further social stress stems from a surge of Yorbian migrants and refugees (some legal, most illegal) who comprise almost 17 per cent of the population and most of the city's economic underclass. As an overall assessment, Archaria is a functioning municipality, but just barely.

The *Archaria 2035* scenario provides extensive details about the city. The information is organized in a modified version of the Political, Military, Economic, Social, Infrastructure and Information (PMESII) framework, which is common to the US military.[43] The scenario and its associated geographic information system (GIS) model of approximately 280 layers provide what can be considered static, structural representations of the urban terrain. That is, the base materials provide an inventory of what can be located and counted. The materials do not, though, provide a basis for understanding how the city functions on a routine day-to-day basis, let alone during a crisis. This lack presented limits for the intended use of the materials.

To fill this gap and provide a basis for playing out what might happen during crisis events, a cast of 13 influential stakeholders was developed. Figure 1 shows the roles, primary motivation of each, and relationships to other characters. A one-page biography of each stakeholder was also developed. The set is intended to reflect different sources of agency and tensions that may result from their respective goals. For example, in a large capital city that is home to most of the nation's population, does the national president or the local mayor manage the situation? Asked differently, what kinds of authority can each marshal, and where and when does one or the other have greater agency? In this exercise, these questions are made more difficult since the mayor is currently in a close run-off election in which the voting population is divided by ethnicity. Governance of large cities can also be managed, or at least heavily swayed, by large institutions such as religious organizations or by criminal syndicates. Roles of social media personalities and non-state cyber groups (such as Anonymous or, in the case of this exercise, the Simulacra Union) can also affect opinions and outcomes.
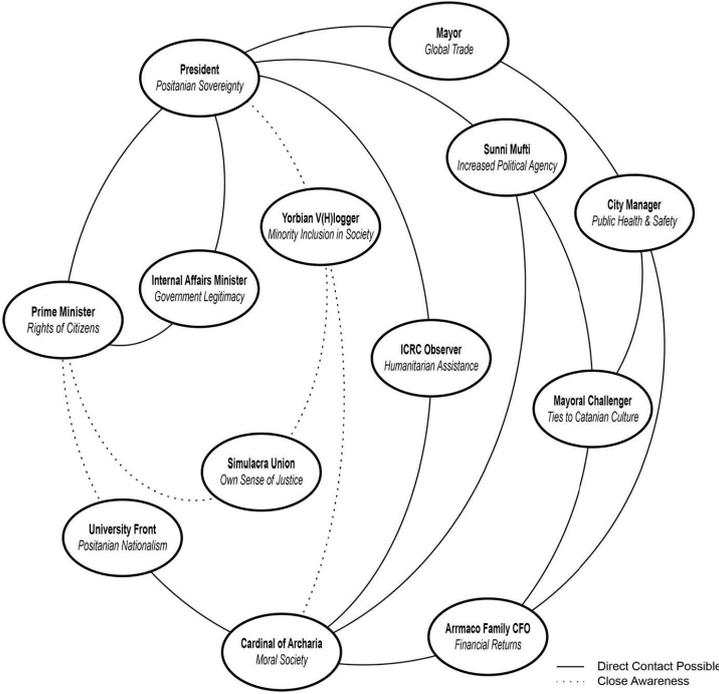


**Figure 1**   Archaria stakeholders, primary motivations and relationships (Source: Author, 2020).

**Exercise and Game Play**

*Testing the Learning Objective*

Given the learning objective of enabling students to recognize priorities that are different from their own and to incorporate them into a more holistic effort to improve a city's resilience, the research method tracked students' assessments of what was most uncertain. Two assessment exercises took place before the role-playing exercise. In the first, students reviewed the *Archaria 2035* scenario and GIS model in teams of three or four people. Each team drew on the collective perspectives of urban policy, planning and design disciplines to identify the two most pressing uncertainties with respect to broad health, safety and welfare concerns. They also mapped these concerns using the GIS. After this group work was completed, students were randomly assigned stakeholder roles. The second preliminary assignment asked each student to inventory and map uncertainties from the perspective of his or her individual character. The third assessment took place after the role-playing exercise. In it each student, as him- or herself, was asked to identify two policies or plans that would best address the kinds of uncertainties experienced in the exercise to make the city more resilient.

