WELCOME TO THE WORLD WAR 3 (WWIII)

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Mario Arturo Ruiz Estrada
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THE WORLD WAR 3 (WWIII)

Mario Arturo Ruiz Estrada
Head
CLAS, University of Malaya, 50603 Kuala Lumpur, Malaysia
Email: marioruiz@um.edu.my
Tel: +006012-6850293
&
Full Professor
University of Economics and Human Sciences
Okopowa 59, 01-043 Warszawa, Poland
E-mail: m.ruizestrada@vizja.pl

Abstract

This research tries to present different possible scenarios of the World War III under different magnitudes of destruction with the interaction of n-opponents and m-geographical locations worldwide simultaneously. We are applying the World War III Impact Simulator (WW3-Simulator). The WW3-Simulator is able to assess the final impact of WWIII under the application of different levels of war escalations and intensities from a partial to a full war respectively. In our case, we have twelve possible WWIII armed conflicts areas with different opponents worldwide. We have the next twelve locations and opponents are followed by: (i) Europe vs. Russia (C_1); (ii) China vs. Taiwan (C_2); (iii) South Korea vs. North Korea (C_3); (iv) Pakistan vs. India (C_4); (v) Japan vs. China (C_5); (vi) Japan vs. North Korea (C_6); (vii) Greece vs. Turkey (C_7); (viii) Israel vs. Middle East (C_8); (ix) U.S. vs. China (C_9); (x) U.S. vs. Russia (C_{10}); (xi) U.S. vs. Russia Allies in Latin America (Cuba, Nicaragua, and Venezuela) (C_{11}); (xii) U.S. vs. Iran (C_{12}). We are using different levels of war destruction based on different magnitudes of military devastation to find the final economic damages. This research paper tries to do it several uses of maps and multidimensional graphs to evaluate the economic damage from WWIII. Lastly, this paper shows interesting final results according to WW3-Simulator in a single multidimensional graphical framework and different time frames.

Keywords
WWIII, U.S., EU, Russia, Ukraine, War, Economic Simulating, Economic Desgrowth
JEL Code
C60, Q48, R11

1. A Review of the Effects of War in the Economic Performance

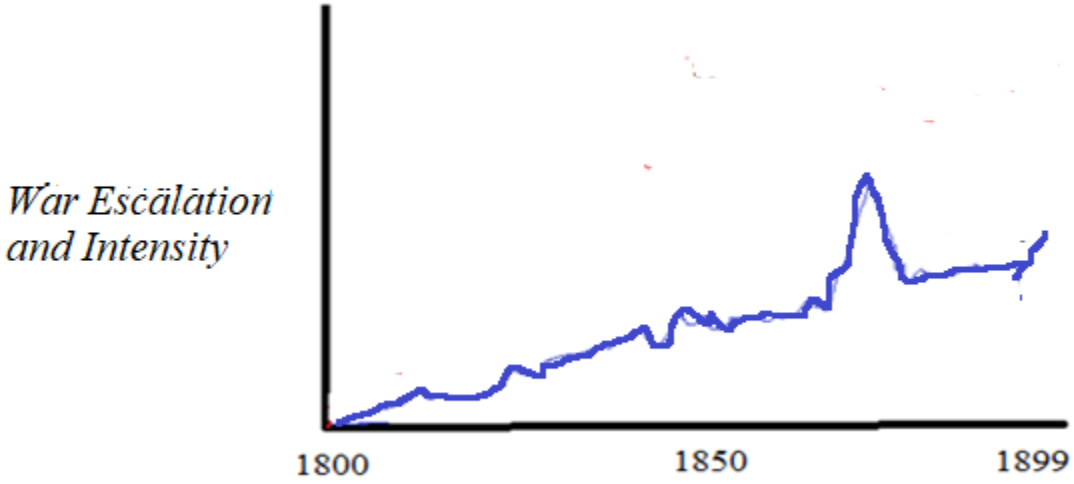
The document written by David Friedman (1984) represents the first manuscript to analyze the impact of war on the economy performance. This manuscript offers a clear explanation of the economic cost of war from a qualitative perspective. Additionally, the same document enumerates ten negative economic effects of war, including large international trade debts, high international debt in the balance of payments, faster currency depreciation, taxation difficulties, high military expending, and the world experiences a high inflation and unemployment, which can collectively generates a slowdown in the economic growth performance in the short term and medium run. In fact, the same document marks a first, valiant attempt to apply economics to analyze the relationship between war and economic growth. Another significant contribution of Friedman document is to extend the scope of analysis to not only the war itself, but also the pre-war negotiation and arbitration as well as a post-war armed conflict stage between winners versus losers.

Models of war economics are based largely on cost-benefit analysis, historical comparative data, correlations, and forecasting. In this connection, (Koubi, 2005) explained the differential effects of war on economic growth for both winners and losers respectively. Other notable research paper pertaining to war economics include (Murdoch and Sandler, 2002). (Organski and Kugler, 1977), (Organski and Kugler, 1980), (Rasler and Thompson, 1985). All these documents extend the theoretical framework and analysis of war damage from an economics perspective by using either exogenous or neoclassical models or endogenous models. Both variants of models are based on the analysis of key socio-economic variables such as saving propensity rates, destruction of natural resources and the combination of all production factors (capital, land, and labor), new development of technologies, management of the public finances, and the post war reconstruction budgets. According to (Barro and Lee, 1994), however, unconditional relation between war and economic growth contains limited information and results. For example, a lack of a relation does not necessarily imply that wars have no effect on economic performance if different war characteristics were associated with different economic scenarios, and the combination of the different conditional non-economic patterns netted each other out and led to a zero unconditional effect in the long run.

2. An General Review of the Different Wars Between Century 19th and Century 20th

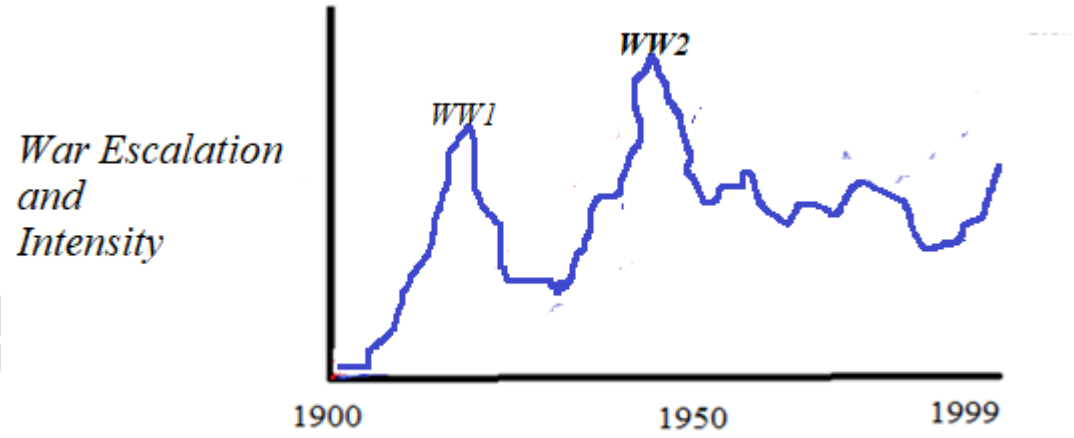
Different wars in the last two hundred years can show pro and cons economically. We evaluate in five continents different armed conflicts are followed by Africa, Asia, America, Europe, and Oceania. According to our results from the 19th century and 20th century, we can clearly observe the 20th century (Collier, 1999) was the most vulnerable century with different wars. Hence, the world becomes more vulnerable in the 20th century compared to the 19th Century. According to Figure 1 and Figure 2, it is possible to observe that different wars were expanded faster geometrically. In fact, the world in the 20th century was more vulnerable to get any time a war with a high magnitude of devastation. Therefore, we can observe that war is more dangerous and difficult to recover social and economically.

Fig. 1: Wars Worldwide Escalation and Intensifying the 19th Century



Source: CCAPS Research – Strauss Center, (2018), Mitchell, B.R., (1998), and Tufts University Libraries, (2018).

Fig. 2: Wars Escalations and Intensity Worldwide in the 20th Century



Source: CCAPS Research – Strauss Center, (2018), Mitchell, B.R., (1998), and Tufts University Libraries, (2018).

In the case of different wars in the 20th century, we have two world wars (first and second) is possible to get two of the largest wars that humanity suffering in the same century compared to 19th Century. Paradoxically, in the 19th century, the different wars was less in escalation and intensity. Both Wars left dramatic changes in the redistribution of the international trade volumes and the wealth accumulation and distribution amounts worldwide.

However, the economic leaking in the largest wars in the 20th century is several times higher than the 19th century. This large economic growth in the 20th century was originated from the WWI and WWII respectively. At the same time, the large economic leaking from war in the 20th century generates a large economic desgrowth from war (-δw) until arrive to -0.65. The large economic desgrowth from war (-δw) in the 20th century hits directly in the fast expansion of the total poverty growth rate (ΔP = 0,25) dramatically. It means that the expansion of poverty in the 20th century increase several times compared to the 19th century (ΔP = 0.07). Simultaneously, the large economic desgrowth from war (-δw) from the 20th century generates a high impact on the investment reconstruction growth rate (+I) that moves from the 19th century (+I = 0.26) to the 20th century (+I = 0.91) subsequently.

We are taking as the main reference for our analysis different wars in the 19th century and 20th century (see Table 1 and Table 2). The parameters for the war escalation and intensity is based on the magnitude of human lives casualties (more than 10,000 dead, missing, and injure people) and material (infrastructure damage by Km^2).

Table 1: The List of Wars in the 20th Century

1.	Unification of Saudi Arabia	1902-1932 (Middle East)
2.	Russo Japanese War	1904-1905 (Asia)
3.	Middle Eastern theatre of World War I	1914-1918 (Europe)
4.	Russo-Polish War	1919-1920 (Europe)
5.	Mexican Revolution	1911-1920 (America)
6.	Russian Civilian War	1918-1921 (Europe)
7.	First War world	1914-1918 (Europe)
8.	Riffian War	1921-1926 (Europe)
9.	Spanish Civil War	1936-1939 (Europe)
10.	Chinese Civilian War	1927-1937 (Asia)
11.	Second War World	1937-1945 (Worldwide)
12.	French Indochina War	1945-1954 (Asia)
13.	First Sudanese Civil War	1956-1972 (Africa)
14.	Chinese Civil War	1945-1949 (Asia)
15.	Korean War	1950-1953 (Asia)
16.	French-Algeria War	1954-1962 (Africa)
17.	Six Days War	1967-1967 (Asia)
18.	Biafran War	1967-1970 (Africa)
19.	Vietnam War	1964-1973 (Asia)
20.	Afghanistan War	1980-1989 (Asia)
21.	Iran and Iraq War	1980-1988 (Asia)

Source: CCAPS Research – Strauss Center, (2018), Mitchell, B.R., (1998) and Tufts University Libraries, (2018).

Table 2: The List of Wars in the 19th Century

1.	War of the Third Coalition	1803-1806 (Europe)
2.	War of the Fourth Coalition	1806-1807 (Europe)
3.	Anglo-Turkish War	1807-1809 (Europe)
4.	War of the Fifth Coalition	1809-1809 (Europe)
5.	The French invasion of Russia	1812-1812 (Europe)
6.	Russo-Persian War	1804-1813 (Asia)

7.	The War of the Sixth Coalition	1813-1814 (Europe)
8.	The Hundred Days	1815-1815 (Europe)
9.	Russo-Turkish War	1806–1812 (Asia)
10.	Peninsular War	1807-1814 (Europe)
11.	Anglo-Russian War	1807-1812 (Europe)
12.	French Revolution	1830-1830 (Europe)
13.	The Apache War	1849-1886 (America)
14.	The California Indian War	1850-1880 (America)
15.	The Crimean War	1853-1856 (Europe)
16.	The Second Opium War	1856-1860 (Asia)
17.	Second French Intervention in Mexico	1861-1867 (America)
18.	The Austro-Prussian War or Seven Weeks' War	1866-1866 (Europe)
19.	The Franco-Prussian War or Franco-German War	1870-1871 (Europe)
20.	The Japanese punitive expedition to Taiwan	1874-1874 (Asia)
21.	The Russo-Turkish War	1877–1878 (Asia)
22.	The First Sino-Japanese War	1894-1895 (Asia)
23.	The Japanese invasion of Taiwan	1895-1895 (Asia)
24.	The Spanish–American War	1898-1898 (America)

Source: CCAPS Research – Strauss Center, (2018), Mitchell, B.R., (1998), and Tufts University Libraries, (2018).

