



ORIGINAL PAPER

Euro-Atlantic Security and Institutional Resilience: Analyzing the Conceptual Use and Topical Variations

Cătălina Maria Georgescu¹⁾, Anca Parmena Olimid²⁾,
Cosmin Lucian Gherghe³⁾

Abstract:

Background: The present article reflects the main themes and topics related to Euro-Atlantic Security and institutional resilience in terms of a cross-scale spectrum (personal-human-private-institutional).

Objectives: The objectives of the research associate the theoretical development and the analytical framework on Euro-Atlantic security and institutional resilience rooted in concepts-based analysis, namely: “security resilience”, Euro-Atlantic alliance”, “Euro-Atlantic solidarity”, “social security”, “human security” and “personal security”.

Methods: Developing the analytical tools and methods depends on the convergence of multiple approaches, including (i) comparing the apex for the use of concepts; (ii) relational analysis representation of the use of concepts; (iii) analyzing the relation between concepts in different periods. The article also outlines the qualitative analysis featuring the use of the *Google Ngram Viewer (Google Ngram)* on digitalised literature for the period 2000-2019.

Results and findings: From an analytical perspective, the research sets three relevant factors: “Euro-Atlantic security”, “security resilience”, and “human security”.

Conclusions: The study adopts quantitative and qualitative research collecting and analyzing information and data through a chronological design conducted in the period 2000-2019.

Keywords: *Euro-Atlantic security; resilience; institutions; security resilience; human security.*

¹⁾Lecturer, PhD, University of Craiova, Faculty of Social Sciences, Craiova, Romania, Phone: 0040351403149, Email: catalina.georgescu@edu.ucv.ro.<https://orcid.org/0000-0002-4462-4689>.

²⁾ Associate Professor, PhD, University of Craiova, Faculty of Social Sciences, Craiova, Romania, Phone: 0040351403149, Email: anca.olimid@edu.ucv.ro.<https://orcid.org/0000-0002-7546-9845>.

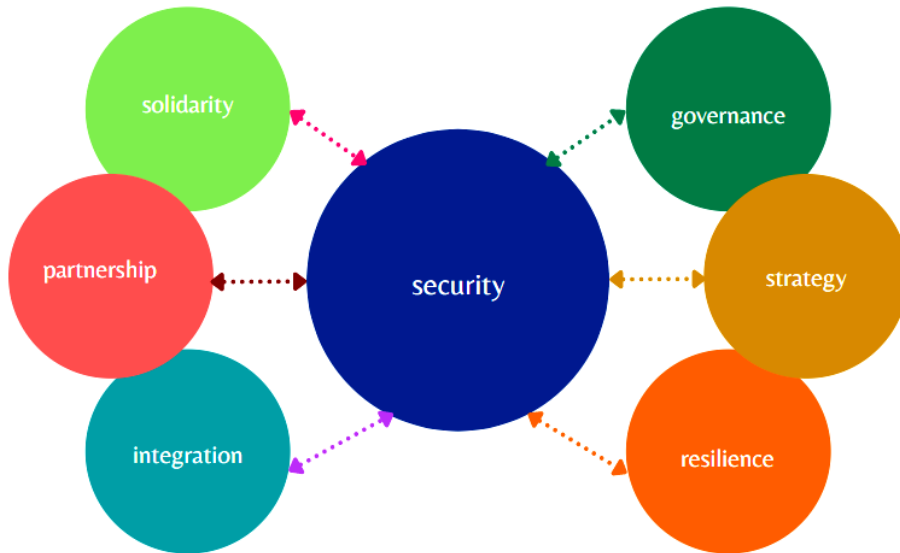
³⁾ Associate Professor, PhD, University of Craiova, Faculty of Social Sciences, Craiova, Romania, Phone: 0040351403149, Email: cosmin.gherghe@edu.ucv.ro.<https://orcid.org/0000-0002-9131-0391>.

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Introduction

This article explores the actual linkages between security and resilience focusing on the Euro-Atlantic partnership analysis. To a large context, Euro-Atlantic security is a complex construct enabling a permanent dialogue between collaboration-coordination-solidarity-unity-partnership (Sjursen, 2004: 687-703; Hallams, 2011; Rynning, 2014: 1383-1401). The current literature approaches focus on the implementation areas of security and defense calling for solidarity and partnership seeking to provide (Diagram 1. Euro-Atlantic Security Circular Topics Map): (i) analysis of security and resilience within the Euro-Atlantic environment; (ii) integration and implementation of resilience measures and processes; (iii) impact evaluation of the security framework. In addition, the research highlights a comprehensive approach to personal, private, human and social security referring to key topics for security-resilience efforts, namely: stability, defense agenda and institutional governance.

