MARMARA ÜNİVERSİTESİ YAYINEVİ

New World (Dis)Order: A Thermodynamical Approach to Rising Instability in the World System

Şükrü YAZĞAN*

Contrary to post-cold war expectations, the contemporary world system is increasingly characterized by socio-political and geopolitical upheavals and rising disorder all around the world. The chaotic interactions between constituent units of the international system have become the norm and the rising unpredictability has contributed to the overwhelming sense of increasing instability. In order to understand the underlying dynamics that led to increasingly volatile and unpredictable relations between the systemic actors and the rising instability within the international system, a new perspective that is incorporating insights from the second law of thermodynamics and chaos theory is required. This new perspective should be based on the acceptance that a) "disorder" and/or "crisis" is the rule/normal condition of the existence and "order" is just a spatial-temporal exception/a dissipative structure that should be created and which may endure as long as material and ideational flows feeding it can be sustained b) increasing complexity of both socio-political order(s) and environmental systems has elevated the systemic instability by increasing the number of systemic possibilities which should be controlled exponentially and thus has made it more difficult to (re)construct or sustain any particular order pattern within the world system.

Keywords: World (Dis)Order, Non-Linear Thermodynamics, Dissipative Structures, Chaos Theory

A. Introduction

The instability in the world system seems to be rising and the relations between its constituent units look increasingly chaotic. In order to understand the underlying dynamics that lead to increasingly volatile and unpredictable relations between the relevant systemic actors and the rising instability within the international system, a new approach based on insights from the second law of thermodynamics (explaining the relation between motion and energy)

* Asst. Prof ., Marmara University, Department of International Relations, E-mail: syazgan@marmara.edu.tr

MARMARA ÜNİVERSİTESİ YAYINEVİ

and the chaos theory is required. This new approach, first of all, should be based on the acceptance that within any system "disorder" and/or "crisis" is the rule/normal condition of *existence* and "order," as a spatial-temporal continuity, is just an *exception*. All orders (including international order) should be conceptualized as a "dissipative structure" that either may emerge under extra ordinary and rare systemic conditions by itself through self-organization or should be created by deliberate agency, and in any case which may only endure as long as the material and ideational flows nurturing it continue or be sustained. Secondly, it should also be understood that the increasing complexity of both socio-political order(s) and their environmental contexts has elevated the systemic instability by exponentially increasing the number of systemic possibilities to be controlled and thus has made it more difficult to (re)construct or sustain any particular order pattern within the system. According to this new approach, the increasing instability within the international system can be considered as a consequence of the weakening energy basis of the human societies due to entropic entrapment, increasing inability of the existing institution in controlling the exponentially growing systemic complexity, and the inevitable fluctuations associated with the power vacuum that may emerge during all hegemonic transition periods.

B. The New World (Dis)order

Contrary to post-cold war expectations, the contemporary international system is increasingly characterized by socio-political and geopolitical upheavals and rising disorder all around the world. Chaotic interactions between constituent units of the international system seem to become the norm and the concomitant rise in unpredictability is contributing to the overwhelming sense of increasing instability.

The signs of rising tensions, conflicts and crisis reflecting and strengthening the rising instability within the international system ranges from rising geopolitical tensions and accelerating regional conflicts to lasting effects of the ongoing crisis in the capitalist economy and to seemingly unstoppable massive refugee flows from crisis ridden regions of the world to the advanced industrialized western countries.

The foremost sign of the rising instability is the intensifying global and/or regional military confrontations. The accelerating military tension between Russian Federation and NATO in Eastern Europe and the Baltic region after the Russian invasion of some parts of Ukraine and its subsequent annexation of

MARMARA ÜNİVERSİTESİ YAYINEVİ

Crimean Peninsula,[1] rising military tension on the Korean Peninsula,[2] and the accelerating arms race between USA and China in the Asia-Pacific region[3] can be given as the examples of intensifying geo-political tensions.

The increasing regional tensions and conflicts, particularly over the control of resource rich territories also contributing to the rising instability within the world system. These regional conflicts include the increasing rivalry between China and the other regional states about the control of resource rich islands and islets in the South China Sea[4]; the increasing tension in the Eastern Mediterranean between regional states for the control of undersea resources[5]; the diplomatic crisis between Egypt, Ethiopia and Sudan over the control of Nile,[6] and the rising tensions in the Arctic region over the control of undersea

[1] For the military escalation between Russia and NATO after the Crimean Crisis, see Aleksandr Khramchikhin, "Rethinking The Danger of Escalation: The Russia-Nato Military Balance" *Carnegie Endowment for International Peace*, 2018, pp. 1-12; Bryan Frederick et al, *Assessing Russian Reactions to US and NATO Posture Enhancements*, Santa Monica, California: Rand Corporation, 2017; and, F. Stephen Larrabee et al, *Russia and the West After the Ukrainian Crisis: European Vulnerabilities to Russian Pressures*, Santa Monica, California: Rand Corporation, 2017.

[2] For rising tension in the Korean peninsula, see Peter Hayes, "The Future of Conflict in the Korean Peninsula and Beyond: The War Dreams of Kim and Trump," *The Asia-Pacific Journal* 15 Issue: 19 No. 5 (October, 2017), pp. 1-8; and "The Korean Peninsula Crisis (II): From Fire and Fury to Freeze-for-Freeze" *Crisis Group Asia Report* No. 294, 2018.

[3] For an analysis of Chinese-USA rivalry, see Kai He, "Explaining United States-China Relations: Neoclassical Realism and the Nexus of Threat-Interest Perceptions", *The Pacific Review* 30 No. 2 (2017), pp. 133-151; and Robert C. Watts IV, "*Rockets' Red Glare*—Why Does China Oppose THAAD in South Korea, and What Does It Mean for U.S. Policy?" *Naval War College Review* 71 No. 2 (Spring 2018), pp. 79-107.

[4] For the historical background and the eco-strategic reasons for the rising conflict in the South China Sea, see Christopher L. Daniels, *South China Sea: Energy and Security Conflicts*, Lanham: Scarecrow Press, 2014; Alice D. Ba, "Staking Claims and Making Waves in the South China Sea: How Troubled Are the Waters?" *Contemporary Southeast Asia* 33 No. 3 (2011), pp. 269-291; and Zhou Fangyin, "Between Assertiveness and Self-restraint: Understanding China's South China Sea Policy," *International Affairs* 92 No. 4 (2016), pp. 869-890.

[5] For how the discovery of oil and natural gas resources in the Eastern Mediterranean is exacerbating the existing regional conflicts between Turkey, Israel, Egypt, Greece, South Cyprus, Syria and Lebanon, see James Stocker, "No EEZ Solution: The Politics of Oil and Gas in the Eastern Mediterranean," *Middle East Journal* 66 No. 4 (Autumn 2012), pp. 579-597; Eric R Eissler and Gözde Arasil, "Maritime Boundary Delimitation in the Eastern Mediterranean: New Conflict between Cyprus, Turkey, Greece and Israel?" *The RUSI Journal* 159 No. 2 (April-May 2014), pp. 74-80; Ioannis N. Grigoriadis, "Energy Discoveries in the Eastern Mediterranean: Conflict or Cooperation?" *Middle East Policy* XXI No. 3 (Fall 2014), pp. 124-133; and Andrea Prontera and Mariusz Ruszel, "Energy Security in the Eastern Mediterranean," *Middle East Policy* XXIV No. 3 (Fall 2017), pp. 145-162.