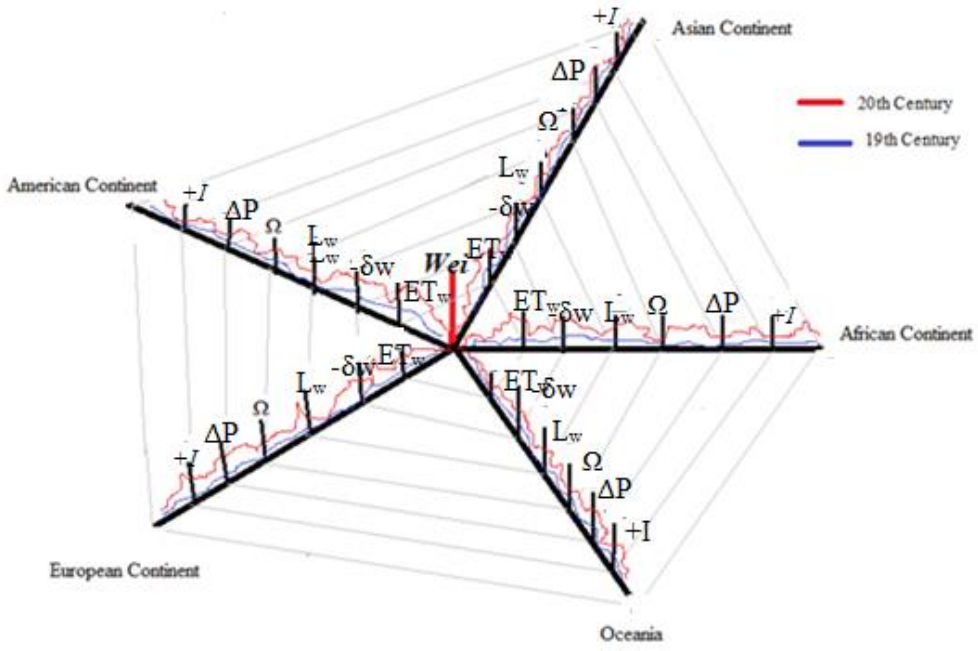
We can observe that the wars escalation and intensity (Wei) in the 20th century per continent was followed by Europe (Wei = 0.87), Asia (Wei = 0.35), America (Wei = 0.25), Africa (Wei = 0.35), and Oceania (Wei = 0.15). Same behavior also is observed in the 19th century with Europe on the top of the list and the rest of continents. The main reason of the higher Wei in the 20th century was originated from the fast expansion of economic and trade tensions in Europe ($ET_w = 0.92$) and the rest of continents (Asia $ET_w = 0.29$, America $ET_w = 0.17$, Africa $ET_w = 0.27$, and Oceania $ET_w = 0.12$). Accordingly, to our results found that the most common war issues by these five continents in the 20th century were natural resources, post-colonization, and corruption, foreign trade expansion, revolutions, and civilian wars. The different wars in the 19th and 20th Century shows that in the 20th century for every eight of ten wars are originated from economic reasons. In the case of Europe, this ratio is equal to (8:10) and the rest of the world keeps the next ratios (Africa 3:7, Asia 5:8, America 6:6, and Oceania 2:4).

The economic leaking from war ($L\varepsilon_w$) change dramatically in Europe from -0.37 (19th century) to -0.85 (20th century). The higher economic leaking from war (L_w) is originated from the war damage on the human capital and infrastructure. Similar situation with Asia ($L_w = -0.61$), America ($L_w = -0.35$), Oceania ($L_w = -0.22$), and Africa ($L_w = -0.31$). The large amounts of economic leaking from war (L_w) influence directly in the economic desgrowth from war ($-\delta w$) was followed by Europe ($-\delta w$=-0.95), Asia ($-\delta w$= -0.31), America ($-\delta w$=-0.15), Africa ($-\delta w$=-0.40), and Oceania ($-\delta w$=-0.12) respectively. The huge amounts of the economic desgrowth from war ($-\delta w$) have a high impact in the fast expansion of the total poverty growth rate (ΔP) around the world from the 19th century to the 20th century. In the case of Europe ΔP moves from 0.21 to 0.60,

Africa ΔP moves from 0.25 to 0.63, Asia ΔP expansion is from 0.40 to 0.60, in the case of America ΔP got a result from 0.11 to 0.25.

The faster expansion of poverty worldwide was globally in the 20th century compared to the 19th century. Moreover, the war investment reconstruction growth rate (+I) experience a considerable expansion especially in Europe (+I = 0.92) and Asia (+I = 0.50). Finally, the War graphical evaluator in five continents from the 19th century to the 20th century can show a large gap in the vulnerability and risk levels expansion between the 19th century and the 20th century. The constant and often appearance of War made the 20th century extremely vulnerable anytime and anywhere (See Figure 3).

Fig. 3: The Application of the War Graphical Evaluator in Five Continents from 19th Century to 20th Century



Source: CCAPS Research – Strauss Center, (2018), Mitchell, B.R., (1998), and Tufts University Libraries, (2018).

The idea about war always reminds us synonymous of destruction, damage, or losses. According to this research, any war is an inherent part of the human evolution (Stallings, 2006) from ancestral times until our days, because always a War is unpredictable and keep a constant chaotic behavior independently to the geographical area and time framework (Schenk, 2007). In addition, this research proposes an alternative definition of war. This research defines "War as any

social-economic-political convulsion that can generate invaluable human causalities and economic damages under different magnitudes of destruction." According to this research, any War can be classified in two large groups such as short War and longer War (Cuaresma, 2010).

The war is originated from rational or irrational human's actions (Nel and Righarts, 2008) through the figure of invasion, defense, revolution, domination, unification (Berrebi and Ostwald, 2013), religions conflicts, and terrorist, or any violent activity that can generate small or large damage(s) individually or collectively in the society. According to this research, each War show its special features such as level of damage, socio-economic challenges, and new political configuration respectively.

On the other hand, a War consists of any uncontrolled violence actions that can generate several numbers of human casualties and material losses with clear signs that can be alerted or predicted. Also, the War shows its special features such as unpredicted, chaotic, vulnerable, cyclical, and costly. At the same time, we can observe that both types of Wars such as short and long War is showing different magnitudes of destruction under the quantification of human causalities and fixed amounts of material losses (Narayanan et al., 2016) subsequently.

This research proposes that the evaluation of any war needs to be quantified its magnitude of destruction into different historical periods to understand deeply the negative impact of armed conflicts on the society as a whole (Albala-Bertrand, 2000). We are considering to evaluate only two centuries from the 19th century to the 20th century respectively. The main reason to choose only two centuries are first, the large database is able to run our simulator, Second, it is because we are focusing our full attention on these two convulsed and unstable centuries at the African continent, the American continent, the Asian continent, the European continent, and Oceania simultaneously.

Additionally, the evaluation of any war can show different levels of vulnerability, the magnitude of destruction, and reconstruction time frameworks according to this research. The evaluation of war is followed by the construction of a large database of human causalities (number of death, missing, and injure people), material losses (losses by Km^2), and its reconstruction process (time framework).

It is our belief that this research will contribute significantly towards a more systematic and accurate measurement of the final impact of any war (Hanson, 2005) from the human and economic losses until we can measure the reconstruction process of any country or region. While most research studies on war have had their focus in only the historical approach (Hayes, 2005); this study, however, examines also it in the context of war and its final impact globally as the reference.

3. An Introduction to the WW3-Simulator

The primary objective of this paper is to set forth a model - the Third World War Impact Simulator (WW3-Simulator) – to evaluate an economy in times of war economics. We hope that our model can fill up the gap in the economic modeling literature – i.e. modeling a wartime economy. The WW3-Simulator assesses the economic damage of a war in nine different indicators: (i) the total level of WW3 tension (ΔT) under the calculation of the level of WW3 tension first level ($\Delta T1_j$) and the level of WW3 tension second level ($\Delta T2_k$); (ii) the harmonize WW3 diplomatic strategy (S_+) under the analysis of different level of WW3 diplomatic strategies set (S_n); (iii) the size of army for WW3 (A_k), (iv) losses from WW3 ($-L_o$), (v) economic leaking from WW3 (-L), (vi) economic desgrowth from WW3 ($-\delta w$) together; (vii) the post-WW3 economic damage (-D); (viii) the post-WW3 reconstruction plan (R_t); (ix) the Mega-Disk Networks Analysis (Ruiz Estrada, 2017). The methodology and approach used in the *WW3-Simulator* applies different elements from an alternative mathematical multidimensional graphical model framework under the application of Econographicology (Ruiz Estrada, 2017). To illustrate and illuminate the W*W3-Simulator*, we apply the simulator to an potential high intensity war between n-countries in different regions. We believe that this research makes a significant contribution to a more systematic, analytical and accurate measurement of the economic impact of war.

An important value-added of the WW3-Simulator, in the context of contributing to a more precise understanding of war, is that it accounts for the uncertainty and chaos behavioral change inherent in war. The model does so within the assumptions of Omnia Mobilis assumption (Ruiz Estrada, 2011) and Dynamic Imbalanced State (DIS) (Ruiz Estrada and Yap, 2013). The idea is to move beyond classical economic models to a new economic multidimensional mathematical modeling and mapping of war impact - e.g. ex-ante (before war) versus ex-post (after war) – by utilizing high resolution multidimensional graphs and a new mathematical framework. This alternative simulator can yield relevant results which can improve and strengthen the measurement of economic effects of war.

In this section, we derive the WW3-Simulator, which can be classified into nine indicators (i) the total level of WW3 tension (ΔT) under the calculation of the level of WW3 tension first level ($\Delta T1_j$) and the level of WW3 tension second level ($\Delta T2_k$); (ii) the harmonize WW3 diplomatic strategy (S_+) under the analysis of different level of war diplomatic strategies set (S_n); (iii) the size of army for WW3 (A_k), (iv) losses from WW3 (-Lo), (v) economic leaking from WW3 (-L), (vi) economic desgrowth from WW3 ($-\delta w$) together; (vii) the post-WW3 economic damage (-D); (viii) the post-WW3 reconstruction plan (R_t); (ix) the Mega-Disk Networks Analysis. The WW3-Simulator uses many different groups of countries. The different possible first group of opponents are the main war conflict opponents Ot_i where i = (1, 2,…,12), we have a set of twelve

confrontations (with two opponents in different regions globally) followed by (i) Europe vs. Russia; (ii) China vs. Taiwan; (iii) South Korea vs. North Korea; (iv) Pakistan vs. India; (v) Japan vs. China; (vi) Japan vs. North Korea; (vii) Greece vs. Turkey; (viii) Israel vs. Middle East; (ix) U.S. vs. China; (x) United States vs. Russia; (xi) United States vs. Russia Allies in Latin America (Cuba, Nicaragua, and Venezuela); (xii) U.S. vs. Iran.

i. The Total Level of WW3 Tension (ΔT)

To evaluate the total level of WW3 tension (ΔT) request to find the level of WW3 tension first level ($\Delta T1_j$) and the level of WW3 tension second level ($\Delta T2_k$). The level of WW3 tension first level ($\Delta T1_j$) is based on the calculation of the historical armed confrontation trend growth rate (Ct_i) that is a single indicator that is based to evaluate the performance between the last period of analysis (last year = t-1) and the present period of analysis (present year t+1) of armed confrontations constantly (See Expression 1 and 2). The main objective is to evaluate how much is the level of WW3 tension first level ($\Delta T1_j$) between two opponents are increasing and decreasing. Therefore, we have that the Ct_i is in function of the total sum of armed confrontations in the present year (t+1) divided by the total sum of armed confrontations from last year (t-1). Hence, this final results is divided by the total years in analysis (n) multiply by hundred percent (See Expression 3).

$$\Delta Ct_i = f(Ct_{(t+1)}, Ct_{(t-1)}) \quad \text{where } I = \{0, 1, 2, \ldots, \infty\} \quad (1)$$

$$\Delta Ct_i = [\partial \sum C_{(t+1)} - \partial \sum \Delta C_{(t-1)} / \partial \sum \Delta C_{(t-1)}] \times 100\% \quad (2)$$

In fact, we build $\Delta T1$ original equation is equal to the total sum of $\sum \Delta Ct_i$ is divided by the total years in analysis (n) multiply by hundred percent (See Expression 3)

$$\Delta T1_j = \sum_{i=0}^{\infty} (\Delta Ct_i)/n \times 100\% \quad n \neq 0 \quad (3)$$

Hence, the following measure is to compute the minimum and maximum the level of WW3 tension first level ($\Delta T1_j$) through the application of the first derivative according to (See Expression 4) and (See Expression 5).

$$f'(\Delta T1_j) = \sum[(\partial \Delta T1_0/\partial \Delta Ct_0) + \ldots + (\partial \Delta T1_\infty/\partial \Delta Ct_\infty)..] \Rightarrow j = \{0, 1, 2, \ldots, \infty\} \quad (4)$$

$$f'(\Delta T1_j) = \sum(\lim_{\Delta Ct_0 \to 0} \Delta T1_0/\partial \Delta Ct_0) + \ldots + (\lim_{\Delta Ct_\infty \to \infty} \Delta T1_\infty/\Delta Ct_\infty) \quad (5)$$

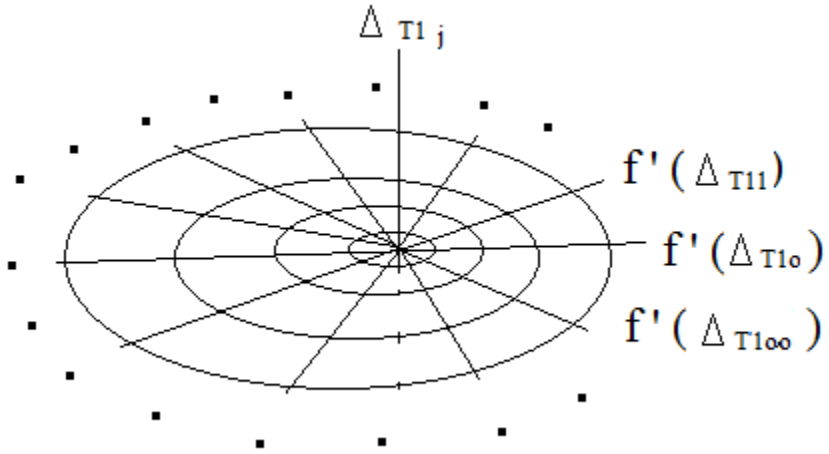
Moreover, the level of war tension first level ($\Delta T1_j$) applies a second derivative to find the inflection point according to (See Expression 6).

$$f''(\Delta T1_j) = (\partial^2 \Delta T1_0 / \partial^2 \Delta Ct_0) + \ldots + (\partial^2 \Delta T1_\infty / \partial^2 \Delta Ct_\infty) \quad (6)$$

Each circumference in the bottom part of the coordinate system for $\Delta T1_j$ is going to be plotted the final result from $f'(\Delta T1_0)$ to $f'(\Delta T1_\infty)$ final results. Therefore, $\Delta T1$ is equal to the total $\sum[f'(\Delta T1_0) \ldots f'(\Delta T1_\infty)]$ divided by the total of years in analysis ($n = 0.\ 1, \ldots, \infty$). In this case, we need to joint ($\fatslash\!\!\!\fatslash$) from $f'(\Delta T1_0)$ to $f'(\Delta T1_\infty)$ with the final $\Delta T1_j$ according to Fig. 4. Finally, the level of WW3 tension first level ($\Delta T1_j$) is represented in Expression 7.

$$\Delta T1_j = [f'(\Delta T1_0) \fatslash\!\!\!\fatslash \ldots \fatslash\!\!\!\fatslash f'(\Delta T1_\infty)] / n \times 100\% \quad (7)$$

Fig. 4.