Diagram 1. Euro-Atlantic Security Circular Topics Map



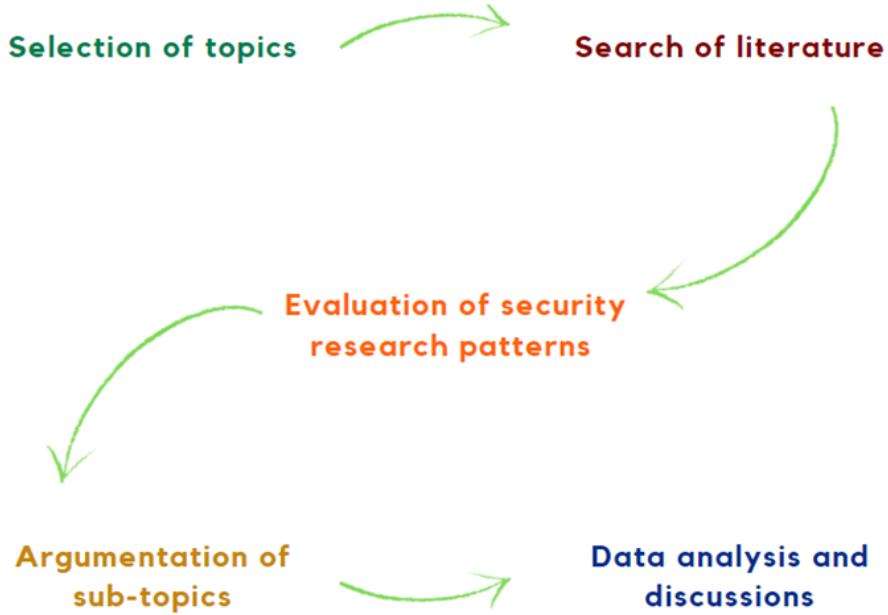
Source: Authors' own compilation

Methodology

This paper reviews the major topics related to security and resilience, namely Euro-Atlantic security and partnership and integration sense. In the first section, this study addresses a comprehensive set of the major considerations of the concept using the method of the literature review. The second part combines the data provided by *Ngram Google Viewer* for an extensive period until 2019, using a high volume of data and frequencies processed using the conceptual association and the relational analysis. In fact, the following research intends to provide a complex understanding of the current approaches to North-Atlantic Security Organization (NATO) from an analytical perspective. Given the research period of the digitalized literature (2000-2019), the study identifies the major challenges of security in recognizing the topics frequencies performed with *Ngram Google Viewer*. Overall, the first section of our research provides a 5-step process for mapping the literature review: (i) selection of topics; (ii) search of

literature; (iii) evaluation of Euro-Atlantic security research patterns; (iv) argumentation of the sub-topics identified; (v) data analysis and discussions (Diagram 2. A five-step process for mapping the literature review).

Diagram 2. A five-step process for mapping the literature review



Source: Authors' own compilation

Literature review

This section provides a complex description of the core patterns of the concept of Euro-Atlantic security and security resilience in the recent literature review. Furthermore, the initial screening of the concept of security is based on the relevance of the social and institutional approaches to the field of “homeland security” (Haimes, Crowther, Horowitz, 2008: 287-308) and “network security” (Mérand, Hofmann, Irondelle, 2011: 121-147).

An additional goal of the research outlines the “peacekeeping-peace building” linkage and provides a comprehensive understanding of the “human security” encounters as an institutional construct by exploring and examining other topics such as: “threat assessment” and “impact assessment” (Imboden, 2012: 173-196; Krause, 2008: 65-79; Burgess, 2008: 49-63). Moreover, Jolly *et al.* characterize the human security-human development nexus and summarizes the “multilevel security” (Anderson, 2020) and broader concepts of security regarding operational approaches and processes (Jolly, Ray, 2007: 457-472). The authors also describe the effects of policy making and “concerns of people” in particular situations (Jolly, Ray, 2007: 457-472) and “urban resilience” (Coaffee, 2013: 240-252) enabling two operational concepts: “personal security” (Yanay, 2006: 509-525; Carreño, Gutierrez, Ochoa, Fortino, 2015: 2531-2546) and “adaptive resilience” (Zoli, Steinberg, 2015).

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Thus, the recent literature attention is given to the “security sector reform” (Larzillière, 2019: 384-401) and the EU-NATO relationship is significant shedding new frameworks for “structural stability” and “military option” (Cornish, Edwards, 2001: 587-603), but also for the NATO enlargement and future (Schweickert, Melnykovska, Belke, Bordon, 2011: 667-692; Croft, Howorth, Terriff, Webber, 2000: 495-518; Hartley, 1999: 37-40) and EU security and defense agenda (Croft, 2002: 97-114).

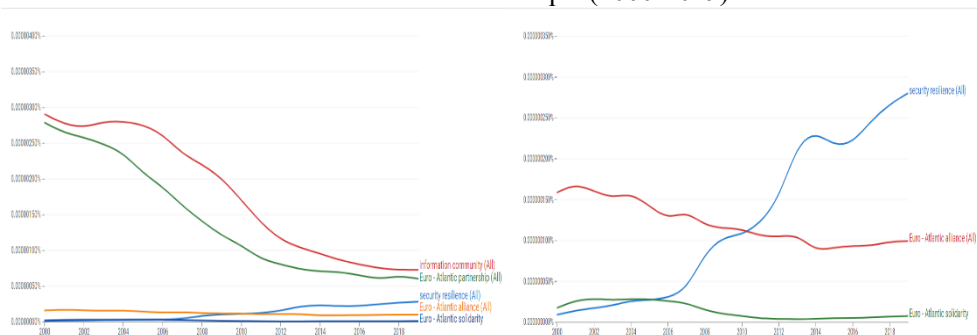
A new research mechanism for “security resilience” uses joint analysis of “solidarity” and partnership approaches linking multi-sectoral attributes, namely: (i) network system and security resilience (Williamson, 2003: 34-40); (ii) societal and governance resilience (Olimid, Georgescu, Gherghe, 2022: 38-51); (iii) civic participation (Olimid, Georgescu, 2017: 42-56); (iv) security strategies (Joseph, 2013: 253-264); (v) information and documentation to research governance-policies nexus (Georgescu, Olimid, Olimid, Georgescu, Gherghe, 2017). Guerrier (2021a) includes the concept of “social networks” to explain the security-democracy linkage. The author conducts a particular outline of what is known about the topic of “plurality of opinions” (Guerrier, 2021a).