An adaptation of the PMESII framework was used to categorize the uncertainty issues and proposed solutions. As noted above, PMESII is typically used to provide a structural inventory of factors. To understand the city as a dynamic, coupled human and natural system, the framework was recast through two steps. In the first step, the structural descriptions given in a military training circular[44] were rewritten as 'how' questions. These rephrases are given in Table 1.

**Table 1**   Translation of functional PMESII categories to functional questions.

| Category | Structural PMESII | Functional PMESII |
|---|---|---|
| Political | Describes the distribution of responsibility and power at all levels of governance – formally constituted authorities, as well as informal or covert political powers | How is a member (typically a citizen) identified, what rights pertain to a member, and how do those rights differ from non-members? |
| Military | Explores the military and/or paramilitary capabilities of all relevant actors (enemy, friendly and neutral) in a given operational environment | How are security issues defined, declared, engaged and resolved? |
| Economic | Encompasses individual and group behaviours related to producing, distributing and consuming resources | How do people exchange goods and services? |
| Social | Describes the cultural, religious and ethnic makeup within an operational environment and the beliefs, values, customs and behaviours of society members | How do individuals and groups behave and why do they do what they do? |
| Infrastructure | Composed of the basic facilities, services and installations needed for the functioning of a community or society | How are flows – flows of people, food, water, goods or power – co-ordinated through the city? |
| Information | Describes the nature, scope, characteristics and effects of individuals, organizations and systems that collect, process, disseminate or act on information | How is truth recognized? |

The second recasting of the typical PMESII inventory was to also ask functional relationship questions in the six major categories. As an example, the cross-category questions for the political section are provided in Table 2.

**Table 2**  Questions for functional relationships between categories in the political relationships section.

| PMESII Categories | Relationship Questions |
|---|---|
| Political – Base Question | How is a member (typically a citizen) identified, what rights pertain to a member and how do those rights differ from non-members? |
| Political – Military Relationship | How is order over a population operationalized? |
| Political – Economic Relationship | How are regimes of resource distribution structured? |
| Political – Social Relationship | How is order legitimized? |
| Political – Infrastructure Relationship | How does the state (or city) establish conduits and protocols to direct flows? |
| Political – Information Relationship | What counts (that is, numerically matters) and how are counting (inventory) systems constructed and used? |

*Initial Assessment of Uncertainties*

The first group-based assessment was carried out in the fourth and fifth weeks of the semester. A point to be emphasized is that the participants were not asked to identify ways to change the city for the good *or* to change it for the bad, per se. Instead, they had to specify the relationships of uncertainty where both good *and* bad were open to exogenous pressure or endogenous manipulation. To the degree that these relationships could be affected by endogenous action, they might be the leverage points to improve resiliency or they might be or become the source of increased vulnerability. Base results are given in Table 3, which lists the selections by group. Table 4 represents the results, showing a cross-tabulation in which the intersection of a column and row shows the number of times each pair was mentioned. A graphic version of this information is provided in Figure 2, which is presented in the Discussion section.

**Table 3**  Listing of initial group identification of critical uncertainties.

| Group | Sources of Uncertainty between PMESII Category Relationships |
|---|---|
| Group A | Military – Infrastructure & Economic – Infrastructure |
| Group B | Military – Economic & Infrastructure – Information |
| Group C | Political – Military & Social – Information |
| Group D | Military – Information & Economic – Infrastructure |

**Table 4**  Summary of initial group identification of critical uncertainties.

|  | Political | Military | Econ. | Social | Infra. | Info. |
|---|---|---|---|---|---|---|
| Political | ----- | 1 | 0 | 0 | 0 | 1 |
| Military | 1 | ----- | 1 | 0 | 1 | 0 |
| Economic | 0 | 1 | ----- | 0 | 2 | 0 |
| Social | 0 | 0 | 0 | ----- | 0 | 1 |
| Infrastructure | 0 | 1 | 2 | 0 | ----- | 1 |
| Information | 0 | 1 | 0 | 1 | 1 | ----- |
| Total | 1 | 4 | 3 | 1 | 4 | 3 |

*Role-Based Assessment of Uncertainties*

Students were assigned their roles in week nine of the semester. The second assessment occurred in week 12, immediately prior to the role-playing exercise. Results are shown in Tables 5 and 6.