[6] For the historical roots of the Nile Crisis, see Sam L. Laki, "Management of Water Resources of the Nile Basin," *International Journal of Sustainable Development & World Ecology* 5

mineral resources and shipping lanes.[7]

The instability in the world system seems to be continuously fueled by the spreading socio-political and military conflicts and terrorism in the sub Saharan Africa that is daily inflicting everlasting costs for the native populations. The socio-political upheavals in the region, like the ongoing ethno-religious conflict in Nigeria,[8] the civil and political unrest in Democratic Republic of Congo,[9] the civil war and ethnic cleansing in Central African Republic,[10] seemingly unending civil war in South Sudan,[11] and sporadic political unrests and riots following the elections in many African countries[12] are strengthening its position as a major center of crisis.

The never ending chaos in the Middle East region due to the rising diplomatic and military tensions between regional states and the persistent civil wars is a

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No. 4 (1998), pp. 288-296. For the rising tension between Egypt, Ethopia and Sudan over the allocation of the water resources of the Nile, see Fred H. Lawson, "Egypt versus Ethiopia: The Conflict over the Nile Metastasizes," *The International Spectator* 52 Issue: 4 (2017), pp. 129-144.

[7] For the increasing rivalry over the Arctic regions and its consequences see, Mikkel Runge Olesen, "Arctic Rivalries: Friendly Competition or Dangerous Conflict?" *DIIS Working Papers* (2017); and Marian Lutostański and Tadeusz Kęsoń, "International Rivalry for Arctic Chances and Its Impact on Regional and Global Security," *American International Journal of Contemporary Research* 6 No. 5 (October 2016), pp. 115-121.

[8] For the on-going ethno-religious conflict in Nigeria and its causes, see Ukoha Ukiwo, "Politics, Ethno-Religious Conflicts and Democratic Consolidation in Nigeria," *Journal of Modern African Studies* 41 No. 1 (2003), pp. 115-138; and Daniel Egiegba Agbiboa, "Ethno-religious Conflicts and the Elusive Quest for National Identity in Nigeria," *Journal of Black Studies* 44 No. 1 (2013), pp. 3-30.

[9] For the long conflict in Democratic Republic of Congo, see Emmanuel Sithole, "Democratic Republic of Congo-A Fertile Ground for Instability in the Great Lakes Region States" (Unpublished Master Thesis, U.S. Army Command and General Staff College, 2017), pp. 27-36; and Jordi Calvo Rufanges and Josep Maria Royo Aspa, "Democratic Republic of Congo: A Review of 20 Years of War," *Escola de Cultura de Pau / Centre Delàs d'Estudis per la Pau Report* (2016).

[10] For the civil war in Central African Republic, see Ilmari Käihkö and Mats Utas, "The Crisis in CAR: Navigating Myths and Interests," *Africa Spectrum* 49 No. 1 (2014), pp. 69-77; and Nathalia Dukhan, "The Central African Republic Crisis," *GSDRC Report* (March 2016).

[11] For the causes and dynamics of the civil war in South Sudan, see Alex Dewaal, "When Kleptocracy Becomes Insolvent: Brute Causes of The Civil War in South Sudan," *African Affairs* 113 Issue: 452 (July 2014), pp. 347-369; Aziza Geleta Dessalegn, "The Cause and Consequence of Conflict in South Sudan," *International Journal of Political Science and Development* 5 No. 1 (2017), pp. 15-21; and Kate Almquist Knopf, "Ending South Sudan's Civil War," *Council on Foreign Relations Special Report* No. 77 (November 2016).

[12] For an analysis of post-election violence in Sub-Saharan Africa and examples, see Stephanie M. Burchard, *Electoral Violence in Sub-Saharan Africa: Causes and Consequences*, Boulder, CO: First Forum Press, 2015; and Sanne Timmer, "Causal Factors of Election Violence in Africa: A Comparative Analysis of Kenya's 2007 Elections and Zimbabwe's 2008 Elections" (Unpublished Master Thesis, University of Stellenbosch, 2012).

MARMARA ÜNİVERSİTESİ YAYINEVİ

persistent factor contributing to the rising systemic instability. These tensions and civil wars are fueled by the decades old Israeli-Palestinian conflict,[13] the Iran-Saudi Arabia rivalry over the Persian Gulf,[14] the diplomatic tension between Qatar and Saudi Arabia and United Arab Emirates,[15] ethno-religious sectarian civil war in Iraq,[16] the civil wars in Syria, Libya and Yemen in which regional and global actors involved through their proxies,[17] and the destabilization created by the political upheavals and the radical Islamist terrorist attacks in Egypt, Tunisia and Algeria.[18]

The increasing ethno nationalist conflicts in the countries of the global south and the extant secessionist movements in the economically advanced democracies of the West are invigorating the sense of rising instability in the world system. These conflicts and movements are exemplified by the vibrant Catalan and dormant Basque separatist movements in Spain,[19] the Flemish

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[13] For the enduring causes and impact of Palestinian-Israeli conflict, see Montse Ferrer, "The War Report 2017: The Armed Conflict in Israel-Palestine" *Geneva Academy* (January 2018); and C. Ross Anthony et al, *The Costs of the Israeli-Palestinian Conflict*, Santa Monica, California: Rand Corporation, 2015.

[14] For the rising tension between 2 countries after 2011, see Muhammad Rizwan et al, "From Rivalry to Nowhere: A Story of Iran-Saudi Ties," *IOSR Journal of Humanities and Social Science* 19 Issue: 9 (September 2014), pp. 91-101; and Ali Fathollah-Nejad, "The Iranian–Saudi Hegemonic Rivalry" *Harvard Belfer Center Iran Matters Blog Post* (October 25, 2017) https://www.belfercenter.org/ publication/iranian-saudi-hegemonic-rivalry.

[15] For the regional implications of the Qatar Crisis, see Talha Köse & Ufuk Ulutaş, "Regional Implications of the Qatar Crisis: Increasing Vulnerabilities," *SETA Perspective* 31 (June 2017); and Prasanta Kumar Pradhan, "Qatar Crisis and the Deepening Regional Faultlines," *Strategic Analysis* 42 No. 4 (2018), pp. 437-442.

[16] For an analysis of the causes and impacts of ethno-religious sectarian conflict in Iraq, see Harith Hasan Al-Qarawee, "Iraq's Sectarian Crisis: A Legacy of Exclusion," *Carnegie Middle East Center* (April 2014); and Brigitte Rohwerder, "Contemporary Conflict Analysis of Iraq," *GSDRC Rapid Literature Review* (October 2014).

[17] For the spread of civil wars particularly in the Middle East, see Barbara F. Walter, "The New Civil Wars," *Annual Review of Political Science* 20 (2017), pp. 469-486; and Kenneth M. Pollack and Barbara F. Walter, "Escaping the Civil War Trap in the Middle East," *The Washington Quarterly* 38 No. 2 (Summer 2015), pp. 29-46.