Other authors also focus on the research area of “cybersecurity and privacy” setting a common approach to (i) “digital security” and (ii) “security of information” (Guerrier, 2021b). The selected criteria for the study research design two additional approaches to security: (i) “security of networks” and “information systems” (Guerrier, 2021b).

Data analysis and discussions

The relational analysis performed with *Ngram Google Viewer* for the 2000-2019 period on the “Euro-Atlantic” and “security resilience”-related concepts revealed the use of “information community”, “Euro-Atlantic partnership”, “security resilience”, “Euro-Atlantic alliance”, “Euro-Atlantic solidarity”. We have to note that the frequencies of “information community” and “Euro-Atlantic partnership” concepts was higher before the 2000s with 0.0000029023% and 0.0000027847%, respectively, reached 0.0000028019% and 0.0000023620% in 2004 and 0.0000007261% and 0.0000006004% in 2019.

Figure 1. Relational analysis representation of the use of “Euro-Atlantic” and “security resilience”-related concepts (2000-2019)



Source: Authors' compilation based on *Google Ngram Viewer* data

Figure 2. Comparing the apex for the use of “Euro-Atlantic” and “security resilience”-related concepts

2000		2004		2019	
● security resilience (All)	0.0000000088%	● security resilience (All)	0.0000000261%	● security resilience (All)	0.0000002798%
● information community (All)	0.0000029023%	● information community (All)	0.0000028019%	● information community (All)	0.0000007261%
● Euro - Atlantic partnership (All)	0.0000027847%	● Euro - Atlantic partnership (All)	0.0000023620%	● Euro - Atlantic partnership (All)	0.0000006004%
● Euro - Atlantic alliance (All)	0.0000001582%	● Euro - Atlantic alliance (All)	0.0000001578%	● Euro - Atlantic alliance (All)	0.0000000988%
● Euro - Atlantic solidarity	0.0000000170%	● Euro - Atlantic solidarity	0.0000000280%	● Euro - Atlantic solidarity	0.0000000070%

Source: Authors’ compilation based on Google Ngram Viewer data

Further focusing our study on the relational analysis representation of the use of “security resilience”, “Euro-Atlantic alliance” and “Euro-Atlantic solidarity” concepts for the period between 2000 and 2019 we have observed that the frequency in the use of “security resilience” has grown towards 2019 reaching 0.0000002798%. The peak in the use of “Euro-Atlantic solidarity” was in 2004 with 0.0000000280%, while in the case of “security resilience” we have to note an increase towards 2019 with 0.0000002798%.

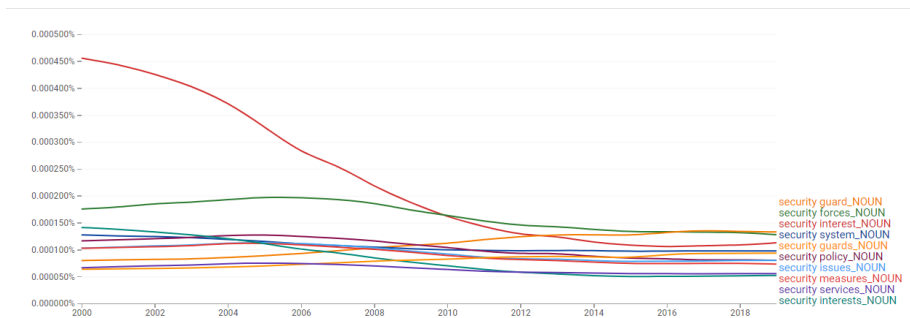
Figure 3. Comparing the apex for the use of “Euro-Atlantic alliance”, “Euro-Atlantic solidarity” and “security resilience” concepts

2000		2001		2010		2019	
● security resilience (All)	0.0000000088%	● security resilience (All)	0.0000000138%	● security resilience (All)	0.0000001061%	● security resilience (All)	0.0000002798%
● Euro - Atlantic alliance (All)	0.0000001582%	● Euro - Atlantic alliance (All)	0.0000001691%	● Euro - Atlantic alliance (All)	0.0000001137%	● Euro - Atlantic alliance (All)	0.0000000988%
● Euro - Atlantic solidarity	0.0000000170%	● Euro - Atlantic solidarity	0.0000000263%	● Euro - Atlantic solidarity	0.0000000073%	● Euro - Atlantic solidarity	0.0000000070%

Source: Authors’ compilation based on Google Ngram Viewer data

Furthermore, we were interested in identifying the conceptual association of the “security” concept (after interrogating on the 10 most frequent associations between “security” and a NOUN). By employing the Google NgramViewertool, we discovered the following phrases: “security guard(s)”, “security forces”, “security interest”, “security system”, “security policy”, “security issues”, “security measures”, “security services”, “security interests”.

Figure 4. Relational analysis representation of the use of “security” concept (2000-2019)



Source: Authors’ compilation based on Google Ngram Viewer data

In order to recognize the top frequencies, the analysis has tracked the apex for “security interest” in 2000 (0.0004556772%), “security forces” in 2005 (0.0001978069%), “security guard” in 2017 (0.0001359343%), “security system” in

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2000 (0.0001272888%), “security issues” in 2005 (0.0001130136%), “security measures” in 2005 (0.0001118948%), “security interests” in 2000 (0.0001410568%), and “security services” in 2005 (0.0000750958%).