The level of WW3 tension second level ($\Delta T2_k$) assumes also that there are four root factors of war: (i) historical events growth rate ($\Delta H = 0, 1, \ldots, \infty$); (ii) economic expansion growth rate ($\Delta E = 0, 1, \ldots, \infty$); (iii) race and religious conflicts events growth rate ($\Delta R = 0, 1, \ldots, \infty$); and (iv) the military expansion events growth rate ($\Delta M = 0, 1, \ldots, \infty$). These four factors directly affect "the level of WW3 tension second level ($\Delta T2_k$)", which is a function of four variables as in (See Expression 8).

$$\Delta T2_k = f(\Delta H, \Delta E, \Delta R, \Delta M) \quad (8)$$

So, the following measure is to compute the minimum and maximum the level of WW3 tension second level ($\Delta T2_k$) where the factor time is moving always $n = \{0, 1, 2, \ldots, \infty\}$ through the application of the first derivative according to (See Expression 9) and (See Expression 10).

$$f'(\Delta T2_k) = \sum[(\partial\Delta T2_k/\partial\Delta H) + (\partial\Delta T2_k/\partial\Delta E) + (\partial\Delta T2_k/\partial\Delta R) + (\partial\Delta T2_k/\partial\Delta M)] \quad (9)$$

$$f'(\Delta T2_k) = [(\lim_{\Delta H\to 0} \Delta T2_k/\Delta H) + (\lim_{\Delta E\to 0} \Delta T2_k/\Delta E) + (\lim_{\Delta R\to 0} \Delta T2_k/\Delta R) + (\lim_{\Delta M\to 0} \Delta T2_k/\Delta M)] \quad (10)$$

Hence, we find the final level of WW3 tension second level ($\Delta T2_k$) according to Expression 11.

$$\Delta T2_k = \sum_{K=0}^{\infty}[f'(\Delta T2_k)] / n \times 100\% \quad \text{where } k = \{0, 1, 2, \dots, \infty\} \quad (11)$$

Moreover, the level of WW3 tension second level ($\Delta T2_k$) applies a second derivative to find the inflection point according to (See Expression 12).

$$f''(\Delta T2_k) = (\partial^2\Delta T2_k/\partial\Delta H^2) + (\partial^2\Delta T2_k/\partial\Delta E^2) + (\partial^2\Delta T2_k/\partial\Delta R^2) + (\partial^2\Delta T2_k/\partial\Delta M^2) \quad (12)$$

To probe the level of WW3 tension first level ($\Delta T1_j$) we apply the Jacobian single vector under the first-order derivatives (See Expression 13).

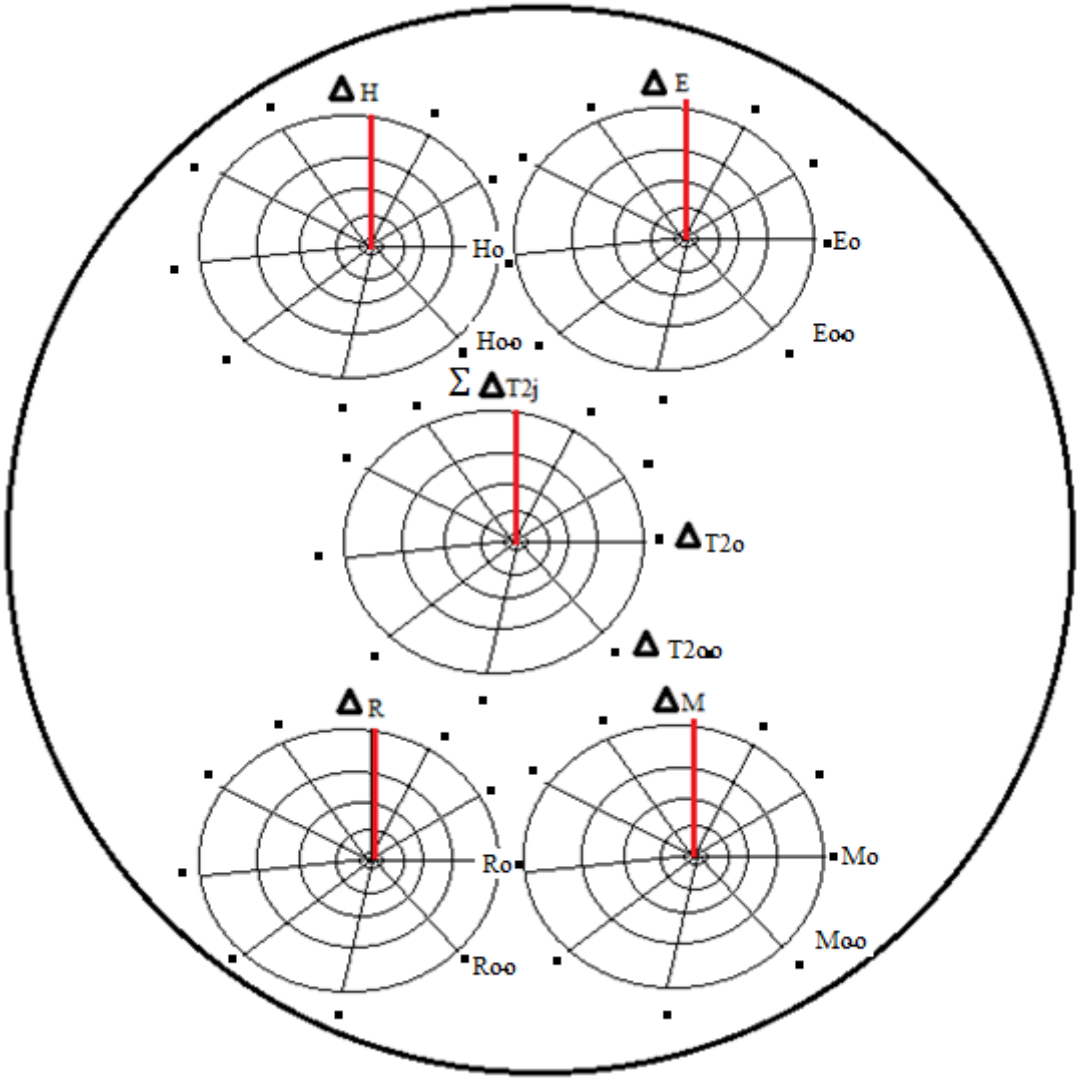
$$\Delta T1_j\,|J'| = (\partial T1_0/\partial Ct_{(t+1)0}/\,(\partial T1_0/\partial C_{(t-1)0} \dots \partial T1_\infty/\partial Ct_{(t+1)\infty}/\,(\partial T1_\infty/\partial C_{(t-1)\infty}) \quad (13)$$

On the other hand, the application of the Jacobian determinants under the first-order derivatives in the level of WW3 tension second level ($\Delta T2_k$) between Country-1 (C_1) ∧ Country-2 (C_2) (See Expression 14).

$$\sum\Delta T2_k\,|J'| = \begin{pmatrix} \partial T2_0/\partial\Delta H_0 & \sum\partial T2_0/\partial\Delta E_0 \\ \partial T2_0/\partial\Delta R_0 & \sum\partial T2_3/\partial\Delta M_0 \end{pmatrix} \dots \begin{pmatrix} \partial T2_\infty/\partial\Delta H_\infty & \sum\partial T2_\infty/\partial\Delta E_\infty \\ \partial T2_\infty/\partial\Delta R_\infty & \sum\partial T2_\infty/\partial\Delta M_\infty \end{pmatrix} \quad (14)$$

From a graphical point of view, we have a sub-mega disk that is follow by five sub-disks that firstly we fixed in the center Nano-disk that is called $\sum\Delta T2_k$ and four more Nano-disks such as ΔH, ΔE, ΔR, ΔM (See Figure 5).

Fig. 5

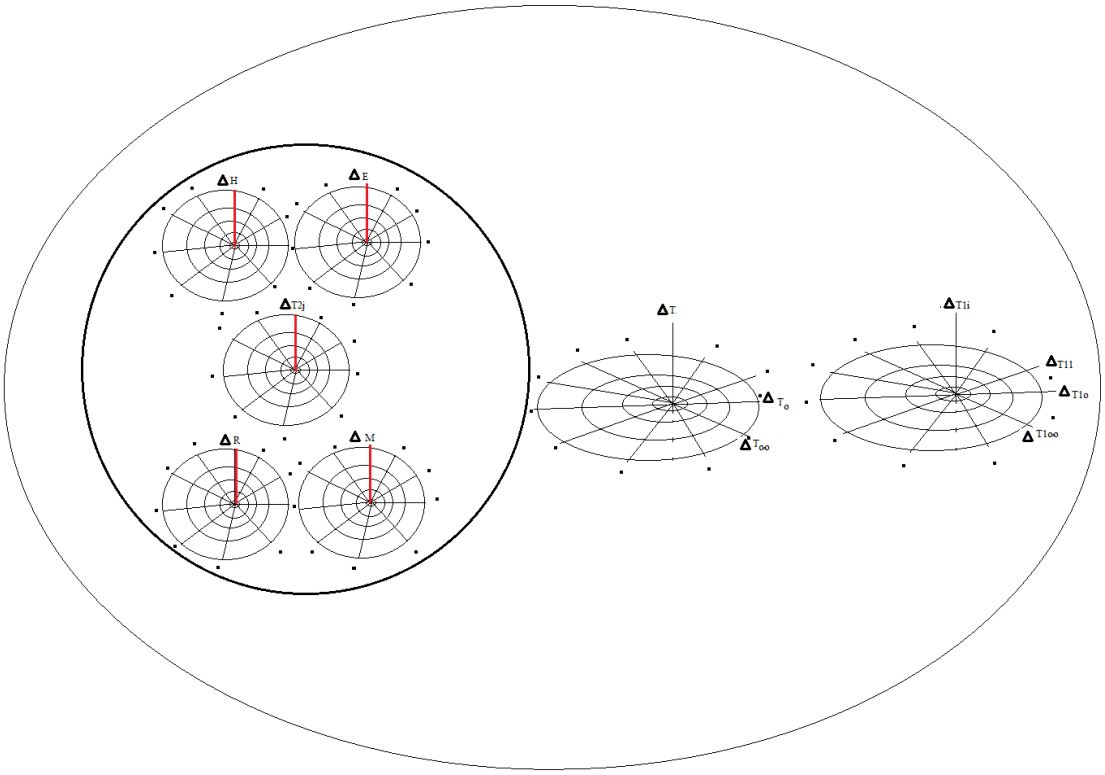


Finally, we can calculate the total level of WW3 tension (ΔT) that is expressed in equation 15.

$$\Delta T = \sqrt{[|J^{'}|\,\Delta T1]x[|J^{'}|\,\sum \Delta T2\,]} \qquad (15)$$

From a graphical view we build the first general disk that include the calculations of $\Delta T1_j$ and $\Delta T2_k$ and in the central part is located the final result of ΔT in this specific disk or first sub-general-disk of analysis (See Figure 6).

Figure 6.



In our case, we are evaluating the total level of WW3 tension (ΔT) between Opponent-1 (O_1) ∧ Opponent-2 (O_2) in a period of time between (t+a) ∧ (t-1).

ii. The Harmonized WW3 Diplomatic Strategy (S_+) = 0

Consequently, initial war is necessary to assume that the total level of WW3 tension (ΔT) is going to determine a harmonized war diplomatic strategy (S_+) and the different level WW3 diplomatic strategies set (S_n) in the form of S-Powerful Nations, S-National, S-Supranational, and S-Regional. In this part of the *WW3-Simulator* if the total level of WW3 tension (ΔT) is escalating then the different level war diplomatic strategies set (S_n) is going to be more intensive until all possibilities to secure peace between the two opponents in conflict are exhausted until find the harmonized WW3 diplomatic strategy (S_+) = 0. Hence, the different level war diplomatic strategies set (S_n) and the harmonized WW3 diplomatic strategy (S_+) depends directly on the total level of WW3 tension (ΔT) in the short run. In the case of the WW3 all supranational, multilateral, and bilateral negotiations fail until we have zero negotiation or agreement to stop the war.