[18] For the ISIS activities in North Africa, see Jason Warner and Charlotte Hulme, "The Islamic State in Africa: Estimating Fighter Numbers in Cells Across the Continent," *CTC Sentinel* 11 Issue: 7 (August 2018), pp. 21-28; and "How the Islamic State Rose, Fell and Could Rise Again in the Maghreb," *Crisis Group Middle East and North Africa Report* No.178 (24 July 2017).

[19] For separatist movements in Spain, see Matthias Bieri, "Separatism in the EU," *CSS Analyses in Security Policy* 160 (September 2014); and Eivind Jerve, "Explaining Scottish and Catalan Secessionist Mobilization in the Framework of the EU: A Comparative Case Study of Minority Nationalist Mobilization in Scotland, Catalonia, Wales and the Basque Country," (Unpublished Master Thesis University of Bergen, 2015), pp. 77-92.

MARMARA ÜNİVERSİTESİ YAYINEVİ

speaking population's demands for secession from Belgium,[20] the Kurdish struggle for an independent Kurdish state,[21] the Russian speaking separatist movement in eastern Ukraine,[22] the growing Scottish aspirations for independence,[23] the Azawad movement for Tuareg self-rule in Mali,[24] and the different ethnic groups' demands for independence from Myanmar.[25]

The rise of different types of non-state and/or individual violence can be given as another sign of rising systemic instability. That trend is exemplified by the increasing ferocity, magnitude and frequency of attacks committed by millennialist nihilist religious (like Islamic State affiliates or Al-Qaeda)[26] or ultranationalist-white supremacist terrorist groups,[27] by the contagious gun

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[20] For Flanders separatism, see Bart Maddens, "Secessionist Strategies: The Case of Flanders," in *Secession and Counter-secession: An International Relations Perspective* Diego Muro and Eckart Woertz (Eds.), Barcelona: CIDOB, 2018, pp. 55-62

[21] For the Kurdish separatist movement and its impact on regional security see, Laura Bröker, "Any Hope for a Kurdish State? The United States, Germany and the Prospects of Kurdish Self-Determination," Heinrich-Böll-Stiftung North America; and Radwan Ziadeh, "The Kurds in Syria Fueling Separatist Movements in the Region?" *United States Institute of Peace special Report* (April 2009).

[22] For analysis of Russian separatism in Eastern Ukraine and the Russia's support, see "Russia and the Separatists in Eastern Ukraine," *Crisis Group Europe and Central Asia Briefing* No. 79 (February 2016); and Gary Wilson, "Secession and Intervention in the Former Soviet Space: The Crimean Incident and Russian Interference in Its *Near Abroad*," *Liverpool Law Review* 37 (2016), pp. 153-175.

[23] For Scottish and Welsh aspirations for independence, see Nicola McEwen, "Insights from The Scottish Independence Referendum," in *Secession and Counter-secession: An International Relations Perspective* Diego Muro and Eckart Woertz (Eds.), Barcelona: CIDOB, 2018, pp. 47-54.; and Jerve, pp. 61-69.

[24] For the history and the evolution of Tuareg separatist movements, see David Alvarado, "Independent Azawad: Tuaregs, Jihadists, and an Uncertain Future for Mali," *CIDOB Notes Internacionals* (May 2012); and Baz Lecocq and Georg Klute, "Tuareg Separatism in Mali," *International Journal* 68 No. 3 (September, 2013), pp. 424-434.

[25] For the active separatist groups in Myanmar, see Tin Maung Than, "Ethnic Insurgencies and Peacemaking in Myanmar," *IIAS Newsletter* No. 66 (Winter 2013), and Mahalia Gaskin McDaniel, "The Politics of Identity in Myanmar: The Rohingya, Kachin & Wa Ethnic Minorities," *Institute for International Development* (July 2017).

[26] For an analysis of terrorist attacks associated with ISIS and other radical Islamist organizations, see Kyle Orton, "Foreign Terrorist Attacks by the Islamic State, 2002-2016," *Centre for the Response to Radicalisation and Terrorism at the Henry Jakson Society* (2017); and Canelle Beuze, "Terrorist Attacks, Failed Attacks and Plots in the West linked to the Syrian-Iraqi Context (2013-2016)," *Center for the Analysis of Terrorism* (March 2017).

[27] Although the number and and ferocity of the violent terrorist attacks by far right groups are increasing, the attacks by white supremacist and far right groups in Europe and USA are generally ignored or de-emphasized in the studies on terrorism. For the far right attacks in Europe and USA, see Vidhya Ramalingam, "Old Threat, New Approach: Tackling the Far Right Across Europe: Guide for Policy Makers," *Institute for Strategic Dialogue* (2014); Jeff Gruenewald, Steven Chermak, and Joshua D. Freilich, "Far-Right Lone Wolf

MARMARA ÜNİVERSİTESİ YAYINEVİ

violence particularly in US schools,[28] and by increasing power and visibility of heavily armed organized crime syndicates (such as paramilitary drug cartels in Mexico or drug smugglers in South America) that are flourishing in the regions of the third world where state control is weak or non-existent[29] and that occasionally cooperate with ideological or ethnic guerrilla groups fighting against established states.[30]

The increase in the magnitude and frequency of crisis within the capitalist world economy and the weakening of liberal economic order also points out to increasing instability. The weak and precarious economic recovery after 2008 economic crisis[31], and the looming trade wars between the leader of liberal capitalism, USA, and other economic power centers initiated by US president Donald Trump in order to make "Make America Great Again" are all

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Homicides in the United States," *Studies in Conflict & Terrorism* 36 (2013), pp. 1005-1024; and "A Dark & Constant Rage: 25 Years of Right-Wing Terrorism in the United States," *Anti-Defamation League* (2017).

[28] For the gun violence in USA, see James A. Densley and Jillian K. Peterson, "Gun Violence in America," *Gun Violence Project Issue Brief I* (2017); and James M Shultz et al, "Fatal School Shootings and The Epidemiological Context of Firearm Mortality in The United States," *Disaster Health* 1 No. 2 (April-December 2013), pp. 1-18.

[29] For the disruptive impacts of the crime syndicates and drug cartels in Central and South America, see Steven Dudley, "Transnational Crime in Mexico and Central America: Its Evolution and Role in International Migration," *Migration Policy Institute* (November 2012); "The Globalization of Crime: A Transnational Organized Crime Threat Assessment," *United Nations Office on Drugs And Crime* (2010); and June S. Beittel, "Mexico: Organized Crime and Drug Trafficking Organizations," *Congressional Research Service* (July 2018).

[30] For the links between terrorist/insurgent groups and organized crime, see "The Drug Problem and Organized Crime, Illicit Financial Flows, Corruption and Terrorism" *The United Nations Office on Drugs and Crime-World Drug Report 2017* No. 5 (May 2017); and Tamara Makarenko, "The Crime–Terror Continuum: Tracing the Interplay between Transnational Organised Crime and Terrorism," *Global Crime* 6 No. 1 (February 2004), pp. 129-145.