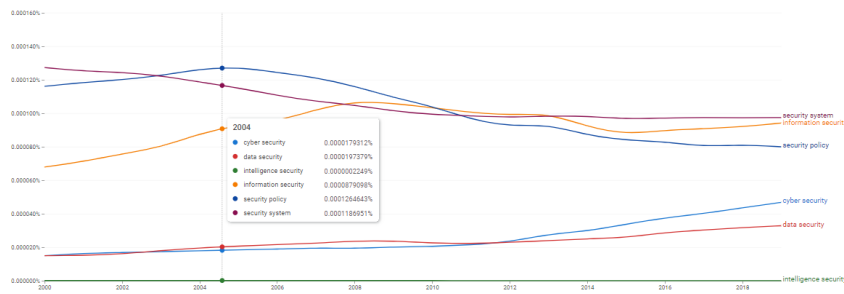
Figure 5. Comparing the apex for the use of “security” AND NOUN associations

2000	2005	2017	2019
● security interest_NOUN 0.0004556772%	● security interest_NOUN 0.0003283129%	● security interest_NOUN 0.0001074235%	● security interest_NOUN 0.0001125944%
● security forces_NOUN 0.0001752574%	● security forces_NOUN 0.0001978069%	● security forces_NOUN 0.0001322521%	● security forces_NOUN 0.0001275570%
● security guard_NOUN 0.0000794107%	● security guard_NOUN 0.0000882496%	● security guard_NOUN 0.0001359343%	● security guard_NOUN 0.0001327425%
● security system_NOUN 0.0001272888%	● security system_NOUN 0.0001151569%	● security system_NOUN 0.0000975160%	● security system_NOUN 0.0000974798%
● security policy_NOUN 0.0001160954%	● security policy_NOUN 0.0001276682%	● security policy_NOUN 0.0000800852%	● security policy_NOUN 0.0000800054%
● security issues_NOUN 0.0001023967%	● security issues_NOUN 0.0001130136%	● security issues_NOUN 0.0000782626%	● security issues_NOUN 0.0000798057%
● security measures_NOUN 0.0001023531%	● security measures_NOUN 0.0001118948%	● security measures_NOUN 0.0000741654%	● security measures_NOUN 0.0000730285%
● security interests_NOUN 0.0001410568%	● security interests_NOUN 0.000112056%	● security interests_NOUN 0.0000502272%	● security interests_NOUN 0.0000519878%
● security guards_NOUN 0.0000634709%	● security guards_NOUN 0.0000695181%	● security guards_NOUN 0.0000932122%	● security guards_NOUN 0.0000934788%
● security services_NOUN 0.0000662981%	● security services_NOUN 0.0000750958%	● security services_NOUN 0.0000548538%	● security services_NOUN 0.0000551782%

Source: Authors’ compilation based on Google Ngram Viewer data

Moreover, we were interested in the manner in which the following associations were present in the digitalized literature: “security system” and “security policy” together with “information security”, “cyber security” and “data security”.

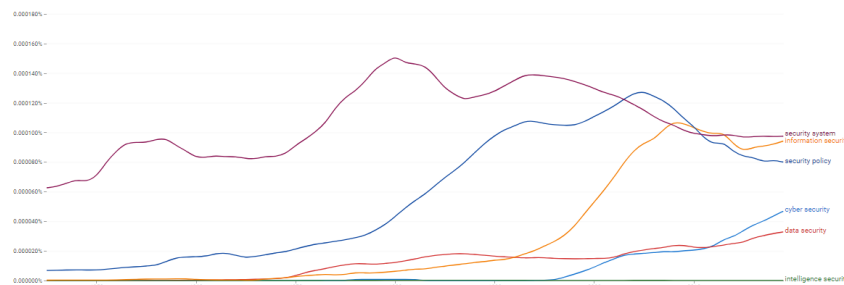
Figure 6. Analyzing the use of “security”-related concepts (2000-2019)



Source: Authors’ compilation based on Google Ngram Viewer data

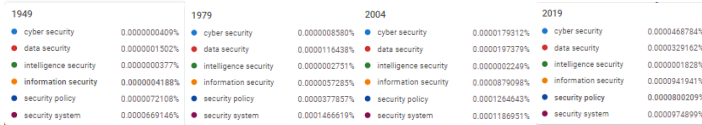
For this set of concepts, we aimed at identifying their frequencies since NATO creation and discovered an increase in the frequencies towards 2019 for “cyber security” (0.0000468784%), “data security” (0.0000329162%) and “information security” (0.0000941941%), while the mentions of “security system” and “intelligence security” both peak in 1979 (0.0001466619% and 0.0000002751%, respectively). The frequency for “security policy” is at its highest in 2004 (0.0001264643%).

Figure 7. Analyzing the use of “security”-related concepts since NATO creation



Source: Authors’ compilation based on Google Ngram Viewer data

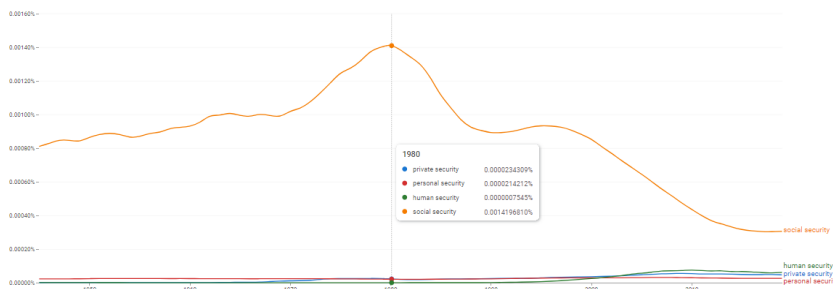
Figure 8. Comparing the apex for the use of “security”-related concepts



Source: Authors’ compilation based on Google Ngram Viewer data

Next in our analysis, we were interested in the following associations: “private security”, “personal security”, “human security” and “social security”. Among these, “social security” reached the frequency of 0.0014196810% in 1980.