Fig. 7

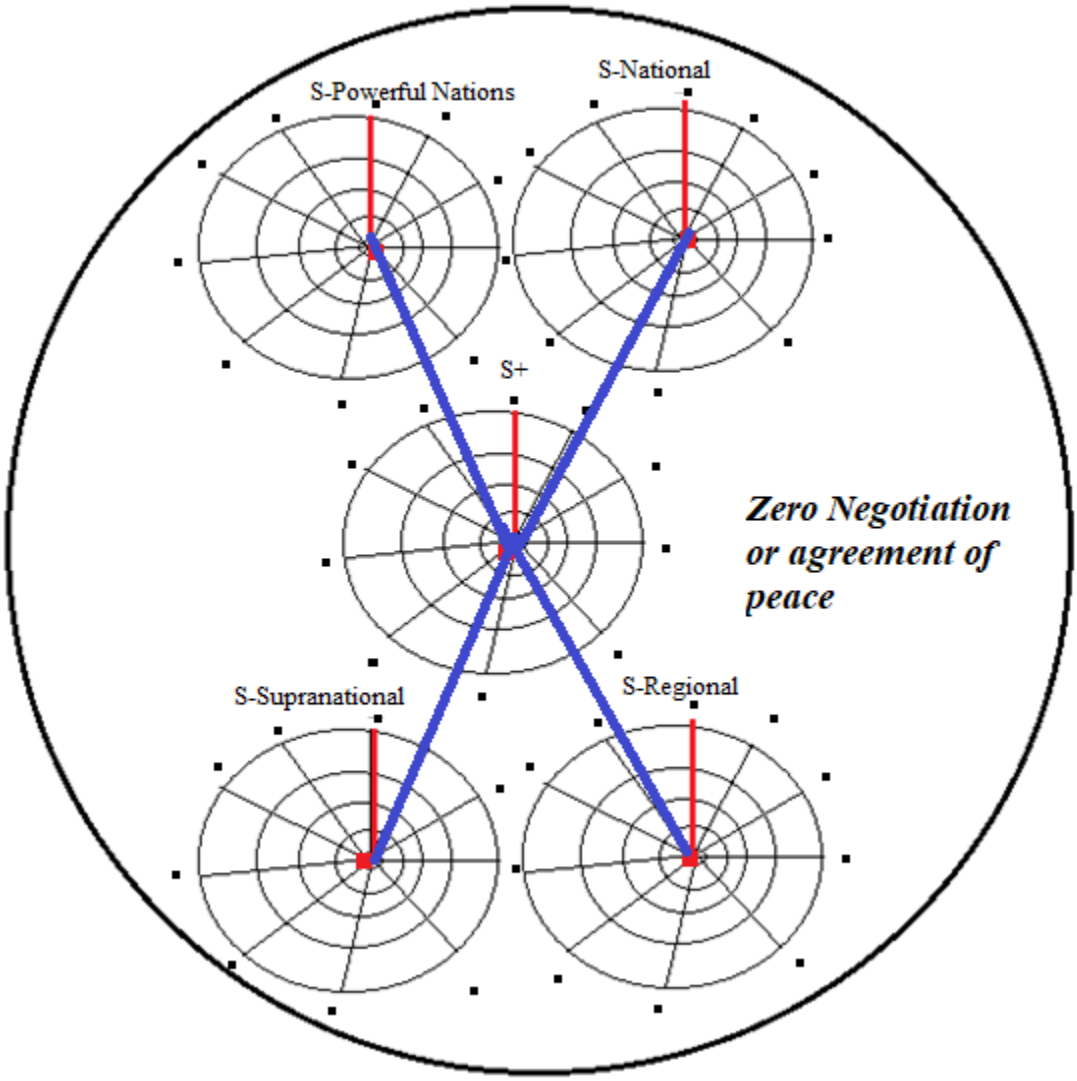


Figure 7 shows the relationship between the harmonized war diplomatic strategy (S_+) and the different level WW3 diplomatic strategies set (S_n). The relationship is in different logarithmic calculations in different levels of analysis in the N-dimensional Cartesian plane (See Expression 16). S-Powerful Nations, S-National, S-Supranational, and S-Regional together may play a crucial role in the different level WW3 diplomatic strategies set (S_n) = 0. If the total level of WW3 tension (ΔT) rises, then the different level WW3 diplomatic strategies set (S_n) = 0 will play an important role in reducing WW3 tension between the two opponents under the creation of the harmonized WW3 diplomatic strategy (S_+). Figure 7 represents the second general disk of analysis

$$S_+ = S_+ \log_n (S_n) = 0 \Rightarrow \{S_n / S_n : \text{S-Powerful Nations} = 0 \cap \text{S-National} = 0 \cap \text{S-Supranational} = 0 \cap \text{S-Regional} = 0\} \quad (16)$$

iii. The Simulation of a Possible Large Scale WWIII

The WW3 stage consists of two stages – (iii.a) Economic Desgrowth from WW3 (-δw), (iii.b) Losses of WW3 (-Lo) and (iii.c) effective WW3 stage.

iii.a. Economic Desgrowth from WW3 (-δw)

In this section, we discuss the concept of economic desgrowth from WW3 (-δw), which plays an essential role in the construction of the *WW3-Simulator*. The main objective of inclusion of "economic desgrowth from WW3 (-δw)" is to create an alternative economic indicator that can help us to analyze how controlled and non-controlled shocks can war affect worldwide GDP in real prices at the short run. Economic desgrowth from WW3 (-δw) is delineated as "an indicator that can show different leakages, originated from WW3 that can bear on the execution of the final worldwide GDP formation in real prices into a period of one year." The WW3-Simulator assumes that any war is perpetually in a province of permanent chaos and subject to different degrees of exposure according to different magnitudes of irregularities. This is because we assume at the outset that WW3 is in permanent chaos. At the same time, the *WW3-Simulator* assumes that economic desgrowth from WW3 (-δw) has a substantial connection of total economic leaking from WW3 (-L).

The total worldwide economic leaking (-L) is based on nine sub-factors: (i) ΔF_{11} is equal to β_{11} (active population between 15 and 65 years old) to the power of -α (unemployment growth rate); (ii) ΔF_{12} is equal to β_{12} (total capital formation) to the power of -β (capital formation from foreign firms); (iii) ΔF_{13} is equal to β_{13} (natural resources supply in Km^2) to the power of -λ (land demand annually for agriculture in Km^2); (iv) ΔF_{21} is equal to β_{21} (technology imports volume) to the power of -Φ (demand of technology growth rate); (v) ΔF_{22} is equal to β_{22} (national budget) to the power of -ζ (armed forces spending growth rate); (vi) ΔF_{23} is equal to β_{23} (government income tax) to the power of -Ω (corruption growth rate); (vii) ΔF_{31} is equal to β_{31} (total population) to the power of -Ξ (growth rate of poverty); (viii) ΔF_{32} is equal to β_{32} (national budget) to the power of -η (international debts payments ratio); (ix) ΔF_{33} is equal to β_{33} (international reserves in US$) to the power of -ω (exchange rate depreciation). The final measurement of total economic leaking from WW3 (-L) is derived by applying a large number of multi-dimensional partial derivatives on each factor (9 factors) to evaluate the changes of each factor between the present time (this year = t+1) and the past time (last year = t-1) (See Expression 17).

$$\Delta F_{mxn} = \sum(\partial \beta_{mxn}{}^{\varepsilon_{(t+1)}} / \partial \beta_{mxn}{}^{\varepsilon_{(t-1)}}) \quad m = \{1, \ldots, \infty\} \vee n = \{1, \ldots, \infty\} \wedge t = \{1, \ldots, \infty\} \qquad (17)$$

Next step is to verify each exponential factor (See Expression 18).

$$(\Delta F_{mxn}{}^{\varepsilon-1}{}_{(t-1)} \ldots . \Delta F_{mxn}{}^{\varepsilon-1}{}_{(t-1)}) \qquad (18)$$

Where the exponent $\beta_{mxn}{}^{\varepsilon}$ can be replaced by any of the nine different exponents (ε) in Expression 19.

$$\beta_{mxn}{}^{\varepsilon} = (-\alpha, -\beta, -\lambda, -\Phi, -\zeta,, -\Omega, -\Xi, -\eta, -\omega) \qquad (19)$$

Initial conditions ex-ante (See Expression 20).

$$\alpha \mid_{t-1=0} = 0, \beta \mid_{t-1=0} = 0, \lambda \mid_{t-1=0} = 0, \Phi \mid_{t-1=0} = 0, \zeta \mid_{t-1=0} = 0, \Omega \mid_{t-1=0} = 0, \Xi \mid_{t-1=0} = 0, \eta \mid_{t-1=0} = 0, \omega \mid_{t-1=0} = 0 \qquad (20)$$

Final conditions ex-post (See Expression 21).

$$\alpha \mid_{t+1=\infty} = \infty, \beta \mid_{t+1=\infty} = \infty, \lambda \mid_{t+1=\infty} = \infty, \Phi \mid_{t+1=\infty} = \infty, \zeta \mid_{t+1=\infty} = \infty, \Omega \mid_{t+1=\infty} = \infty, \Xi \mid_{t+1=\infty} = \infty, -\eta \mid_{t+1=\infty} = \infty, -\omega \mid_{t+1=\infty} = \infty = \infty \qquad (21)$$

Next step in this part of the *WW3-Simulator* need to run nine partial derivatives simultaneously to evaluate all possible changes in each economic leaking from WW3 in a fixed period of time (one year) according to Expression 22.

$$\Delta F_{mxn} = [(n\beta_{mxn}{}^{n-1}{}_{(t+1)}/n-1)/n\beta_{mxn}{}^{n-1}{}_{(t-1)}/n-1] \qquad (22)$$

The next step in the calculation of total economic leaking from WW3 (-L) is to calculate the denominator by applying the Jacobian determinant under the first-order derivatives. At the same time, we apply an inverse matrix (See Expression 23).

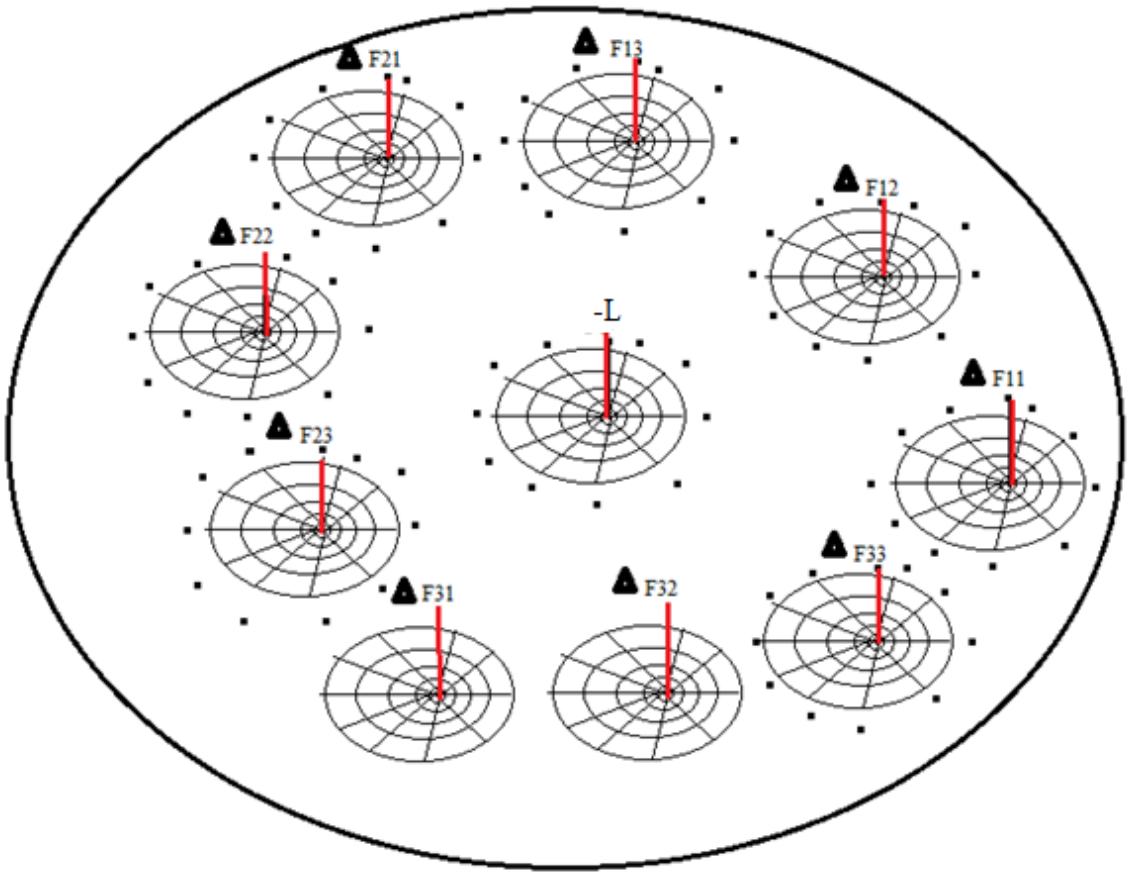
$$\Delta^{-1} = \begin{pmatrix} \Delta F_{11} & \Delta F_{12} & \Delta F_{13} \\ \Delta F_{21} & \Delta F_{22} & \Delta F_{23} \\ \Delta F_{31} & \Delta F_{32} & \Delta F_{33} \end{pmatrix} \qquad (23)$$

The final step is to determine the total economic leaking from WW3 (-Ψ) by dividing 1 by the inverse matrix from expression 23 to the power of 2 in Expression 24.

$$-L = 1/(\Delta^{-1})^2 \qquad (24)$$

In the case of the total economic leaking from WW3 (-L) graphical mapping shows a disk builder by nine Nano-disks around of a single Nano-disk that represents –L see Figure 8.

Fig. 8



Lastly, it is possible to calculate economic desgrowth from WW3 (-δw) as in (25)

$$-\delta w = [GDP_{fmp} \times (-L)] \Rightarrow 0 \geq -\delta w \leq 1 \quad (25)$$

The computation of economic desgrowth from war (-δw) is based on the full maximum potential worldwide GDP in real prices (GDP_{fmp}) and total economic leaking from WW3 (-L) from (24). This part of the WW3-Simulator reminds us that total economic leaking from WW3 (-L) always affects economic desgrowth from WW3 (-δw) behavior according to Figure 6.