[31] Marxist and neo-Marxist scholars have long predicted the inevitable terminal crisis of capitalism that would be provoked by its internal contradictions as an economic model. For the crisis dynamics inherent in capitalist mode of production see, Barry K. Gills, "Going South: Capitalist Crisis, Systemic Crisis, Civilisational Crisis," *Third World Quarterly* 31 No. 2 (2010), pp. 170-174. For the 2008 financial crisis and its long term and enduring consequences, see Nancy Birdsall, The Global Financial Crisis: The Beginning of the End of the *Development* Agenda?" *Center for Global Development Policy Paper* No. 3 (April 2012); Michael Redmond and Willem Van Zandweghe, "The Lasting Damage from the Financial Crisis to U.S. Productivity," *Federal Reserve Bank of Kansas City Economic Review First Quarter* (2016); and Maurice Obstfeld, "Evening Keynote Address: The World Economy after the Global Financial Crisis," *Asia Economic Policy Conference: Policy Challenges in a Diverging Global Economy*, San Francisco November 19-20, 2015.

evidences for the economic problems contributing to the systemic instability.[32]

Finally, the seemingly unstoppable massive refugee flows from various crisis ridden regions of the world to the economically developed countries are threatening the receiving countries' socio-political stability and thus contributing to the trend for rising instability. These massive refugee inflows are fueling ultra nationalist far right discourses, movements and parties, creating extra burden on their welfare institutions, intensifying the existing problems about social services such as accommodation, healthcare and education, creating a socio-political environment that is mainstreaming the radical discourses through their adoption by centrist political parties,[33] and triggering centrifugal socio-political reactions that lead to the questioning of the European Union project and to the calls for defection by empowering the Eurosceptic movements, parties and discourses.[34]

All these geo-political developments contributing to the instability in the international system have been strengthened by negative consequences of growing human ecological footprint on the natural environment (such as increasing environmental degradation, growing relative resource scarcity,

[32] For the trade war initiated by US President Donald Trump and its probable negative consequences, see Marcus Noland, "US Trade Policy in the Trump Administration," *Asian Economic Policy Review* 13 (2018), pp. 262-278; Bonnie S. Glaser and Kelly Flaherty, "US-China Relations: Hurtling Toward A Trade War," *Comparative Connections: A Triannual E-Journal on East Asian Bilateral Relations* 20 No. 1 (May 2018), pp. 19-32; Zornitsa Kutlina-Dimitrova and Csilla Lakatos, "The Global Costs of Protectionism," *World Bank Group Policy Research Working Paper* 8277 (December 2017); and Antoine Bouët and David Laborde, "US Trade Wars with Emerging Countries in the 21st Century: Make America and Its Partners Lose Again," *International Food Policy Research Institute Discussion Paper* 1669 (August 2017).

[33] For the disruptive socio-political consequences of increasing refugee flows, see Erika Brady, "An Analysis of Security Challenges Arising from The Syrian Conflict: Islamic Terrorism, Refugee Flows and Political and Social Impacts in Europe," *Journal of Terrorism Research* 8 Issue: 1 (February 2017), pp. 59-67; Marinella Taoushiani, "Effects of the Syrian Refugee Crisis on the EU: Nationalism on the Rise," (Unpublished Master Thesis Brandeis University, 2017); and Claudia Postelnicescu, "Europe's New Identity: The Refugee Crisis and the Rise of Nationalism," *Europe's Journal of Psychology* 12 No. 2 (2016), pp. 203-209.

[34] For the impact of refugee flows on European Union, see Karl Vick, "Refugees: The Migrant Crisis Is A Major Test for European Identity—and Unity," *Time* September 28, 2015, pp. 11-12; d'Artis Kancs and Patrizio Lecca, "Long-term Social, Economic and Fiscal Effects of Immigration into the EU: The Role of the Integration Policy," *JRC Working Papers in Economics and Finance 2017/4* (2017); and Atanas Dimitrov and Goran Angelov, "Refugee Integration in the EU: Challenges and Economic Impact," *Economic Alternatives* Issue: 4 (2017), pp. 584-600.

MARMARA ÜNİVERSİTESİ YAYINEVİ

unintended consequences of climate change, etc.),[35] the rising domestic social tensions and political upheavals (rise of the radical parties and the weakening of the political center, adoption of radical discourses by center right and left parties,[36] increasing socio-economic inequality,[37] etc.), the cultural dislocations that are fueled by globalization and leading to a loss of identity and sense of certitude,[38] and the loss of faith in the ability of human beings to solve their problems (loss of faith in human rationality and science, concomitant rise of anti-intellectualism, growing appeal of pseudo-scientific/pseudo-spiritual remedies, etc.)[39].

C. Systemic Reasons for the Increasing (Dis) order

The persistency of the multi-faceted crisis (re)shaping the contemporary world system, indicates that far from being random and/or temporary developments based on the conjuncture; the rising socio-political and military crisis/conflicts breeding instability within the international system are structural and systemic.

The existence of widespread socio-political and economic instability in today's world should not be considered as an extraordinary problem in itself.

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[35] Ecological Footprint is described as "a measure of the amount of bio-productive land and sea required to support a person's lifestyle, which includes "all the impacts of personal spending as well as the business and government expenditure on their behalf." Alan Calcott and Jamie Bull, "Ecological Footprint of British City Residents," *WWF-UK Report* (October 2007), p. 5. For the human societies' increasing ecological footprint that has exceeded natural environment's capacity for renewal 40 years ago, see WWF-World Wide Fund For Nature, "Living Planet Report 2016: Risk and Resilience in A New Era," WWF International (2016).

[36] For the rise of radical left and right wing political parties and discourses, see Ljupcho Stevkovski, "The Rise of Right-Wing Extremism in European Union," *International Studies Interdisciplinary Political and Cultural Journal* 17 No. 1 (2015), pp. 43-57; Daniel Oesch and Line Rennwald, "Electoral Competition in Europe's New Tripolar Political Space: Class Voting for the Left, Centre-right and Radical Right," *EUI Working Papers MWP 2017/02* (2017); and George Eaton, "How Radical Left Populism Was Reborn: Progressives Are Championing *The People* against *The Elite*," *New Statesman* 13-19 July 2018, pp. 16-17.

[37] For the rising socio-economic inequality both in rich and developing countries, see Brian Keeley, "Income Inequality: The Gap between Rich and Poor," *OECD Insights* Paris; OECD Publishing, 2015; and Era Dabla-Norris et al, "Causes and Consequences of Income Inequality: A Global Perspective," *IMF Staff Discussion Note* (June 2015).

[38] For the identity crisis created or exacerbated by globalization process, see Elirea Bornman, "Struggles of Identity in the Age of Globalisation," *Communicatio* 29 No. 1 & 2 (2003), pp. 24-47; and Larry Polivka, "Postmodern Aging and the Loss of Meaning," *Journal of Aging and Identity* 5 No. 4 (2000), pp. 225-235.

[39] For an analysis of how the ideas and the intellectuals are becoming irrelevant for public discourse and policy, see Frank Furedi, "Afterword: The Downsizing of Intellectual Authority," *Critical Review of International Social and Political Philosophy* 6 No. 4 (Winter 2003), pp. 172-178.

MARMARA ÜNİVERSİTESİ YAYINEVİ

According to the 2nd law of thermodynamics, instability and its incessant rise is the rule/norm of existence in the absence of a deliberate intervention by conscious and sentient agency. What is conspicuous and what demands a comprehensive explanation is the increasing incapacity of the relevant global, regional, and national actors (including both governments and NGOS) to reign over the spreading instability within the world system.