**Table 5**  Listing of role-based identification of critical uncertainties.

| Role | Sources of Uncertainty between PMESII Category Relationships |
|---|---|
| President | Political – Economic & Military – Social |
| Prime Minister | Political – Economic & Political – Social |
| Internal Affairs Minister | Political – Military & Political – Social |
| Mayor | Political – Economic & Economic – Infrastructure |
| City Manager | Social – Infrastructure & Infrastructure – Information |
| Mayoral Challenger | Political – Infrastructure & Social – Infrastructure |
| Crime Family CFO | Military – Economic & Economic – Infrastructure |
| Sunni Mufti | Political – Social & Social – Information |
| University Front | Political – Social & Economic – Social |
| Yorbian Video Blogger | Political – Information & Economic – Social |
| Simulacra Union | Military – Infrastructure & Military – Information |
| Cardinal of Archaria | Social – Information & Political – Social |
| ICRC Observer | Military – Information & Social – Infrastructure |

**Table 6**  Summary of role-based identification of critical uncertainties.

| | Political | Military | Econ. | Social | Infra. | Info. |
|---|---|---|---|---|---|---|
| Political | ----- | 1 | 3 | 5 | 1 | 1 |
| Military | 1 | ----- | 1 | 1 | 1 | 2 |
| Economic | 3 | 1 | ----- | 2 | 2 | 0 |
| Social | 5 | 1 | 2 | ----- | 3 | 2 |
| Infrastructure | 1 | 1 | 2 | 3 | ----- | 1 |
| Information | 1 | 2 | 0 | 2 | 1 | ----- |
| Total | 11 | 6 | 8 | 13 | 8 | 6 |

*Role-Playing Exercise*

Participants were given the crisis timeline 36 hours before the exercise. It included how each character had so far responded in the crisis. To summarize the crisis: The neighbouring nation Catan asserted that the Positanian government was persecuting its ethnic Catanian population. In response, Catan sent an invading military force across its border with Positania and into Archaria to secure the areas that are predominantly occupied by ethnic Catanians. Positania denied the allegations and believed that Catan invented the pretence to gain leverage over its busy port. An international military force was sent to assist Positania, but in the meantime, the capital city is in crisis.

Students arrived at the role-playing event with at least two planned actions. These actions were specified using Kenneth Burke's Dramatic Pentad, which specifies act, actor, agency, scene (location and time) and purpose.[45] The role-playing session lasted three-and-a-half hours and a significant amount of this time was for participants to state their understanding of the situation and give explanations for immediate plans. While these foundational presentations took time away from moving through actions and reactions, it was beneficial since none of the students had ever participated in a role-playing game of this complexity or one in which an entire city was being affected. Throughout the session, assertions and assumptions were questioned. For example, the Mayoral Challenger asserted that he was best prepared to come to peaceful terms with Catan, since he was 'of them', but also a seemingly proud Archarian – several times he noted his service as a neighbourhood elected official when others questioned his loyalty to Positania.

Following the session, students were given four days to draft memos outlining two ideas that would most effectively help Archaria improve its resilience. These were also categorized in terms of PMESII relationships. The results are shown in Table 7.

**Table 7**   Summary of relationships where plans and policies were proposed to address critical uncertainties.

|  | Political | Military | Economic | Social | Infra. | Info. |
|---|---|---|---|---|---|---|
| Political | ----- | 2 | 1 | 2 | 0 | 0 |
| Military | 2 | ----- | 0 | 4 | 1 | 0 |
| Economic | 1 | 0 | ----- | 5 | 3 | 0 |
| Social | 2 | 4 | 5 | ----- | 8 | 0 |
| Infrastructure | 0 | 1 | 3 | 8 | ----- | 0 |
| Information | 0 | 0 | 0 | 0 | 0 | ----- |
| Total | 5 | 7 | 9 | 19 | 12 | 0 |