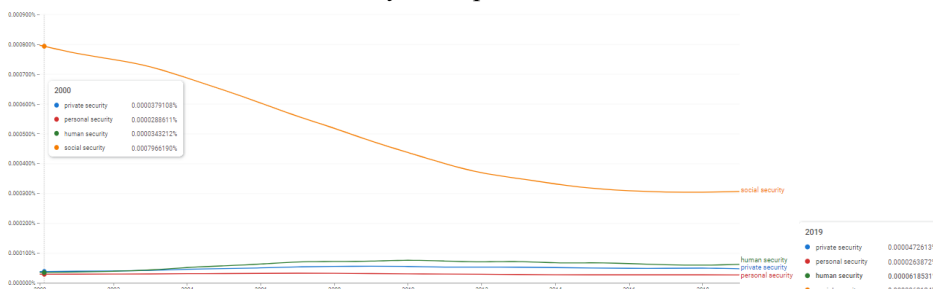
Figure 9. Analyzing the relation of “private”, “personal”, “human” and “social” to security concept (1940-2019)



Source: Authors’ compilation based on Google Ngram Viewer data

In 2000, “social security” reached 0.0007966190%, “private security” reached 0.0000472613%, “personal security” 0.0000288611% and “human security” 0.0000343212%. In 2019, the frequency of “social security” dropped at 0.0003062124%, while the other values increased: “private security” reached 0.0000472613%, “personal security” 0.0000263872% and “human security” 0.0000618531%.

Figure 10. Analyzing the relation of “private”, “personal”, “human” and “social” to security concept after 2000

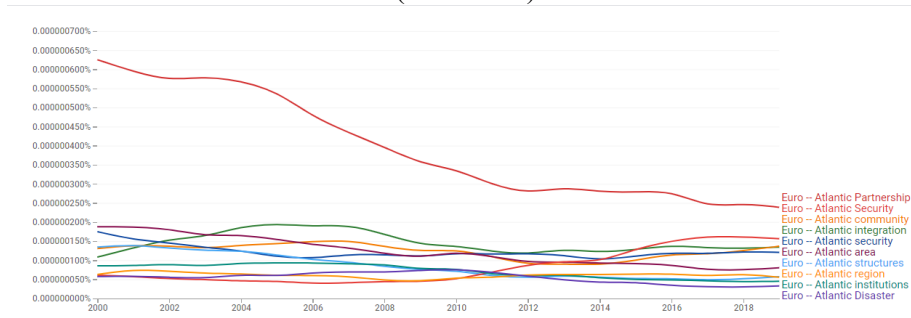


Source: Authors’ compilation based on Google Ngram Viewer data

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The following stage of our research acquired to highlight the conceptual associations of the “Euro-Atlantic” concept between 2000 and 2019: “Euro-Atlantic Partnership”, “Euro-Atlantic security”, “Euro-Atlantic community”, “Euro-Atlantic integration”, “Euro-Atlantic area”, “Euro-Atlantic structures”, “Euro-Atlantic region”, “Euro-Atlantic institutions” and “Euro-Atlantic disaster”.

Figure 11. Relational analysis representation of the use of “Euro-Atlantic” concept (2000-2019)



Source: Authors’ compilation based on *Google Ngram Viewer* data

The data collected by employing the *Google NgramViewer* instrument showed the yearly frequencies for the conceptual associations in question. Consequently, the peaks were reached in 2000 for “Euro-Atlantic Partnership” (0.0000026502%), “Euro-Atlantic security” (0.0000011912%), “Euro-Atlantic area” (0.0000017764%), “Euro-Atlantic structures” (0.0000012900%), “Euro-Atlantic region” (0.0000006054%), and in 2005 for “Euro-Atlantic community” (0.0000014556%), “Euro-Atlantic integration” (0.0000015428%), “Euro-Atlantic institutions” (0.0000009424%).

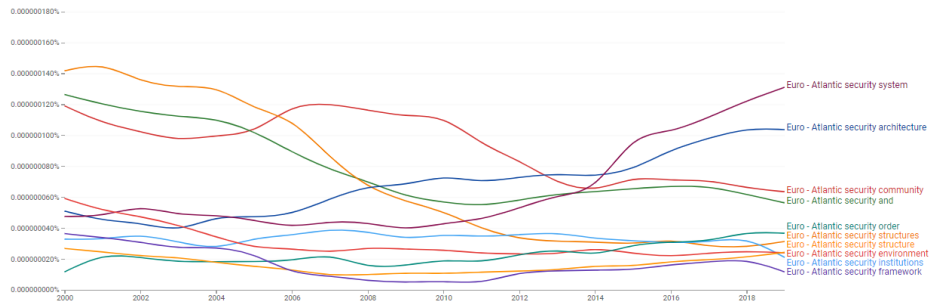
Figure 12. Comparing the apex for the use of “Euro-Atlantic”-related concepts