The on-going incapability of the constituent units (actors) of the world system to continuously (re)create or maintain *international order*, individually or in cooperation with each other, can only be explained by 2 reasons: either the elements of disorder are too complex and too strong to be controlled or the relevant actors in the system is too weak to suppress the growing elements of disorder. These two reasons, which are operating in tandem and weakening the ability of actors to sustain international order, can be seen as consequences of 3 interrelated developments affecting the world system: *thermodynamic entrapment* due to ever increasing level of entropy in a virtually closed energy environment, ever increasing complexity of the world system that inescapably complicates the processes of creation of order, and the growing fluctuations within the world system as a result of the period of hegemonic transition.

1. Thermodynamic (Entropic) Entrapment

There is a thermodynamical context for "social order(s)"[40] of any kind (local, national and global) based on their need for energy-matter flows to be created/sustained and thus the natural environment impose limits on any societal orders. The laws of thermodynamics indicate that, just like all other living systems, human societies need flow of energy-matter from their environment in order to continuously (re)create their orders and thus protect their vitality. For this reason, all systemic/societal order can be conceptualized as "dissipative structures" which are functioning within the framework of non-equilibrium thermodynamics. Dissipative structures are defined as "relatively stable" disequilibrium structures formed and sustained by the constant energy-

[40] Although order is defined differently from various philosophical, political and social approaches, it can be reduced to an appearance of mathematical *orderliness* and/or perception of this orderliness. According to K.G. Denbigh the problem of order is related to the question of whether a set of objects are distributed in space and time according to a rule or not. He argues that if three or more objects seem to be arranged according to a rule that can be represented with a geometrical shape, then it means these objects present a kind of order. K. G. Denbigh, "Note on Entropy, Disorder and Organization," *British Journal for the Philosophy of Science* 40 (1989), p. 328. According to the perspective offered by Denbigh, societal order can be defined as the existence or perception of an orderliness observed in the spatial and temporal distribution of the societal structures and processes.

MARMARA ÜNİVERSİTESİ YAYINEVİ

matter flows from the environment, and thus, which are prone to destabilization and dissolution if and when the energy-matter flows creating order partially interrupted or completely halted. In this sense they are opposite of equilibrium structures which tend to protect their stable conditions in the short or medium terms even when there are occasional problems/fluctuations in the flow of energy-matter from the environment.[41]

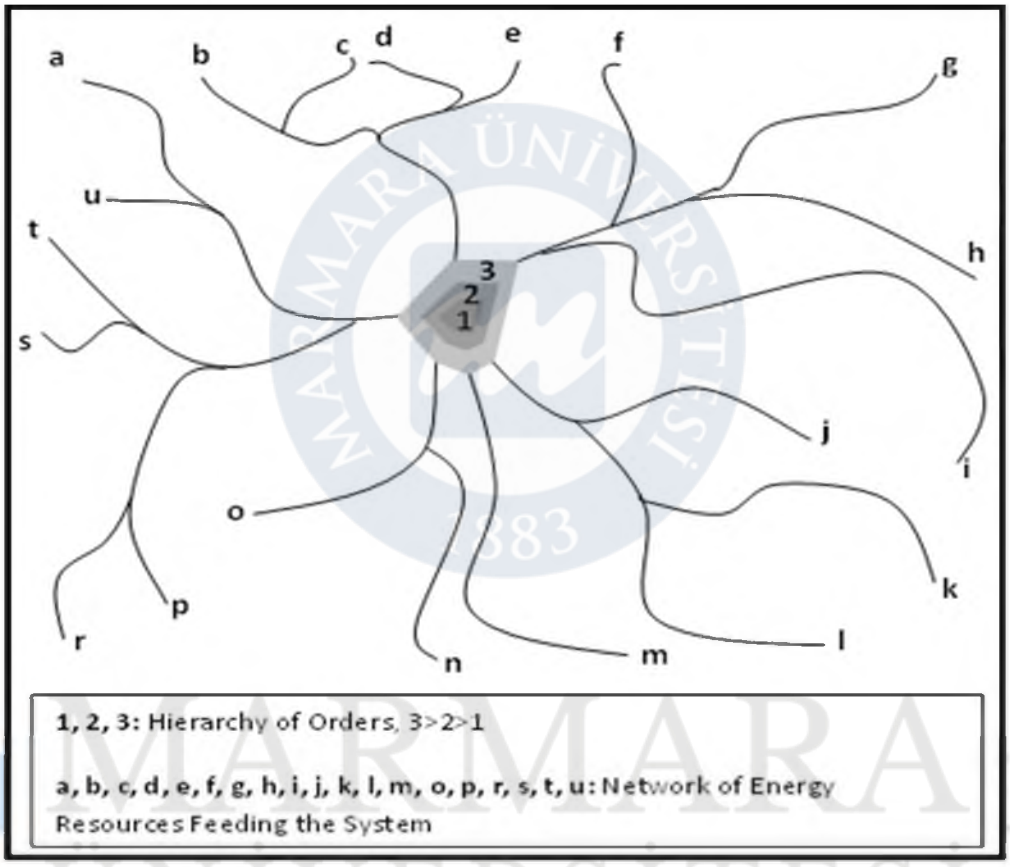


Figure 1: Energy Basin of an Order

In order to escape from the systemic dissolution (indicated by the propensity of entropy to rise within the universe) and to grow, the societal orders must import energy-matter from their natural environment in ever increasing quantities in line with their increasing complexity. Thus, in determining the possibility frontier of a societal order, the quantity and diversity of energy available for a system is fundamental. In other words, every societal order can only exist within the structural restrictions imposed by the "energy-matter

[41] For a discussion of dissipative structures, see Ilya Prigogine and Isabelle Stengers, *Kaostan Düzene*, 2th ed. (Trans.) Senai Demirci, İstanbul: İz Yayıncılık, 1998, pp. 178-184.

MARMARA ÜNİVERSİTESİ YAYINEVİ

basin"[42] it has been located in, and both its existing level of complexity and its future potential for increasing complexity are determined by the limits of its energy-matter basin. (See Figure 1)

When the amount of energy-matter available in an energy-matter basin decreases or the rising complexity of a societal order exceed the capacity of the existing energy-matter basin, the societal order should be expanded both geographically and functionally to farther regions in order to capture and integrate new energy resources to its energy basin. This process eventually lead to the creation of a globalized energy basin.[43] (See Figure 2)