Boundary conditions for economic desgrowth from WW3 (-δw) is equal to Expression 26.

$$-\delta w = \sum[\partial \delta w'_0/\partial -L_0 \mid_{t=0} = 0,\ \partial \delta w'_1/\partial -L_1 \mid_{t=1} = 1,\ \partial \delta'_2/\partial -L_2 \mid_{t=2} = 2,\ldots,\ \partial \delta w'_\infty/\partial -L_\infty \mid_{t=\infty} = \infty\ ] \quad (26)$$

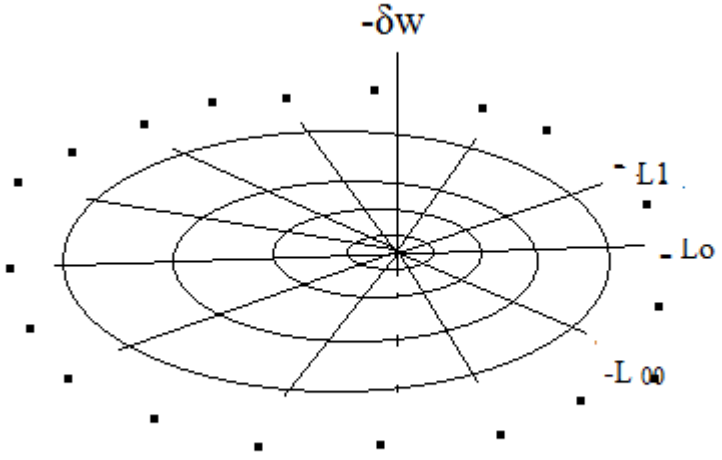
On the other hand, the full maximum potential worldwide GDP (GDP_{fmp}) function is shown in Expression 24 that we assume the full maximum uses of labor, land, capital, and technology without any boundary according to the higher GDP that this country experience in the past together with a lower inflation rate. It is to keep an ideal full maximum potential worldwide GDP to calculate the final –δw.

$$GDP_{fmp} = f(\Delta Labor_{full\text{-}max\text{-}pot.},\ \Delta Land_{full\text{-}max\text{-}pot.},\ \Delta Capital_{full\text{-}max\text{-}pot.},\ \Delta Terchnology_{full\text{-}max\text{-}pot.}) \neq 0 \quad (27)$$

The modeling of economic desgrowth from WW3 (-δw) is based on the application of the Omnia Mobilis assumption of Ruiz Estrada (2011) and (Ruiz Estrada & Park, 2018) to generate the relaxation of the total economic leaking from WW3 (-L) calculation (non-controlled events) and GDP_{fmp} (See Expression 27). In figure 6 is a single sub-general-disk that we can observe that the final –δw is directly connected to the total economic leaking from WW3 (-L) in the war time.

$$-\delta w = \sum[\partial \delta w'_0/\partial -L_0,\ \partial \delta w'_1/\partial -L_1,\ \partial \delta'_2/\partial -L_2,\ldots,\ \partial \delta w'_\infty/\partial -L_\infty]/n \quad (28)$$

Fig.9



iii.b. Losses of WW3 ($-L_o$)

The losses of WW3 ($-L_o$) is based on the expression 29. We are assuming that $-L_{0Lab}$, $-L_{oK}$, $-L_{oLand}$, $-L_{oTech}$ never can be equal to zero because in our model the full destruction is not possible from past experience such as WWI and WWII.

$$-Lo = f(-Lo_{Lab}, -Lo_{K}, -Lo_{Land}, -Lo_{Tech}) \neq 0 \quad (29)$$

The losses of war depend on four sub-variables such as ($-L_oLab$, $-L_oK$, $-L_oLand$, $-L_oTech$). In this part of the simulator is necessary to calculate the maximum losses based on the application of the first derivative under different periods of time according to expression 30 and 31.

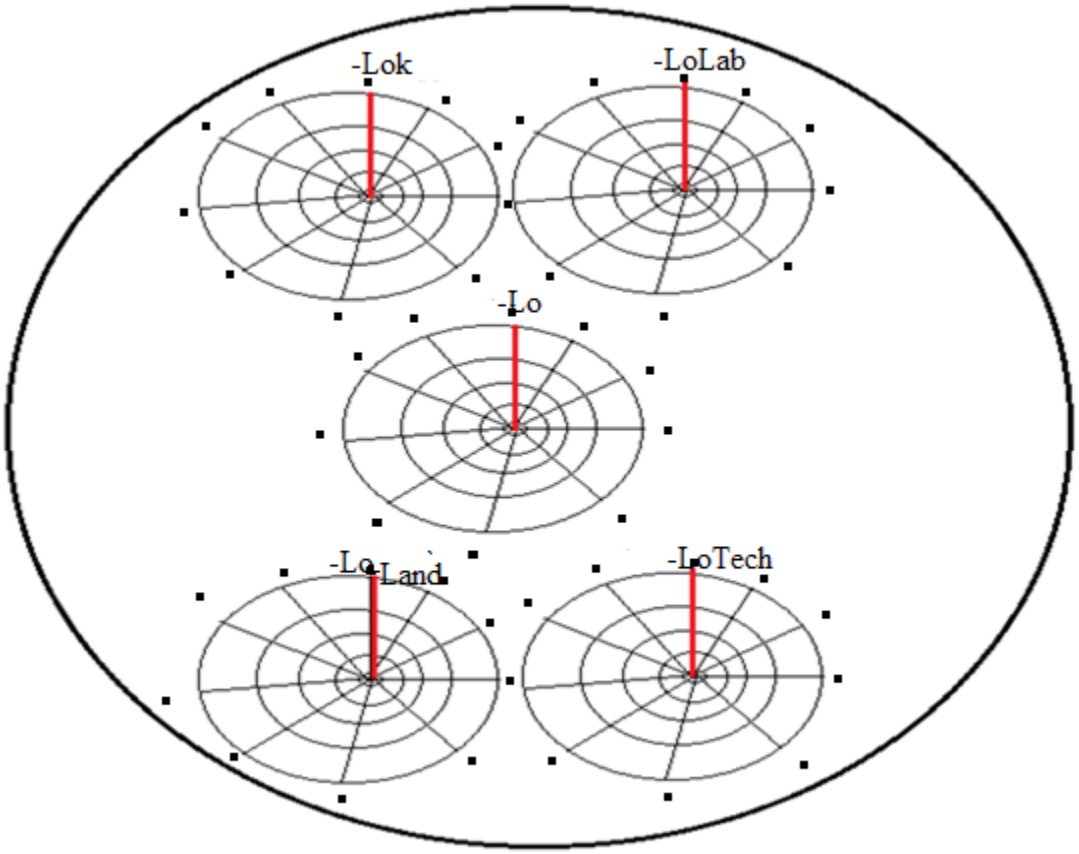
$$f'(-L_o) = \sum[(\partial -Lo/\partial -L_{oLab}) + (\partial -L_o/\partial -L_{oK}) + (\partial -L_o/\partial -L_{oLand}) + (\partial -L_o/\partial -L_{oTech})] \quad (30)$$

$$f'(-L_o) = \sum(\lim \Delta -L_o/\Delta -L_{oLab}) + (\lim \Delta -L_o/\Delta -L_{oK}) + (\lim \Delta -L_o/\Delta -L_{oLand}) + (\lim \Delta -L_o/\Delta -L_{oTech}) \quad (31)$$

$$_{\Delta}-L_{oLab \to 0} \qquad _{\Delta}-L_{oK \to 0} \qquad _{\Delta}-L_{oLand \to 0} \qquad _{\Delta}-L_{oTech \to 0}$$

Nevertheless, figure 10 is possible to observe the existence of four Nano-disks and one more extra Nano-disk among in middle that is showing the final result of $-\pi$ that is directly connected to $-L_{oLab}$, $-L_{oK}$, $-L_{oLand}$, $-L_{oTech}$.

Fig. 10



iii.c. Effective WW3 Stage.

In the effective WW3 stage, it is necessary to assume that both opponents (Opponent-1) $O_1 \wedge$ (Opponent-2) O_2 have different economic desgrowth from WW3 speed from ($-\delta w$) levels in different stages of WW3 [see (32)].

$$O_1(-\delta w) \neq O_2(-\delta w) \qquad (32)$$

Therefore, the levels of total economic leaking from WW3 ($-\Psi$) for both opponents $O_1 \wedge O_2$ have different speed according to Expression 33.

$$O_1(-\Psi) \neq O_2(-\Psi) \qquad (33)$$

In the period of WW3, both countries fully reject any harmonized war diplomatic strategy (S_+). This means that if the total level of WW3 tension (ΔT) reaches its maximum limit then S_+ fail – 0 [see (34)].

$$\Delta T_{max} = f'(S_+) = \partial S_+ \log_2(S_n)/\partial S_+ > 0 \qquad (34)$$

Accordingly, this part of the WW3-Simulator requires the application of a second derivative to observe the estimate the inflection point.

$$\Delta T_{max} = f''(S_+) = \partial^2 S_+ \log_2(\Delta T)/\partial S_+^2 > 0 \qquad (35)$$

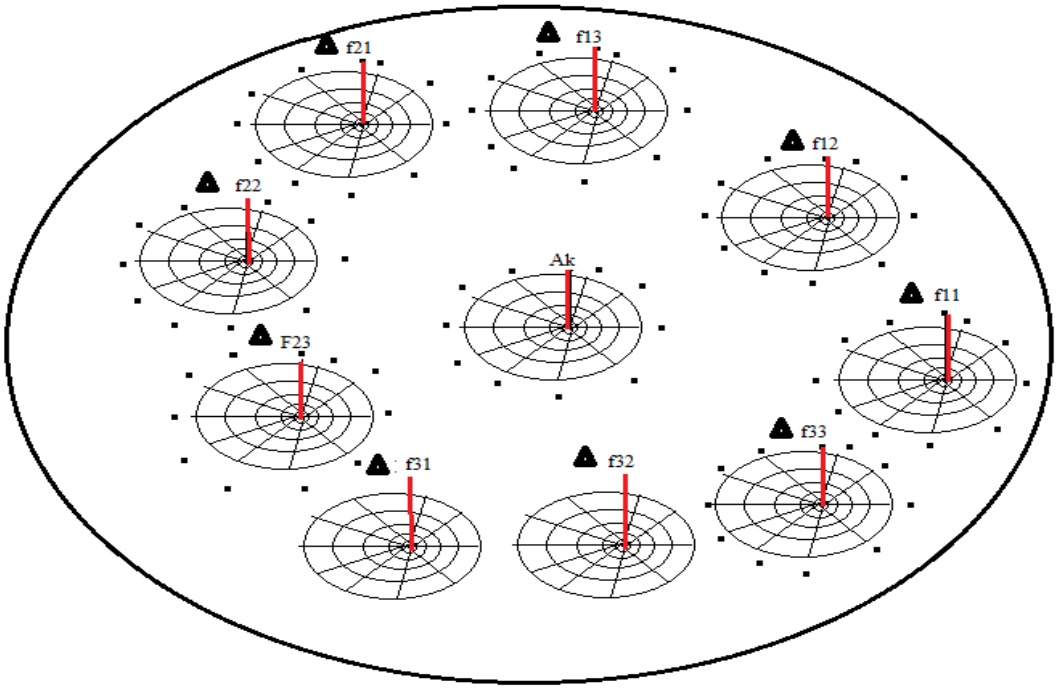
If WW3 starts now between (Opponent-1) $O_1 \wedge$ (Opponent-2) O_2 then economic desgrowth from WW3 ($-\delta w$) can expand quickly, butt in different magnitudes $O_1((\Delta\text{-}\delta w_1) \neq O_2(\Delta\text{-}\delta w_2)$. The historical armed confrontation trend (Ct_i) is going to define the focal ratio of total economic leaking from WW3 (-L). Figure 8 shows total economic leaking from WW3 (-L), economic desgrowth from WW3 ($-\delta w$), and losses of war (-Lo) performance. The dimension of army for WW3 (A_k) is calculated using nine sub-factors. These nine sub-factors results are based on: (i) external military support growth rate (f_{11}); (ii) war technological systems growth rate (f_{12}); (iii) army size growth rate (f_{13}); (iv) strategy, information, and logistic systems growth rate (f_{21}); (v) natural and geographical conditions growth rate (f_{22}); (vi) society support growth rate (f_{23}); (vii) war R&D growth rate (f_{31}); (viii) war infrastructure systems growth rate (f_{32}); (ix) war industrial structures growth rate (f_{33}) (See Expression 36). The *WW3-Simulator* also assumes that in the long run economic desgrowth from WW3 ($-\delta w$), total economic leaking from WW3 (-L), and losses from WW3 ($-L_o$) can seriously impede the recovery of both opponents O_1 and O_2 albeit to different extents in the post-WW3 stage.

$$|J'(\Delta fmxn)| = \begin{pmatrix} \Delta f_{11} = \partial f_{1(t+1)}/\partial f_{1(t-1)} & \Delta f_{12} = \partial f_{2(t+1)}/\partial f_{2(t-1)} & \Delta f_{13} = \partial f_{3(t+1)}/\partial f_{3(t-1)} \\ \Delta f_{21} = \partial f_{4(t+1)}/\partial f_{4(t-1)} & \Delta f_{22} = \partial f_{5(t+1)}/\partial f_{5(t-1)} & \Delta f_{23} = \partial f_{6(t+1)}/\partial f_{6(t-1)} \\ \Delta f_{31} = \partial f_{7(t+1)}/\partial f_{7(t-1)} & \Delta f_{32} = \partial f_{8(t+1)}/\partial f_{8(t-1)} & \Delta f_{33} = \partial f_{9(t+1)}/\partial f_{9(t-1)} \end{pmatrix} \qquad (36)$$