2000	2005	2014	2018	2019
● Euro - Atlantic Partnership 0.0000026502%	● Euro - Atlantic Partnership 0.0000019399%	● Euro - Atlantic Partnership 0.000006620%	● Euro - Atlantic Partnership 0.000006091%	● Euro - Atlantic Partnership 0.000005671%
● Euro - Atlantic integration 0.0000010125%	● Euro - Atlantic integration 0.0000015428%	● Euro - Atlantic integration 0.000009983%	● Euro - Atlantic integration 0.000009706%	● Euro - Atlantic integration 0.000009845%
● Euro - Atlantic area 0.0000017764%	● Euro - Atlantic area 0.0000014152%	● Euro - Atlantic area 0.000006269%	● Euro - Atlantic area 0.000005833%	● Euro - Atlantic area 0.000006108%
● Euro - Atlantic community 0.0000012896%	● Euro - Atlantic community 0.0000014556%	● Euro - Atlantic community 0.000005983%	● Euro - Atlantic community 0.000006642%	● Euro - Atlantic community 0.000006912%
● Euro - Atlantic security 0.0000011912%	● Euro - Atlantic security 0.000008965%	● Euro - Atlantic security 0.000007833%	● Euro - Atlantic security 0.000009028%	● Euro - Atlantic security 0.000008653%
● Euro - Atlantic structures 0.0000012900%	● Euro - Atlantic structures 0.0000010461%	● Euro - Atlantic structures 0.000004406%	● Euro - Atlantic structures 0.000004100%	● Euro - Atlantic structures 0.000004188%
● Euro - Atlantic institutions 0.000008445%	● Euro - Atlantic institutions 0.000009424%	● Euro - Atlantic institutions 0.000003917%	● Euro - Atlantic institutions 0.000003449%	● Euro - Atlantic institutions 0.000003187%
● Euro - Atlantic region 0.000006054%	● Euro - Atlantic region 0.000005986%	● Euro - Atlantic region 0.000004073%	● Euro - Atlantic region 0.000003769%	● Euro - Atlantic region 0.000003262%
● Euro - Atlantic Security 0.000002928%	● Euro - Atlantic Security 0.000002240%	● Euro - Atlantic Security 0.000002587%	● Euro - Atlantic Security 0.000002807%	● Euro - Atlantic Security 0.000002562%
● Euro - Atlantic and 0.000002381%	● Euro - Atlantic and 0.000002242%	● Euro - Atlantic and 0.000001703%	● Euro - Atlantic and 0.000002055%	● Euro - Atlantic and 0.000001652%

Source: Authors’ compilation based on *Google Ngram Viewer* data

The tag of “Euro-Atlantic security” attracted the following conceptual associations: “Euro-Atlantic security system”, “Euro-Atlantic security architecture”, “Euro-Atlantic security community”, “Euro-Atlantic security order”, “Euro-Atlantic security structure(s)”, “Euro-Atlantic security environment”, “Euro-Atlantic security institutions” and “Euro-Atlantic security framework”.

Figure 13. Relational analysis representation of the use of “Euro-Atlantic security” concept (2000-2019)



Source: Authors’ compilation based on *Google Ngram Viewer* data

In terms of frequencies, we have to note that the following conceptual associations peaked in 2000: “Euro-Atlantic security structure(s)” (0.0000001417%), “Euro-Atlantic security environment” (0.0000000592%) and “Euro-Atlantic security framework” (0.0000000364%), while the following phrases pointed towards 2007: “Euro-Atlantic security community” (0.0000001206%), “Euro-Atlantic security institutions” (0.0000000394%). In 2019, the highest frequencies were recorded by “Euro-Atlantic security system” (0.0000001310%), “Euro-Atlantic security architecture” (0.0000001037%), “Euro-Atlantic security order” (0.0000000366%).

Figure 14. Comparing the apex for the use of “Euro-Atlantic security”-related concepts

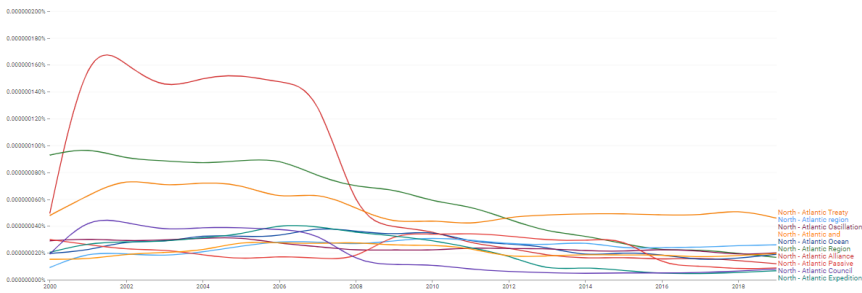
2000	2007	2014	2019
Euro - Atlantic security community: 0.0000001190%	Euro - Atlantic security community: 0.0000001206%	Euro - Atlantic security community: 0.0000000631%	Euro - Atlantic security community: 0.0000000635%
Euro - Atlantic security and: 0.0000001264%	Euro - Atlantic security and: 0.0000000778%	Euro - Atlantic security and: 0.0000000635%	Euro - Atlantic security and: 0.0000000563%
Euro - Atlantic security structures: 0.0000001417%	Euro - Atlantic security structures: 0.0000000854%	Euro - Atlantic security structures: 0.0000000311%	Euro - Atlantic security structures: 0.0000000313%
Euro - Atlantic security architecture: 0.0000000510%	Euro - Atlantic security architecture: 0.0000000589%	Euro - Atlantic security architecture: 0.0000000731%	Euro - Atlantic security architecture: 0.0000001037%
Euro - Atlantic security system: 0.0000000475%	Euro - Atlantic security system: 0.0000000445%	Euro - Atlantic security system: 0.0000000634%	Euro - Atlantic security system: 0.0000000310%
Euro - Atlantic security institutions: 0.0000000328%	Euro - Atlantic security institutions: 0.0000000394%	Euro - Atlantic security institutions: 0.0000000330%	Euro - Atlantic security institutions: 0.0000000210%
Euro - Atlantic security environment: 0.0000000592%	Euro - Atlantic security environment: 0.0000000239%	Euro - Atlantic security environment: 0.0000000275%	Euro - Atlantic security environment: 0.0000000239%
Euro - Atlantic security order: 0.0000000116%	Euro - Atlantic security order: 0.0000000236%	Euro - Atlantic security order: 0.0000000217%	Euro - Atlantic security order: 0.0000000366%
Euro - Atlantic security structure: 0.0000000268%	Euro - Atlantic security structure: 0.0000000091%	Euro - Atlantic security structure: 0.0000000157%	Euro - Atlantic security structure: 0.0000000243%
Euro - Atlantic security framework: 0.0000000364%	Euro - Atlantic security framework: 0.0000000091%	Euro - Atlantic security framework: 0.0000000129%	Euro - Atlantic security framework: 0.0000000117%

Source: Authors’ compilation based on *Google Ngram Viewer* data

In order to detect the conceptual associations for “North-Atlantic” concept, we commanded the search on *Google Ngram Viewer* and found the subsequent top used association phrases during the 2000-2019 period: “North-Atlantic Treaty”, “North-Atlantic region”, “North-Atlantic Oscillation”, “North-Atlantic Ocean”, “North-Atlantic Alliance”, “North-Atlantic Council”, “North-Atlantic Expedition”.