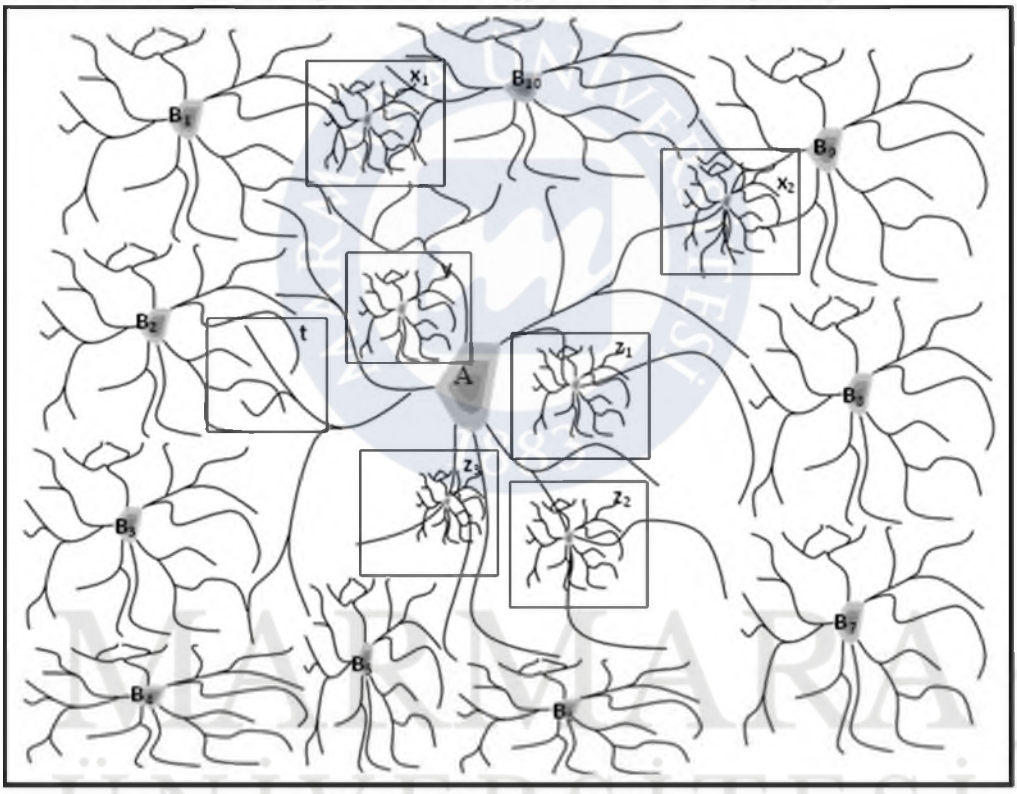


Figure 2: Globalized Energy Basin

[42] The concept of *energy-matter basin* is an abstraction that shows the geographical and functional boundaries of the energy resources that are available for a systemic/societal order at a given level of technology and socio-political organization. Debeir, Deléage and Hemery used the concept of *energy system* in order to refer to *energy-matter basin*. Jean Claude Debeir, Jean-Paul Deléage, and Daniel Hemery, *In the Servitude of Power: Energy and Civilization Through the Ages*, (Trans.) John Barzman, London: Zed Books, 1991, pp. 3-4.

[43] The ever-extending energy lines are the visible manifestations of the ever globalizing energy-matter basin for the sustainability of human societies at their current level of complexity. For the ever increasing energy needs and expanding energy networks of human societies, see Vaclac Smil, "World History and Energy," *Encyclopedia of Energy* 6, 2004, pp. 549-561; and Malcolm Keay, "Energy: The Long View," *Oxford Institute for Energy Studies* (October, 2007).

MARMARA ÜNİVERSİTESİ YAYINEVİ

This inevitable expansion process causes positive-feedback loops, which create more complex and fragile order patterns that are depended on more energy-matter flow from a more globalized energy-matter basin. Eventually, this expansion process increases the probability of disorder/instability within the system by increasing the energy needs of societal orders and by making them more vulnerable to fluctuations in energy-matter flow over long distances in competition with each other.

In the absence of a regulatory mechanism or a higher authority accepted as legitimate by all actors, the rivalry among different constituent units of a system is inevitable as all units want/try to increase their share from the flow of energy-matter in a globalized energy-matter basin. They attempt to divert more energy from the energy-matter basin through processes of "channeling" for carrying the energy-matter flows to their own orders or "barraging" for preventing the energy-matter to flows into other societal orders. The rival infrastructural projects in the field of oil and natural gas transportation or diplomatic and even military rivalry among economically advanced members of the world society for the exploitation of natural resources of the global south are visible expressions of the continuing attempts for channeling and barraging.[44]

Chinese project for the establishment of a "New Silk Road" [45] that exclusively links China with other Eurasian countries; European Union's "Neighborhood

[44]. For rival pipeline projects see, Ildiko Benke, "Power and Energy: Geopolitical Aspects of The Transnational Natural Gas Pipelines From The Caspian Sea Basin to Europe," (Unpublished Master Thesis Naval Postgraduate School, 2010); J.D. Aleksei Tarasov, "The Making of Empires: Russia's Gas-exporting Pipelines v Nabucco," *Journal of World Energy Law and Business* 4 No. 1 (2011), pp. 77-87; Matt Miller, "Multi-billion Dollar Pipeline Projects Battle to Stay on Track," *American Journal of Transportation* Issue: 675 (September, 2018) https://www.ajot.com/premium/ajot-multi-billion-dollar-pipeline-projects-battle-to-stay-on-track; and Henry Foy, "Russia's $55bn Pipeline Gamble on China's Demand for Gas," *Financial Times* April 3, 2018 https://ig.ft.com/gazprom-pipeline-power-of-siberia/ (07.10.2018). The states also compete for the control over the flow of raw materials either by monopolizing its source or controlling lines of transportation. For example, the Chinese infrastructural projects in other countries can be considered as attempts for control over the raw materials. See, Erich D. Grome, "The Dragon on Our Doorstep: China's Nicaraguan Canal, Its Geopolitical And Economic Impacts, and Potential U.S. Rebuttals Utilizing The Monroe Doctrine," *Florida Journal of International Law* 29 Issue: 2 (August 2017), pp. 183-228.

[45] For Chinese project for a new Silk Road (The Belt and Road Initiative), see, Rob Koepp (Ed.), "*One Belt, One Road*: An Economic Road Map," *The Economist Intelligence Unit Report* (March 2016); and Peter Cai, "Understanding China's Belt and Road Initiative," *Lowy Institute for International Policy* (March 2017).

MARMARA ÜNİVERSİTESİ YAYINEVİ

Policy"[46] that is trying to structurally integrate the countries in its vicinity to the Union; Russia's "Near Abroad"[47] concept for incorporating ex-soviet republics into its orbit; and the USA president's policies for protecting the hegemonic position of USA in the world system through different initiatives such as George Bush, Sr.'s "New World Order", George Bush, Jr.'s "The Project for New American Century" and Donald Trump's "Making America Great Again",[48] should also be considered as attempts for increasing their share from the globalized energy-matter basin through channeling and barraging.

Rivalry among the constituent units a system for the energy-matter flow deepens during the periods of thermodynamic entrapment in which the energy-matter basin contracted either in absolute or relative terms. As the available energy-matter flow increasingly becomes inadequate for maintaining the orders of all the constituent units at their current level of complexity, all actors try to increase their share in a destructive competition for resources at the expanse of all others. This rivalry can take the form of rhetorical threats and actual coercive operations that aim to create and maintain exclusive zones which are used only for the satisfaction their own needs.[49]

Contemporary world system carries all hallmarks of a thermodynamical

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[46] For the latest version of the EU's Neighbourhood Policy, see "Review of the European Neighbourhood Policy" 18.11.2015 http://eeas.europa.eu/archives/docs/enp/documents/2015/151118_joint-communication_review-of-the-enp_en.pdf.