The final calculation is shown in expression 37. The final results from expression 36 was plotted in 9 Nano-disks and the final result from expression 37 was plotted among our 9 Nano-disk in Figure 8.

$$A_k = 1 / |J'(\Delta fmxn)| \qquad (37)$$

Fig. 11



Therefore, the final total WW3 damage (-D) depends on the changes of economic desgrowth from WW3 (-δw) and losses from WW3 (-Lo) according to expression 28 and 31 in Figure 11.

$$-D = f(-\delta w, -Lo) \qquad (38)$$

The final step is to calculate the final total WW3 damage (-D) that request the application of a serial of defined integrals according to expression 39.

$$-D = [[\int_0^1 -Lo(-LoLab)t\ dt]\ [\int_0^1 -Lo(-LoK)t\ dt]\ [\int_0^1 -Lo(-LoLand)t\ dt]\ [\int_0^1 -Lo(-LoTech)t\ dt]]\ x\ [\int_0^1 -\delta w(-L)t\ dt]] \qquad (39)$$

The next step is to specify the limits of each variable involved in the calculation of the final total WW3 damage (-D) – i.e. ensure that the limit is between 0 and 1.

$$-D = D\int_0^1 -Lo(-LoLab)t\ dt = \lim_{t\to 1} -Lo\ (1 - LoLab)t]\ \ [\int_0^1 -Lo(-LoK)t\ dt = \lim_{t\to 1} -Lo\ (1 - LoK)t]\ ]\ [\int_0^1 -Lo(-LoLand)t\ dt = \lim_{t\to 1} -Lo\ (1 - LoLand)t]\ ]$$

$$[\int_0^1 -\mathrm{Lo}(-\mathrm{LoTech})\mathrm{t}\ dt = \lim_{t\to 1} -Lo\ (1-\mathrm{LoTech})t]\ ]]\ \mathrm{x}\ [\int_0^1 -\delta\mathrm{w}(-\mathrm{L})\mathrm{t}\ dt]$$
$$= \lim_{t\to 1} -\delta\mathrm{w}\ (1-\mathrm{L})t]]\quad (40)$$

To find the present value of the final total WW3 damage (-D) under a uniform the $-\delta_w$ and -Lo per year, we assume a continuous discount rate of t (time). Since we simply take the limit of a proper definite integral, the final result is represented in (41).

$$-\mathrm{D} = [[-\mathrm{Lo}\int_0^1(-\mathrm{LoLab})^2/2+\mathrm{c}\ \ dt\ ]\ [-\mathrm{Lo}\int_0^1(-\mathrm{LoK})^2/2+\mathrm{c}\ dt\ ]\ [-\mathrm{Lo}\int_0^1(-\mathrm{LoLand})^2/2-\mathrm{c}\ dt]\ [-\mathrm{Lo}\int_0^1(-\mathrm{LoTech})^2/2\ dt]]\ \mathrm{x}\ [-\delta\mathrm{w}\int_0^1(-\mathrm{L})^2/2-c\ dt]] \qquad (41)$$

We estimate the marginal final WW3 damage (-D) by first-order anti-derivatives (see Expression 41). At the same time, we apply the second-order derivative on economic leaking from WW3 (-L) to find the inflection point (see Expression 42).

$$-\Delta D' = \partial\text{-}L_{t+1}/\partial\text{-}L_{t-1} \qquad (42)$$

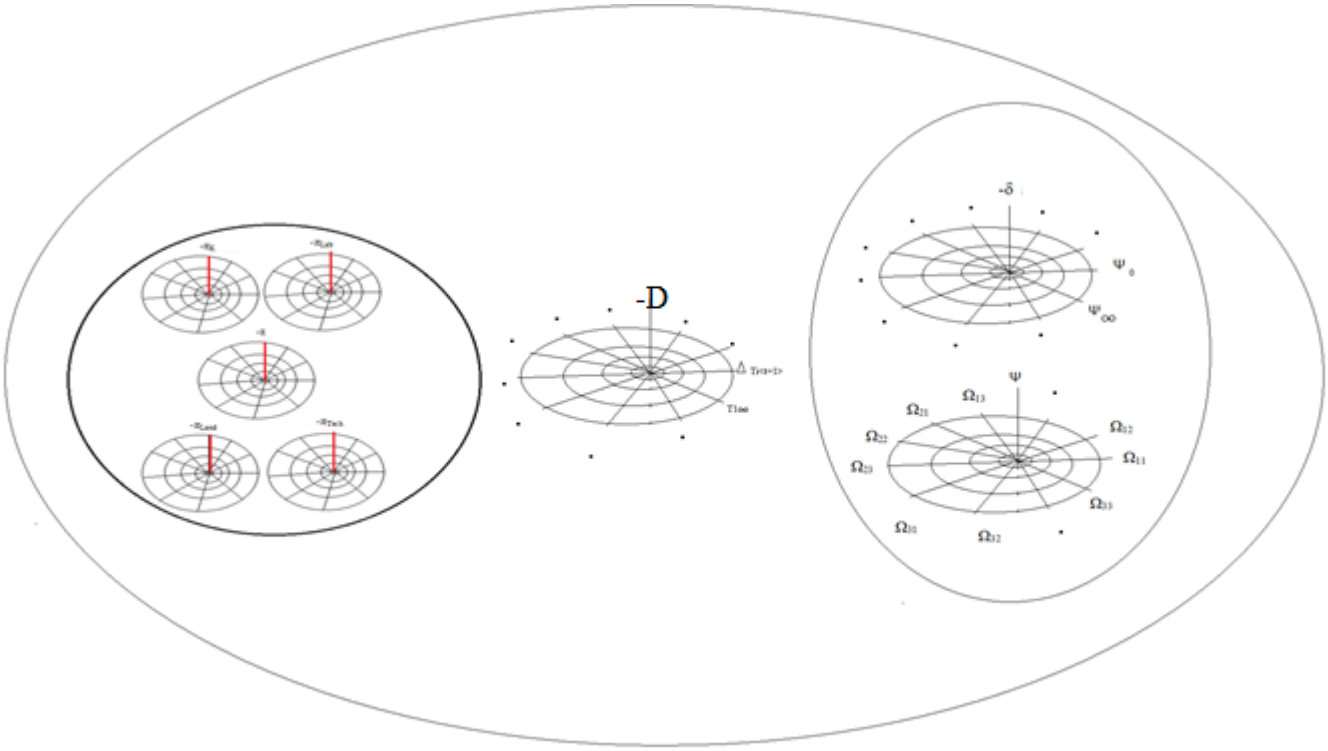
$$-\Delta D'' = \partial^2\text{-}L_{t+1}/\partial\text{-}L^2_{t-1} \qquad (43)$$

Hence, the boundary conditions for final WW3 damage (-D) are equal to expression 44.

$$\Delta D' = \partial\text{-}D'_0/[\partial\text{-}\delta w_0 * \partial\text{-}Lo_0]\,\big|_{t=0} = 0,\ \partial\text{-}D'_1/[\partial\text{-}\delta w_1 * \partial\text{-}Lo_1]\,\big|_{t=1} = 1,\ \partial\text{-}D'_2/[\partial\text{-}\delta w_2 * \partial\text{-}Lo_2]\,\big|_{t=2} = 2,$$
$$\ldots,\ \partial\text{-}D'_\infty/[\partial\text{-}\delta w_\infty * \partial\text{-}Lo_\infty]\,\big|_{t=\infty} = \infty \qquad (44)$$

In figure 12 is using figure 8, 9, and 10 to build the third general disk that can show the relationship and interaction of several Nano-disk and Sub-general-disks to consolidate into a single general disk to consolidate the final result of the final total WW3 damage (-D).

Fig. 12



iv. Post-WW3 Economic Damage

A war between the two opponents $O_1 \wedge O_2$ creates a loser or winner. The winner usually suffers less economic leaking from WW3 (-L), losses from WW3 ($-L_o$), and economic desgrowth from WW3 ($-\delta_w$) during the WW3. In the *WW3-Simulator,* the winner is identified as O_1. On the other hand, the loser suffers relatively more economic leaking from WW3 (-L), losses from WW3 ($-L_o$), and economic desgrowth from WW3 ($-\delta_w$) in the WW3 and in the *WW3-Simulator*, the loser has been denoted as O_2.

$$O_1(-L_o1,-\delta_{w1}(-L_1)) < O_2(-L_{o2}, -\delta_{w2}(-L_2)) \quad (45)$$

The *WW3-Simulator* assumes that the winner (E_1) will find it difficult also to recover from the WW3 in less proportion to O_2 (losing country). The compensation of the final total WW3 damage (-D) from the loser to the winner will levy huge burden to its own economy which will slow down the economic recovery of the losing opponent (O_2). Intuitively, recovery from the final total WW3 damage (-D) will be quicker for the winning opponent (O_1) than the losing opponent (O_2). To improve the final total WW3 damage (-D), the losing opponent (O_2) requires a multilateral reconstruction plan, international assistance, and institutional and society re-organizing in order to rebuild a new post-war structures such as political, societal, technical, and economic systems.

$$O_1[-D_1 , (-L_{o1} , -\delta w_1)] \neq O_2[-D_2 , (-\pi L_{o2} , -\delta w_2)] \qquad (46)$$

In the long run the winning enemy (E_1) and losing enemy (E_2) can experience different magnitudes (Δ) and trends of economic desgrowth from WW3 ($-\delta w$) and WW3 losses ($-L_o$). Additionally, the recovery of both opponents $O_1 \wedge O_2$ depend on their integral social, economic, technological, and political development model until the losses of WW3 ($-L_o$) is equal or closed to zero.

$$\Delta E_1[\partial\text{-}D_1/\partial(-Lo_1,-\delta w_1)\ldots \infty)] \neq \Delta E_2[\partial\text{-}D_2/\partial(-Lo_2 , -\delta w_2)\ldots \infty)] \qquad (47)$$

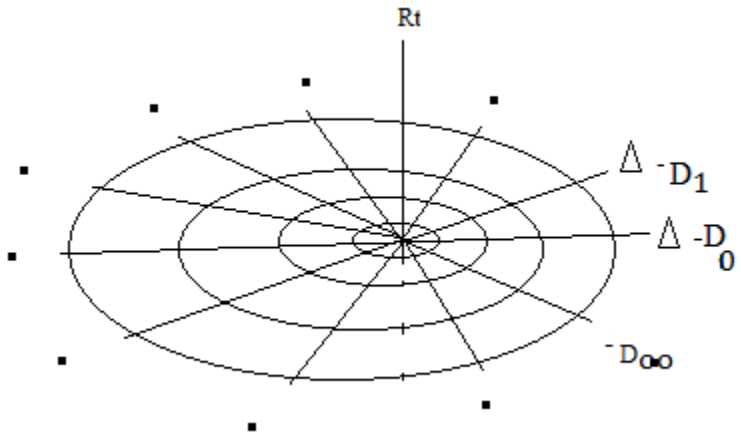
iv. The Post-WW3 Reconstruction Plan

The post war reconstruction plan (R_t) is directly connected to the final WW3 economic damage (-D) from Opponent-1 (O_1) $\wedge$ Opponent-2 (O_2) according to Equation 48.

$$R_{t1} = f(-D_1) \neq R_{t2} = f(-D_2) \quad (48)$$

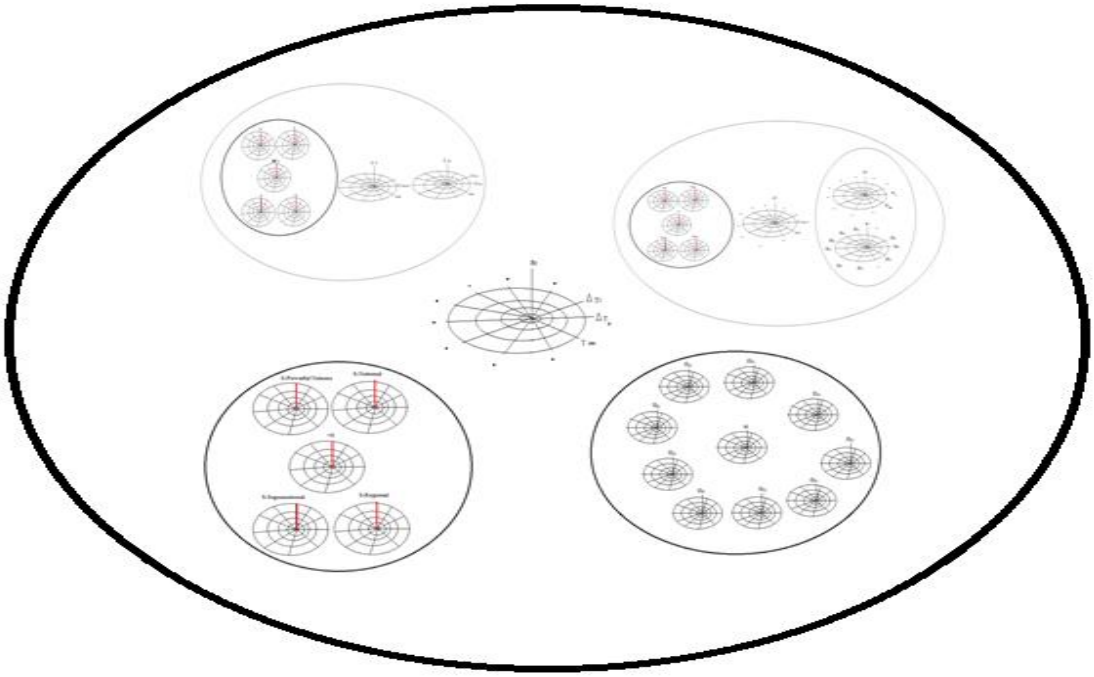
According to *WW3-Simulator* the $R_{t1} \wedge R_{t2}$ is going to depend how large is the total economic leaking from WW3 (-L) from $O_1 \wedge O_2$, the losses from WW3 ($-L_o$) from $O_1 \wedge O_2$ and economic desgrowth from WW3 ($-\delta_w$) from $O_1 \wedge O_2$ in the short and medium run that can help to prepare an optimum national reconstruction plan according to the levels of the final economic WW3 damage (-D). In our case we are intend to evaluate a possible national reconstruction plan for $E_1 \wedge E_2$ in case of a full WWIII between $E_1 \wedge E_2$. In fact, the local authorities, neighbors, and international help is going to play a crucial role in the $Rt_1 \wedge Rt_2$. Together with a fast production reestablishment and fiscal incentives into a fixed period of time. Finally, both countries are going to request different levels of $Rt_1 \wedge Rt_2$. At the same time, a considerable period of peace (10 years minimum) is a crucial part for the reconstruction for both opponents in the same war. Is going to depend on the reduction of $E_1 \wedge E_2$ and strategies of negotiations strategies to reduce a possible new war again in the short run. For each enemy we have a specific sub-general disk that can show the inter-connectivity between Rt and -D in different periods of time (t+1) for each enemy in WW3 (see Figure 13).