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Figure 15. Relational analysis representation of the use of “North-Atlantic” concept (2000-2019)



Source: Authors’ compilation based on *Google Ngram Viewer* data

The research aim was to accomplish a relational analysis representation on the concept since 1950s, 1980s, 1990s and 2000s. Comparing the recorded frequencies, we have to mention that “North-Atlantic Treaty” scored highest in 2004 (0.0000000728%), “North-Atlantic region” in 2019 (0.000000260%), “North-Atlantic Alliance” in 2001 (0.0000001807%), “North-Atlantic Council” in 2001 (0.0000000474%).

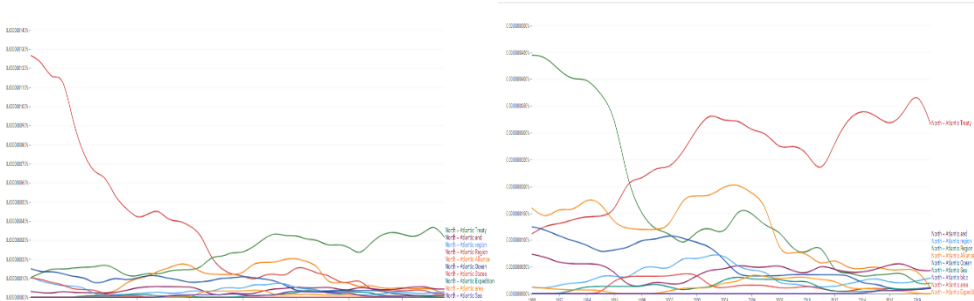
Figure 16. Comparing the apex for the use of “North-Atlantic”-related concepts

2001		2004		2019	
● North - Atlantic Alliance	0.0000001807%	● North - Atlantic Alliance	0.0000001310%	● North - Atlantic Alliance	0.000000120%
● North - Atlantic Region	0.0000000989%	● North - Atlantic Region	0.0000000864%	● North - Atlantic Region	0.000000197%
● North - Atlantic Treaty	0.0000000630%	● North - Atlantic Treaty	0.0000000728%	● North - Atlantic Treaty	0.0000000460%
● North - Atlantic Ocean	0.0000000217%	● North - Atlantic Ocean	0.0000000337%	● North - Atlantic Ocean	0.000000190%
● North - Atlantic Oscillation	0.0000000307%	● North - Atlantic Oscillation	0.0000000310%	● North - Atlantic Oscillation	0.0000000201%
● North - Atlantic region	0.0000000208%	● North - Atlantic region	0.0000000207%	● North - Atlantic region	0.0000000260%
● North - Atlantic Passive	0.0000000262%	● North - Atlantic Passive	0.0000000186%	● North - Atlantic Passive	0.0000000089%
● North - Atlantic Expedition	0.0000000279%	● North - Atlantic Expedition	0.0000000313%	● North - Atlantic Expedition	0.0000000068%
● North - Atlantic and	0.0000000153%	● North - Atlantic and	0.0000000216%	● North - Atlantic and	0.0000000196%
● North - Atlantic Council	0.0000000474%	● North - Atlantic Council	0.0000000392%	● North - Atlantic Council	0.000000081%

Source: Authors’ compilation based on *Google Ngram Viewer* data

The representation changes for the conceptual association moving backwards since the 1980s and 1990s, thus we have to consider “North-Atlantic region”, “North-Atlantic Alliance”, “North-Atlantic Ocean”, “North-Atlantic Sea”, “North-Atlantic bloc”, “North-Atlantic area”, “North-Atlantic expedition” and “North-Atlantic states”.

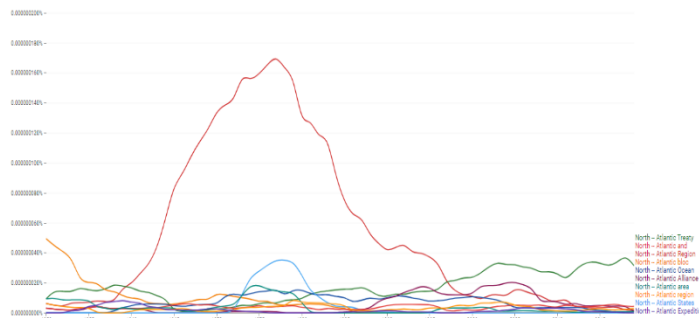
Figure 17. Relational analysis representation of the use of “North-Atlantic” concept since the 1980s and 1990s



Source: Authors’ compilation based on *Google Ngram Viewer* data

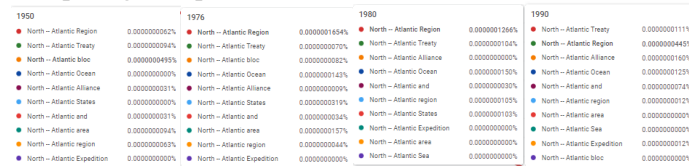
Analyzing the line plot since 1950, we noticed the trends for the conceptual associations which peaked in 1976: “North-Atlantic region” (0.0000001654%) and in 1990: “North-Atlantic Treaty” (0.0000000111%).