[47] For Russian Near Abroad Policy, see Michael Rywkin, "Russia and the Near Abroad under Putin," *American Foreign Policy Interests* 37 (2015), pp. 229-237; and Elias Götz, "Putin, the State, and War: The Causes of Russia's Near Abroad Assertion Revisited," *International Studies Review* 19 (2017), pp. 228-253.

[48] For *New World Order* formulated after the end of the Cold War, see Walter Russell Mead, "The Bush Administration and the New World Order," *World Policy Journal* 8 No. 3 (Summer, 1991), pp. 375-420. For the *The Project for New American Century*, see Donald Kagan, Gary Schmitt and Thomas Donnelly, "Rebuilding America's Defenses: Strategy, Forces and Resources for a New Century," *The Project for the New American Century* (September 2000). For *Making America Great Again*, see Jason A. Edwards, "Make America Great Again: Donald Trump and Redefining the U.S. Role in the World," *Communication Quarterly* 66 No. 2 (2018), pp. 176-195.

[49] Colonialism in the 16th century after the geographical discoveries, economic policies of mercantilism in the 16th -18th centuries and imperialism in the late 19th and early 20th centuries can be conceptualized as attempts by relatively advanced states and societies to create this kind of exclusive exploitation zones. For the economic rationale of mercantilism and imperialism, see J. H. Dales, "The Discoveries and Mercantilism: An Essay in History and Theory," *The Canadian Journal of Economics and Political Science* 21 No. 2 (May 1955), pp. 141-153; and John Bellamy Foster, *The Theory of Monopoly Capitalism: An Elaboration of Marxian Political Economy* New Edition, New York: Monthly Review Press, 2014, pp. 160-192.

MARMARA ÜNİVERSİTESİ YAYINEVİ

(entropic) entrapment. The resource-energy base of the system is increasingly becoming inadequate in absolute and relative terms: not only large amounts of energy-matter is irreversibly transformed into entropic waste during the industrial production processes for the satisfaction of human needs and thus lost for the future purposes, but also the demand for raw materials and energy incessantly increases as the industrial productive capabilities of the countries grow in an unprecedented pace. The rising entropic entrapment in today's world system due to the increasing inadequacy of the resource base (energy-material basin) manifests itself in two interrelated developments: a) widespread fears about the resource depletion in raw materials in the near future, which is particularly apparent in the depletion of mineral resources used in industrial processes including hydrocarbons, rare earth materials, industrial metals and non-metals, etc. b) deterioration of the resource base because of the decreasing quality of the renewable resources provided by the nature.[50] The impact of the entropic entrapment on the survival of human societies is strengthened by growing "footprint" of human societies over their natural environment due to their ever increasing demand for energy in the form of various resources. This increase in demand is a direct consequence of rapid population growth,[51] the changing life styles within a consumer society,[52] the increasing industrialization and unrelenting economic growth.[53]

This situation can be seen an example of the classical ecological problem related to population, consumption and resource base within a particular

[50] Since the Club Rome's groundbreaking report/book *The Limits to Growth*, the future availability of natural resources has been a concern for the activists, economists, and statesmen. For the predictions about the deterioration of the mineral resource base of the human societies, see Donella H. Meadows et al, The *Limits to Growth: A Report For The Club of Rome's Project on The Predicament of Mankind*, New York: Universe Books, 1972; and "Measuring and Managing Environmental Exposure: A Business Sector Analysis of Natural Capital Risk," *Allianz Global Corporate & Specialty Report* (June 2018).

[51] For the impact of population growth on resource depletion, see Fred Magdoff, "The Depletion of the World's Natural Resources: Is Population the Problem?" *Monthly Review* 64 Issue: 8 (January 2013), pp. 13-28; and Robert Repetto and Thomas Holmes, "The Role of Population in Resource Depletion in Developing Countries," *Population and Development Review* 9 No. 4 (December 1983), pp. 609-632.

[52] For analysis of consumerism on the resource depletion, see Walter Cardoso Satyro et al, "Planned Obsolescence or Planned Resource Depletion? A Sustainable Approach," *Journal of Cleaner Production* 195 (2018), pp. 744-752; and Pradip P. Kalbar et al, "Environmental Impact of Urban Consumption Patterns: Drivers and Focus Points," *Resources, Conservation & Recycling* 137 (2018), pp. 260-269.

[53] For the relation between production and resource use, see Wojciech Stanek et al, "Chapter 2: Resources. Production. Depletion," in *Thermodynamics for Sustainable Management of Natural Resources* Wojciech Stanek (Ed.), N.A: Springer, 2017, pp. 7-36.

MARMARA ÜNİVERSİTESİ YAYINEVİ

natural habitat. The requirement for satisfying the exponentially growing demand for energy-matter within an ever diminishing energy environment, inevitably leads to mutually exclusive demand for the same natural resources and strengthen the systemic instability by increasing the possibility and the magnitude of the rivalry and conflict between different actors in the world system. The ever shrinking resource base and the incessantly increasing demand and need for resources due to increasing complexity, render the creation and maintenance of systemic order more difficult.

2. Increasing Complexity of the World System

The degree of systemic complexity directly linked to the level of instability in a societal system. There is a link between the increasing complexity of a system or its environment and the potential for instability to emerge in a societal system: the increasing complexity inescapably increase the fragility of the system and it becomes more difficult to continuously re-create systemic order patterns.

First of all, thermodynamical context of order creation indicates that there is a direct relation between the complexity of an (societal) order and the amount of energy required for its (re)creation. The more complex an order is, the more energy is required for maintaining its order patterns, and the increasing reliance on energy flow intensify its vulnerability to the fluctuations in energy flow from the environment. As the contemporary world system is structurally and functionally becoming more complex, its energy requirements are becoming both qualitatively more varied and quantitatively greater.[54] This situation makes the contemporary world system more vulnerable to inescapable fluctuations in the energy supply from the globalized energy-matter basin that has been constructed upon a complex network of energy transportation lines effectively covering all but some remote regions of the

[54] Increasing complexity of the contemporary world system is a consequence of increasing number of relevant actors within the system, increasing connectivity between previously unconnected parts of the system through creation of new functional networks, increasing pace of the systemic processes, and the inclusion of new systemic factors such as new technologies, merchandise or practices that multiply the systemic possibilities. For complexification of the systems during their evolution, see Francis Heylingen, "The Growth of Structural and

Functional Complexity during Evolution," in F. Heylighen, J. Bollen & A. Riegler (eds.) The Evolution of Complexity, Dordrecht: Kluwer Academic, 1999, pp. 17-44; and; and Yaneer Bar-Yam, "Complexity Rising: From Human Beings to Human Civilization, A Complexity Profile," *Encyclopedia of Life Support Systems*, Oxford: EOLSS UNESCO Publishers, 2002.

MARMARA ÜNİVERSİTESİ YAYINEVİ

world. This increasing vulnerability to energy supply makes is one of the factors that makes the world system more amenable to emergence of socio-political crisis and that strengthen the existing systemic instability.