Fig. 13



Finally, we have the mega-disk network analysis $O_1 \vee O_2$ is possible to observe how different general-disks, sub-general-disks, Nano-disks, and the final Mega-disk can show how different main variables and sub-variables are interacting together and shows significant results in real time. Now, we can figurate how in the same graphical space and time many variable behave and moving together in random and fuzzy performance to show different results and changes to show how the economic performance of any country can be affected by war under different levels and magnitudes of destruction from WW3 through the evaluation of (ΔT), (-Lo), and the economic desgrowth from WW3 (-δw) together for each opponents in the same armed conflict (see Figure 14).

Fig. 14



4. The Application of WW3-Simulator in Twelve Possible Red Spots of Conflict Worldwide:

The application of the Third World War Impact Simulator (WW3-Simulator) assesses the economic damage of a war in nine different indicators: (i) the total level of WW3 tension (ΔT) under the calculation of the level of WW3 tension first level (ΔT1j) and the level of WW3 tension second level (ΔT2k); (ii) the harmonize WW3 diplomatic strategy (S+) under the analysis of different level of WW3 diplomatic strategies set (Sn); (iii) the size of army for WW3 (Ak), (iv) losses from WW3 (-Lo), (v) economic leaking from WW3 (-L), (vi) economic desgrowth from WW3 (-δw) together; (vii) the post-WW3 economic damage (-D); (viii) the post-WW3 reconstruction plan (Rt); (ix) the Mega-Disk Networks Analysis (Ruiz Estrada, 2017). Therefore, the WW3-Simulator uses many different groups of countries. We have a set of twelve red spots of confrontation (with two opponents in different regions globally) according to our simulation between year 2022 and 2023, we make 127,357 simulations of possible atomic attacks using probabilistic and chaos theory with random or fuzzy distances and magnitude of destruction. The WW3-Simulator has its algorithm using Mathematica Wolfram Version 12. We present the tweve possible red spots under the uses of massive atomic arms with the uses of missiles of short, medium and long range respectively.

(i) Europe vs. Russia (C_1):

In the present the invasion of Russia on Ukraine is detonating a possible WWIII. According our results for the possible atomic war between Europe and Russia (C_1) simulation under a nuclear war shows that (i) the total level of WW3 tension ($\Delta T = 0.85$) under the calculation of the level of WW3 tension first level ($\Delta T1 = 0.85$) and the level of WW3 tension second level ($\Delta T2 = 0.97$); (ii) the harmonize WW3 diplomatic strategy ($S+ = 0$) under the analysis of different level of WW3 diplomatic strategies set ($Sn = 0$); (iii) the size of army for WW3 (Ak = Russia [12]: EU [7], (iv) losses from WW3 (-Lo = Russia [0.68] and EU [0.98], (v) economic leaking from WW3 (-L = Russia [0.60] and EU [0.90], (vi) economic desgrowth from WW3 ($-\delta w$ = Russia [-0.49] and EU [-0.99]); (vii) the post-WW3 economic damage (-D = Russia [0.37] and EU [0.92]); (viii) the post-WW3 reconstruction plan (Rt = Russia [0.45] and EU [0.92]) See Figure 15. In map 1 and map 13 is possible to observe the damage of a nuclear war in blue color the areas of damage and destruction between Russia and EU.

Map 1.

Source: Calculation of the Author using Mathematica Wolfram V.12

(ii) China vs. Taiwan (C_2):

The next red spot for a nuclear war is the possible invasion of China on Taiwan is creating the conditions for a possible WWIII. According our results for the possible war between Taiwan and China (C_2) simulation under a nuclear war shows that (i) the total level of WW3 tension ($\Delta T = 0.65$) under the calculation of the level of WW3 tension first level ($\Delta T1 = 0.65$) and the level of WW3 tension second level ($\Delta T2 = 0.90$); (ii) the harmonize WW3 diplomatic strategy ($S+ = 0$) under the analysis of different level of WW3 diplomatic strategies set ($Sn = 0$); (iii) the size of army for WW3 (Ak = China [20] : Taiwan [5], (iv) losses from WW3 (-Lo = China [0.40] and Taiwan [0.99], (v) economic leaking from WW3 (-L = China [0.45] and Taiwan [0.95], (vi) economic desgrowth from WW3 ($-\delta w$ = China [-0.39] and Taiwan [-0.89]); (vii) the post-WW3 economic damage (-D = China [0.33] and Taiwan [0.95]); (viii) the post-WW3 reconstruction plan (Rt = China [0.35] and Taiwan [0.72]) See Figure 15. In map 2 and map 13 is possible to observe the damage

of a nuclear war in red color the areas of damage and destruction between China and Taiwan.

Map 2.

Source: Calculation of the Author using Mathematica Wolfram V.12

(iii) South Korea vs. North Korea (C_3):

The third red spot for a nuclear war is the possible invasion of North Korea on South Korea that can generate the WWIII anytime. According our results for the possible war between South Korea and North Korea (C_3) simulation under a nuclear war shows that (i) the total level of WW3 tension ($\Delta T = 0.75$) under the calculation of the level of WW3 tension first level ($\Delta T1 = 0.75$) and the level of WW3 tension second level ($\Delta T2 = 0.85$); (ii) the harmonize WW3 diplomatic strategy ($S+ = 0$) under the analysis of different level of WW3 diplomatic strategies set ($Sn = 0$); (iii) the size of army for WW3 (Ak = North Korea [15] : South Korea [10], (iv) losses from WW3 (-Lo = North Korea [0.60] and South Korea [0.75], (v) economic leaking from WW3 (-L = North Korea [0.65] and South Korea [0.85], (vi) economic desgrowth from WW3 ($-\delta w$ = North Korea [-0.49] and South Korea [-0.79]); (vii) the post-WW3 economic damage (-D = North Korea [0.63] and South Korea [0.85]); (viii) the post-WW3 reconstruction plan (Rt = North Korea [0.45] and South Korea [0.82]) See Figure 15. In map 3 and map 13 is possible to observe the damage of a nuclear war in red color the areas of damage and destruction between North Korea and South Korea.

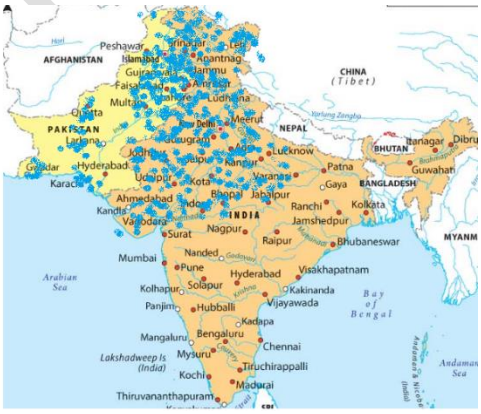
Map 3.

Source: Calculation of the Author using Mathematica Wolfram V.12

(iv) Pakistan vs. India (C_4):

The fourth red spot for a nuclear war is the possible war of India on Pakistan is another possible reason for WWIII. According our results for the possible war between India and Pakistan (C_4) simulation under a nuclear war shows that (i) the total level of WW3 tension ($\Delta T = 0.55$) under the calculation of the level of WW3 tension first level ($\Delta T1 = 0.65$) and the level of WW3 tension second level ($\Delta T2 = 0.70$); (ii) the harmonize WW3 diplomatic strategy ($S+ = 0$) under the analysis of different level of WW3 diplomatic strategies set ($Sn = 0$); (iii) the size of army for WW3 (Ak = India [12] : Pakistan [8], (iv) losses from WW3 (-Lo = Pakistan [0.65] and India [0.85], (v) economic leaking from WW3 (-L = Pakistan [0.75] and India [0.85], (vi) economic desgrowth from WW3 ($-\delta w$ = Pakistan [-0.59] and India [-0.69]); (vii) the post-WW3 economic damage (-D = Pakistan [0.60] and India [0.75]); (viii) the post-WW3 reconstruction plan (Rt = Pakistan [0.65] and India [0.85]) See Figure 15. In map 4 and map 13 is possible to observe the damage of a nuclear war in blue color the areas of damage and destruction between Pakistan and India.

Map 4.



Source: Calculation of the Author using Mathematica Wolfram V.12

(v) Japan vs. China (C_5):

The fifth hot spot for a nuclear war is the possible war of China on Japan is possible to detonate the WWIII. According our results for the possible war between China and Japan (C_5) simulation under a nuclear war shows that (i) the total level of WW3 tension ($\Delta T = 0.35$) under the calculation of the level of WW3 tension first level ($\Delta T1 = 0.45$) and the level of WW3 tension second level ($\Delta T2 = 0.55$); (ii) the harmonize WW3 diplomatic strategy ($S+ = 0$) under the analysis of different level of WW3 diplomatic strategies set ($Sn = 0$); (iii) the size of army for WW3 (Ak = China [21] : Japan [3], (iv) losses from WW3 (-Lo = China [0.25] and Japan [0.95], (v) economic leaking from WW3 (-L = China [0.25] and Japan [0.75], (vi) economic desgrowth from WW3 ($-\delta w$ = China [-0.29] and Japan [-0.78]); (vii) the post-WW3 economic damage (-D = China [0.20] and Japan [0.50]); (viii) the post-WW3 reconstruction plan (Rt = Pakistan [0.25] and India [0.85]) See Figure 15. In map 5 and map 13 is possible to observe the damage of a nuclear war in black color the areas of damage and destruction between China and Japan.

Map 5.

Source: Calculation of the Author using Mathematica Wolfram V.12

(vi) Japan vs. North Korea (C_6):

The sixth hot spot for a nuclear war or WWIII is the possible war of North Korea on Japan is generating the favorable conditions for WWIII. According our results for the possible war between Japan and North Korea (C_6) simulation under a nuclear war shows that (i) the total level of WW3 tension ($\Delta T = 0.85$) under the calculation of the level of WW3 tension first level ($\Delta T1 = 0.85$) and the level of WW3 tension second level ($\Delta T2 = 0.95$); (ii) the harmonize WW3 diplomatic strategy ($S+ = 0$) under the analysis of different level of WW3 diplomatic strategies set ($Sn = 0$); (iii) the size of army for WW3 (Ak = North Korea [15] : Japan [2], (iv) losses from WW3 (-Lo = North Korea [0.40] and Japan [0.65], (v) economic leaking from WW3 (-L = North Korea [0.35] and Japan [0.75], (vi) economic desgrowth from WW3 ($-\delta w$ = North Korea [-0.39] and Japan [-0.89]); (vii) the post-WW3 economic damage (-D = North Korea [0.33] and Japan [0.75]); (viii) the post-WW3 reconstruction plan (Rt = North Korea [0.35] and Japan [0.65]) See Figure 15. In map 6

and map 13 is possible to observe the damage of a nuclear war in green color the areas of damage and destruction between North Korea and Japan.

Map 6.

Source: Calculation of the Author using Mathematica Wolfram V.12

(vii) Greece vs. Turkey (C_7):

The seventh red spot for a nuclear war is the possible war between Turkeys on Greece is detonating a possible starting of the WWIII. According our results for the possible war between Greece and Pakistan (C_7) simulation under a nuclear war shows that (i) the total level of WW3 tension ($\Delta T = 0.65$) under the calculation of the level of WW3 tension first level ($\Delta T1 = 0.55$) and the level of WW3 tension second level ($\Delta T2 = 0.75$); (ii) the harmonize WW3 diplomatic strategy ($S+ = 0$) under the analysis of different level of WW3 diplomatic strategies set ($Sn = 0$); (iii) the size of army for WW3 (Ak = Turkey [12] : Greece [2], (iv) losses from WW3 (-Lo = Turkey [0.35] and Greece [0.60], (v) economic leaking from WW3 (-L = Turkey [0.43] and Greece [0.85], (vi) economic desgrowth from WW3 ($-\delta w$ = Turkey [-0.33] and Greece [-0.79]); (vii) the post-WW3 economic damage (-D = Turkey [0.27] and Greece [0.85]); (viii) the post-WW3 reconstruction plan (Rt = Turkey [0.30] and Greece [0.75]) See Figure 15. In map 7 and map 13 is possible to observe the damage of a nuclear war in blue color the areas of damage and destruction between Turkey and Greece. We assume both countries receive supporting by powerful military logistic and atomic guns equipment from EU, U.S. and Russia in both sides.