Figure 18. Relational analysis representation of the use of “North-Atlantic” concept since 1950



Source: Authors’ compilation based on Google Ngram Viewer data

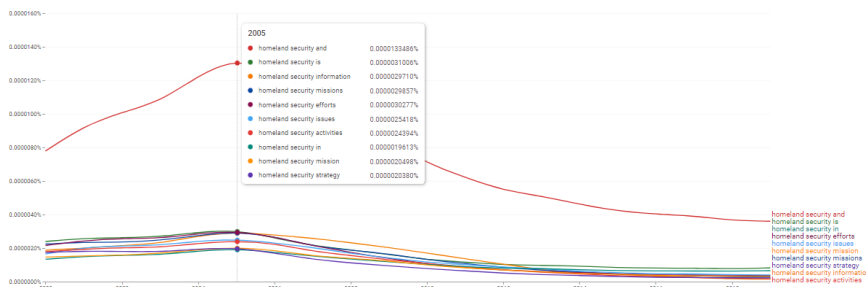
Figure 19. Comparing the apex for the use of “North-Atlantic” and NOUN concepts



Source: Authors’ compilation based on Google Ngram Viewer data

As regards the frequencies for the “North-Atlantic” and noun associations, we have to note the value registered by the syntagm “North-Atlantic region” in 1976 (0.0000001654%), while “North-Atlantic Treaty” scored increasingly higher values following 1990.

Figure 20. Conceptual association “homeland security”

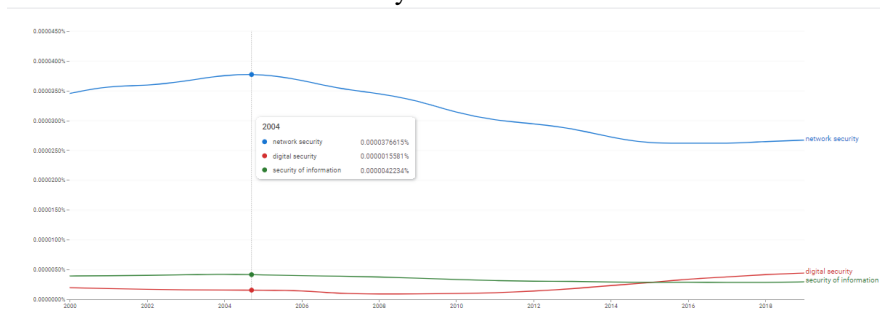


Source: Authors’ compilation based on Google Ngram Viewer data

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Moreover, our interested was directed towards the syntagms resulting by joining the concept of “homeland security”, thus we discovered the apex in 2005: “homeland security information” (0.000002971%), “homeland security missions” (0.0000029857%), “homeland security efforts” (0.0000030277%), “homeland security issues” (0.0000025418%), “homeland security activities (0.0000024394%), “homeland security strategy” (0.0000020380%).

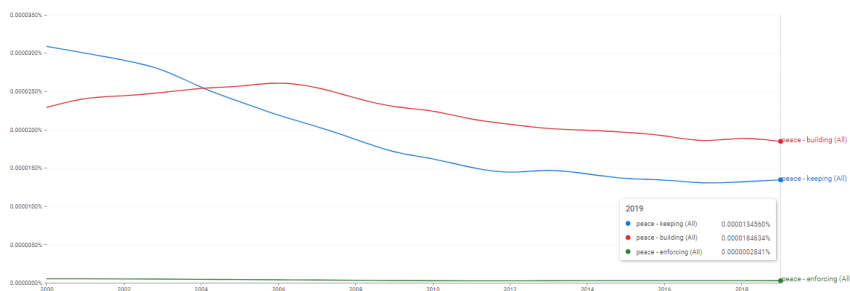
Figure 21. Trends in conceptual usage for “network security”, “digital security”, “security of information”



Source: Authors’ compilation based on Google Ngram Viewer data

Next, we were interested in identifying and assessing the values of the associations in the sphere of IT&C security, thus we found the peak in 2004 for “network security” (0.0000376615%), “digital security” (0.0000015581%) and “security of information” (0.0000042234%).

Figure 22. Trends in conceptual usage for “peace-keeping”, “peace-building”, “peace-enforcing”



Source: Authors’ compilation based on Google Ngram Viewer data

Our final enquiry reached for the associations around the concept of “peace”, thus identifying the following phrases: “peace-keeping”, “peace-building” and “peace-enforcing”, with the apex in 2000 and 2006, respectively.

Conclusions

In conclusion, we can appreciate that the analysis revealed the trends in the use of the key concepts that associate "security" in the Euro-Atlantic area with other related concepts/topics that characterize the security environment of the last 20 years: homeland security, peacebuilding, peacekeeping, security breach and data security. In this

interpretation, the developments on the international scene, but also the main legislative changes in the European space-related to privacy and safety have led to an upward trend in the frequency of concepts associated with the security sphere. Moreover, the analysis, therefore, reveals a directly dependent correlation between (i) the *inputs* generated by international events and developments, international relations and the Euro-Atlantic partnership and the *outputs* provided by the perception and high frequency of use of terms mainly in those periods. Thus, the *input-output nexus* highlights trends and frequencies of using specific terms of the European and Euro-Atlantic security environment in direct dependence on the evolution of the main stages of integration and consolidation of the partnership and solidarity of NATO members.

Authors' Contributions:

The authors contributed equally to this work.

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