## Discussion

Figure 2 presents a graphic comparison of the three assessments of critical uncertainties. Direct comparison is imperfect because each assessment was approached differently – again, in the first assessment, students worked in interdisciplinary groups, in the second, students worked alone while imagining the priorities of a fictional character, and in the third, students worked individually and from their own perspectives. While analytically messy, the results are a direct outcome of intentionally putting the students in positions where they had to think about the city from multiple perspectives.
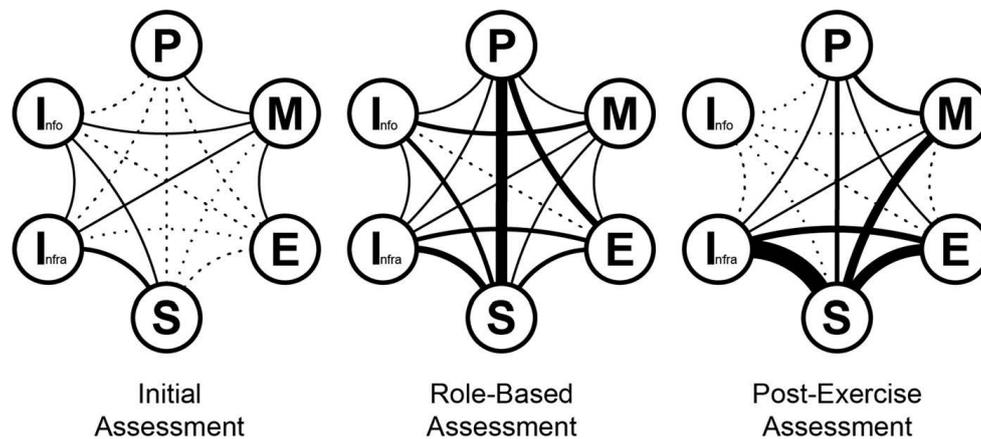


| Initial Assessment | Role-Based Assessment | Post-Exercise Assessment |

**Figure 2**   Comparison of most identified critical uncertainty relationships (Source: Author, 2020).

Nevertheless, observations can be made. It may be notable that in the first assessment (a group-based activity), the two PMESII factors that were used most commonly were Military and Infrastructure, both in terms of number of times cited and number of connections to different factors. The only relationship to receive more than one mention was Social-Infrastructure. The factors that were used least commonly were Political and Social. The initial identification of Military and Infrastructure factors might be expected given both that the base scenario was developed by NATO and that policy and planning programmes commonly emphasize infrastructure to support health, safety and welfare services.

In the second (role-based) exercise, the results were reversed. Political and Social factors came to the forefront. Military and Infrastructure categories were still used, but not as dominantly. Also of note in the second assessment, all relationships are flagged by at least one person except the one between Economics and Information.

In the third assessment, Infrastructure and Social are the most mentioned categories (19 and 12 respectively) and their connection is the most cited link pairwise. Perhaps curiously, in the third assessment, issues that relate to Information are not identified as of critical importance. This result suggests follow-up investigation given current conversations about 'fake news'.[46]

Looking across the results it can be seen that between the first and third assessment more relationships are identified, and that can be recognized as supporting the primary goal of the exercise. Perhaps also, the

connection to Political topics or concerns, which was prominent in the second assessment, was carried through into the third assessment. Referring to Table 1, the base political question is: 'How is a member (typically a citizen) identified, what rights pertain to a member and how do those rights differ from non-members?'

As a set of exercises, participants were asked to play roles beyond their professional and sometimes educational experiences. Several of the students offered unsolicited comments that the experiment was unlike anything they had ever done in school or professional life. While each person was able to provide some level of analytical thinking (through the PMESII diagrams, maps and memo) that reflected the role s/he was asked to play, it must also be said that there were differing levels of comfort in trying to play these roles during the game. A sentiment expressed immediately following the exercise during a group discussion was that empathy may be the decisive criteria, but it will not be empathy with the person who delivers the news per se, but with the situation that is shared through real time Virtual Reality transmissions. The presentation of news would be replaced by experience (even if mediated experience) and without that experience, there would be no buy-in.

David Chandler, who has written extensively on the role of resilience as a framing mechanism for governance in the *Anthropocene*, has commented, 'For resilience-thinking, the type of knowledge that is possible is necessarily concrete rather than abstract; therefore, complexity- and resilience-thinking lends itself to action-research methods engaging with actors in the situation.'[47] Wargames and role-playing may be simulations, but they do serve to ground our understanding of specific situations. To the degree that urban policy makers, planners and designers help create environments that allow strangers to live among one another, role-playing may bring in an aspect of professional practice that is otherwise absent or underdeveloped in the students' training and education.

## Acknowledgements

## Declarations and Conflict of Interests

The author declares no conflict of interests with this work.

## Notes

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