/Map 7.

Source: Calculation of the Author using Mathematica Wolfram V.12

(viii) Israel vs. Middle East (C_8):

The eighth red spot for a nuclear war is the possible attack of Middle East on Israel can detonate the WWIII. According our results for the possible war between Middle East and Israel (C8) simulation under a nuclear war shows that (i) the total level of WW3 tension ($\Delta T = 0.85$) under the calculation of the level of WW3 tension first level ($\Delta T1 = 0.82$) and the level of WW3 tension second level ($\Delta T2 = 0.88$); (ii) the harmonize WW3 diplomatic strategy ($S+ = 0$) under the analysis of different level of WW3 diplomatic strategies set ($Sn = 0$); (iii) the size of army for WW3 (Ak = Middle East [12] : Israel [7], (iv) losses from WW3 (-Lo = Middle East [0.65] and Israel [0.55], (v) economic leaking from WW3 (-L = Middle East [0.81] and Israel [0.55], (vi) economic desgrowth from WW3 ($-\delta w$ = Middle East [-0.81] and Israel -0.43]; (vii) the post-WW3 economic damage (-D = Middle East [0.75] and Israel [0.45]); (viii) the post-WW3 reconstruction plan (Rt = Middle East [0.80] and Israel [0.55]) See Figure 15. In map 8 and map 13 is possible to observe the damage of a nuclear war in blue color the areas of damage and destruction between Turkey and Greece. We assume both countries receive supporting by powerful military logistic and atomic guns equipment from EU, U.S. and Russia in both sides.

Map 8.

Source: Calculation of the Author using Mathematica Wolfram V.12

(ix) U.S. vs. China (C_9)

The ninth red spot for a nuclear war is the possible war between China and U.S. is possible to starting the WWIII. According our results for the possible war between China and U.S. (C_9) simulation under a nuclear war shows that (i) the total level of WW3 tension ($\Delta T = 0.90$) under the calculation of the level of WW3 tension first level ($\Delta T1 = 0.88$) and the level of WW3 tension second level ($\Delta T2 = 0.95$); (ii) the harmonize WW3 diplomatic strategy ($S+ = 0$) under the analysis of different level of WW3 diplomatic strategies set ($Sn = 0$); (iii) the size of army for WW3 (Ak = China [15] : Russia [16], (iv) losses from WW3 (-Lo = China [0.95] and U.S. [0.85], (v) economic leaking from WW3 (-L = China [0.90] and U.S. [0.85], (vi) economic desgrowth

from WW3 (-δw = China [-0.90] and U.S. [-0.93]); (vii) the post-WW3 economic damage (-D = Russia [0.75] and U.S. [0.75]); (viii) the post-WW3 reconstruction plan (Rt = China [0.85] and U.S. [0.90]) See Figure 15. In map 9 and map 13 is possible to observe the damage of a nuclear war in blue color the areas of damage and destruction between China and U.S.

Map 9.

Source: Calculation of the Author using Mathematica Wolfram V.12

(x) United States vs. Russia (C_{10})

The tenth red spot for a nuclear war is the possible war between Russia and U.S. is possible to starting the WWIII. According our results for the possible war between Russia and U.S. (C_{10}) simulation under a nuclear war shows that (i) the total level of WW3 tension (ΔT = 0.95) under the calculation of the level of WW3 tension first level (ΔT1 = 0.95) and the level of WW3 tension second level (ΔT2 = 0.97); (ii) the harmonize WW3 diplomatic strategy (S+ = 0) under the analysis of different level of WW3 diplomatic strategies set (Sn = 0); (iii) the size of army for WW3 (Ak = U.S. [15] : Russia [16], (iv) losses from WW3 (-Lo = Russia [0.85] and U.S. [0.85], (v) economic leaking from WW3 (-L = Russia [0.81] and U.S. [0.85], (vi) economic desgrowth from WW3 (-δw = Russia [-0.83] and U.S. [-0.91]); (vii) the post-WW3 economic damage (-D = Russia [0.55] and U.S. [0.65]); (viii) the post-WW3 reconstruction plan (Rt = Russia [0.60] and U.S. [0.85]) See Figure 15. In map 10 and map 13 is possible to observe the damage of a nuclear war in red color the areas of damage and destruction between Russia and U.S.

Map 10.

Source: Calculation of the Author using Mathematica Wolfram V.12

(xi) United States vs. Russia Allies in Latin America (Cuba, Nicaragua, and Venezuela) (C_{11}):

The eleven red spot for a nuclear war is the possible war between Russia Allies in Latin America (Cuba, Nicaragua, and Venezuela) and U.S. is possible to starting the WWIII. According our results for the possible war between Russia Allies in Latin America (Cuba, Nicaragua, and Venezuela) and U.S. (C_{11}) simulation under a nuclear war shows that (i) the total level of WW3 tension ($\Delta T = 0.35$) under the calculation of the level of WW3 tension first level ($\Delta T1 = 0.45$) and the level of WW3 tension second level ($\Delta T2 = 0.47$); (ii) the harmonize WW3 diplomatic strategy ($S+ = 0$) under the analysis of different level of WW3 diplomatic strategies set ($Sn = 0$); (iii) the size of army for WW3 (Ak = U.S. [55] : Russia Allies in Latin America (Cuba, Nicaragua, and Venezuela) [5], (iv) losses from WW3 ($-Lo$ = Russia Allies in Latin America (Cuba, Nicaragua, and Venezuela) [0.95] and U.S. [0.05], (v) economic leaking from WW3 ($-L$ = Russia Allies in Latin America (Cuba, Nicaragua, and Venezuela) [1.00] and U.S. [0.01], (vi) economic desgrowth from WW3 ($-\delta w$ = Russia Allies in Latin America (Cuba, Nicaragua, and Venezuela) [-0.99] and U.S. [-0.01]); (vii) the post-WW3 economic damage ($-D$ = Russia Allies in Latin America (Cuba, Nicaragua, and Venezuela) [0.95] and U.S. [0.02]); (viii) the post-WW3 reconstruction plan (Rt = Russia Allies in Latin America (Cuba, Nicaragua, and Venezuela) [0.90] and U.S. [0.03]) See Figure 15. In map 11 and map 13 is possible to observe the damage of a nuclear war in blue color the areas of damage and destruction between Russia Allies in Latin America (Cuba, Nicaragua, and Venezuela) and U.S.

Map 11.

Source: Calculation of the Author using Mathematica Wolfram V.12

(xii) U.S. vs. Iran (C_{12})

The ten red spot for a nuclear war is the possible war between Iran and U.S. is possible to starting the WWIII. According our results for the possible war between Iran and U.S. (C_{12}) simulation under a nuclear war shows that (i) the total level of WW3 tension ($\Delta T = 0.35$) under the calculation of the level of WW3 tension first level ($\Delta T1 = 0.35$) and the level of WW3 tension second level ($\Delta T2 = 0.47$); (ii) the harmonize WW3 diplomatic strategy ($S+ = 0$) under the analysis of different level of WW3 diplomatic strategies set ($Sn = 0$); (iii) the size of army for WW3 (Ak = U.S. [35] : Iran [9], (iv) losses from WW3 (-Lo = Iran [0.75] and U.S. [0.01], (v) economic leaking from WW3 (-L = Iran [0.91] and U.S. [0.01], (vi) economic desgrowth from WW3 ($-\delta w$ = Iran [-0.93] and U.S. [-0.01]); (vii) the post-WW3 economic damage (-D = Iran [0.85] and U.S. [0.01]); (viii) the post-WW3 reconstruction plan (Rt = Iran [0.70] and U.S. [0.01]) See Figure 15. In map 12 and map 13 is possible to observe the damage of a nuclear war in red color the areas of damage and destruction between Iran and U.S.

Map 12.

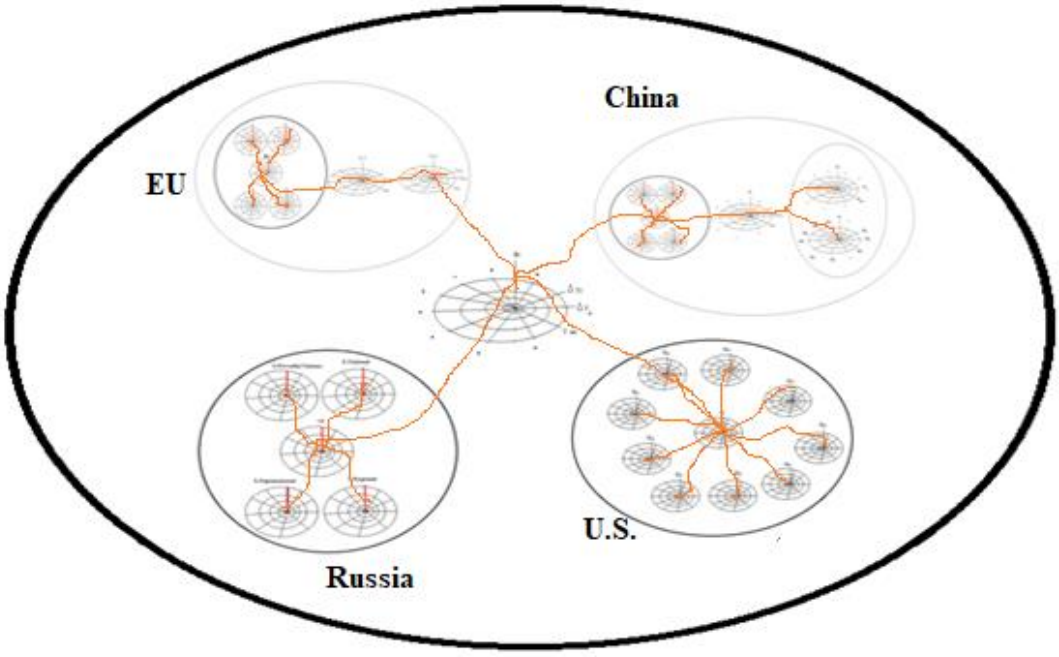
Source: Calculation of the Author using Mathematica Wolfram V.12

Map 13.

Source: Calculation of the Author using Mathematica Wolfram V.12

However, in figure 15 we can find the different conflicts by super power nations such AS Russia, EU, U.S., and China, They are involved directly or indirectly in start a possible WWIII anytime and anywhere. We can observe the intensity of war is increasing to detonate the WWIII anytime according to our calculations in the WW3-Simulator.

Fig. 15



Source: Calculation of the Author using Mathematica Wolfram V.12

5. Concluding Observations

WWIII have a huge impact on the economic damage and performance is seldom formally simulated. The main objective of this paper is to propose a new simulator which systematically analyzes the impact of WWIII economically. The World War III Impact Simulator (WW3-Simulator) assesses the economic effects of WWIII under the uses of different indicators: The WW3-Simulator assesses the economic damage of a war in nine different indicators: (i) the total level of WW3 tension (ΔT) under the calculation of the level of WW3 tension first level ($\Delta T1_j$) and the level of WW3 tension second level ($\Delta T2_k$); (ii) the harmonize WW3 diplomatic strategy (S_+) under the analysis of different level of WW3 diplomatic strategies set (S_n); (iii) the size of army for WW3 (A_k), (iv) losses from WW3 ($-L_o$), (v) economic leaking from WW3 (-L), (vi) economic desgrowth from WW3 ($-\delta w$) together; (vii) the post-WW3 economic damage (-D); (viii) the post-WW3 reconstruction plan (R_t); (ix) the Mega-Disk Networks Analysis. The underlying intuition is that the economic impact of WWIII depends on a country's willing to negotiate with international or regional institutions to avoid or stop the conflict, which determines the leakage from economic desgrowth from WW3 ($-\delta w$) and hence the impact on the final economic growth in real prices. We believe that the WW3-Simulator will contribute to a better and deeper understanding of the economic impact of WWIII.

The estimation result derived from the WW3-*Simulator* shows that if we have a nuclear war (atomic arms) the economic desgrowth from WW3 ($-\delta w$) and the losses from war (-Lo) are extremely large, then the post-WW3 economic damage (-D) will severely affect the performance of the world economy. The world economy will even suffer undefined economic desgrowth from WW3 ($-\delta w$) in the short and long run. On the other hand, if the economic leaking from WW3 (-L) is extremely large, in the short or long run, the economic desgrowth from WW3 ($-\delta w$) and the losses from WW3 (-Lo) will have rather negative impact on the performance of the world economy, although it may later rise to a level that can cause economic desgrowth from WW3 ($-\delta w$).

Finally, we find that the world economy which suffers large losses from the post-WW3 economic damage (-D) final results, and hence large post-WW3 economic damage (-D), is most likely NO winners in the WWIII. The longer the period of war, the higher will be the economic desgrowth from WW3 ($-\delta w$) due to losses from WW3 (-Lo) and economic leaking from WW3 (-L). In terms of the world economy surviving depends on stop just at time a massive nuclear war to reduce the post-WW3 reconstruction plan (Rt) that is so expensive and costly. We probe this argument according to the twelve red spots that can generate the start of the WWIII anytime and everywhere. These twelve red sport are (i) Europe vs. Russia (C_1); (ii) China vs. Taiwan (C_2); (iii) South Korea vs. North Korea (C_3); (iv) Pakistan vs. India (C_4); (v) Japan vs. China (C_5); (vi) Japan vs. North Korea (C_6); (vii) Greece vs. Turkey (C_7); (viii) Israel vs. Middle East (C_8); (ix) U.S. vs.

China (C_9); (x) U.S. vs. Russia (C_{10}); (xi) U.S. vs. Russia Allies in Latin America (Cuba, Nicaragua, and Venezuela) (C_{11}); (xii) U.S. vs. Iran (C_{12}).

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