Secondly, the need for more effective and efficient control sub-systems increases with the growing complexity of world system because complexity entails establishment of a control over increasing number of systemic probabilities and increasing speed of systemic processes. The control sub-systems are necessary for ensuring the functionality of the system, keeping the flow of energy under control, and preventing the potentially destructive contingent threshold behaviors.[55] However, the proper functioning of these more effective and efficient control sub-systems depended on more comprehensive regulation feed-back loops and the existence of organizations/machines capable of processing more information in shorter time intervals. As the functioning of any control system is conditioned or constrained by the informational entropy—used as a measure of loss of information during the transmission of command and control messages among the control systems—the more complex an order becomes, the more informational entropy it will produce, and the probability of anthropogenic or systemic errors in the transmission of control messages increases. This relation foresees weakening capability of control sub-systems over the systemic order re-creation processes as a consequence of the increasing complexity and thus it entails a possible exponential increase in the probability of a crisis to emerge as the system becomes more complex.[56]

Finally increasing complexity of societal orders may also trigger non-linear dynamics within the system due to its increasing "sensitivity to initial conditions",[57] and the emergence of non-linear dynamics may create

[55] Threshold behaviors are also called phase transitions. They are sudden and discontinuous critical changes (like breaking of a rope) that cannot be predicted by observing the micro level details of the system. James Gleick, *Kaos: Yeni Bir Bilim Teorisi* 10th ed. (Trans.) Fikret Üçcan, İstanbul: TÜBİTAK, 2000, pp. 148-150. The threshold behaviors usually have fractal borders. ibid, pp. 187-188.

[56] Şükrü Yazğan, "From Crisis of Civilizatıons to the Civilization of Crisis: Long-Term Patterns in/of Civilizational Life-Cycles," *Medeniyet Araştırmaları Dergisi* 2 No. 3 (January 2018), p. 20. For the relation between complexity and loss of control, see Francis Heylingen, "Complexity and Information Overload in Society: Why Increasing Efficiency Leads to Decreasing Control," *The Information Society* 4 (2002), pp. 1-44.

[57] Sensitivity to initial conditions described the situations where minute differences in the starting conditions/parameters create exponentially growing changes in the systemic trajectories. David Ruelle, *Rastlantı ve Kaos* 13th ed. (Trans.) Deniz Yurtören, İstanbul: TÜBİTAK, 1999, p.38. Extreme sensitivity to initial conditions is one of the defining characteristics of a deterministic chaotic system. Julien Clinton Sprott, *Chaos and Time*

MARMARA ÜNİVERSİTESİ YAYINEVİ

bifurcations[58] in the evolutionary trajectories of the system that lead to unpredictable behaviors which may increase the system's vulnerability against the internal and external detrimental effects.[59] Increasing unpredictability of systemic processes constrain the ability of actors to re-crate a systemic order according to their pre-defined set of systemic preferences by further weakening the control sub-systems and make the world system more prone to crisis dynamics.[60]

All these developments related to increasing complexity of the world system has resulted in unpredictable border conditions that can negatively affect the evolutionary trajectory of the world system. The conceptual and physical border between (areas of) order and disorder has become fractal and the impact of seemingly miniscule factors on the systemic disequilibrium and the systemic evolutionary trajectory in the phase space have been strengthened. As all societal orders have become more fragile, the constructive capability of even the most capable actors in the world system has been diminished and it has become more difficult for them, individually or in cooperation, to create and maintain order patterns reflecting their systemic preferences—even when they have a will to do it.

3. Systemic Fluctuations Generated by Increasing Rivalry and Conflicts in a Hegemonic Transition Period

The on-going hegemonic transition process within the world system is injecting more uncertainty to the world system, and thus creates more

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Series Analysis, Oxford: Oxford University Press, 2006, p. 104. In chaotic systems small errors in measuring the initial conditions incessantly enlarged in time by positive feedback loops and create large differences in the evolutionary trajectories of the system. Christopher G. Hudson, "At the Edge of Chaos: A New Paradigm for Social Work", *Journal of Social Work Education* 36 No. 2 (Spring/Summer 2000), p. 221.

[58] According to Hudson, the concept of bifurcation is used to refer to the threshold where systemic processes split into 2 or more sub-processes or rhythms due to the increase in one of the systemic parameters. Hudson, p. 223. According to Lorenz, bifurcation point is a phase transition and breaking point for the systemic functioning. At the point of bifurcation minute quantitative changes in the systemic constants lead to qualitative differences in the systemic behavior. Edward N. Lorenz, *The Essence of Chaos*, Seattle: University of Washington Press, 1995, p. 69.

[59] For system vulnerability and complexity, see Mohan Munasinghe, *The Economics of Power System Reliability and Planning: Theory and Case Study*, Baltimore: John Hopkins University, 1979, pp. 10-11.

[60] According to Tainter, diminishing returns of investment in social complexity because of the decreasing marginal productivity of changes (innovation/novelty) in socio-political organization can be used to explain the uncontrollability. See, Joseph Tainter, *Collapse of Complex Societies*, Cambridge: Cambridge University Press, 1988, pp. 91-118

MARMARA ÜNİVERSİTESİ YAYINEVİ

instability and unpredictability. As *dissipative structures*, all actors in the world system can be conceptualized as *orders*[61] that are constructed and sustained through continuous re-generation of their peculiar *order patterns* reflecting their *sets of social values* by using both the material and non-material environmental flows.

Although all *orders* are similar in their basic function, they can be differentiated and categorized according their capability to impose their systemic preferences on the others: as "hegemonic order" (*H-Order*), "alternative order" (*A*-order) and "potential order" (*P*-Order). P-Orders have a potential for *self-organization* and they constitute the nucleus/core of any existing order. All orders, both alternative and hegemonic, emerge out of the potential orders. *Alternative Orders* emerge out of potential orders through intensification of the initial clustering creating those potential orders by the suitable environmental conditions. As they differ from each other on systemic preferences they desire for the present and future conditions, all alternative orders exist within permanent struggle with each other and the dominant hegemonic order. If and when one of the A-Orders can restrict and thus control all other alternative orders within the system, it rises to the status of H-Order—hegemonic order. Hegemonic orders suppress or incorporate rival orders into accepting their systemic preferences, rather than destroying them or completely eliminating their impact on the evolutionary trajectory of the system. Thus, in a complex system the dominant order pattern should be considered as a product of the continuous interaction among all alternative orders and between them and the hegemonic order. It is a continuously evolving *global* order due to the impact of various sub-orders (both potential and alternative) and it is subject to a process of incessant destruction and (re)construction at the micro-level.

According to this theoretical framework, the characteristics of the relations between different actors within the world system are determined by the(ir perception on the) degree of compatibility of their systemic preferences on the desired evolutionary trajectory of the international relations with each other. In

[61] A societal order as a concept can be defined as spatial-temporal continuities within functional and structural arrangements. According to Chalidze, it refers to restrictions imposed on the dispersion probabilities of constituent units within the system. These restrictions can be both physical limitations created by laws of physics and social limitations imposed by taboos, traditions, practices, conventions and laws of society. Valery Chalidze, *Entropy Demystified: Potential Order, Life and Money*, USA: Universal Publishers, 2000, pp. 41-43.

MARMARA ÜNİVERSİTESİ YAYINEVİ

other words the nature of their relations is shaped by the compatibility of their desires and priorities for today and their aspirations, dreams and projects for the future regarding their own countries, the region and the world. If their systemic preferences in foreign policy are more overlapping and compatible; it would led to converging priorities for today and converging aspirations for the future and thus, the relations between these actors would be more cooperative. However, if these alternative orders are working to realize different or diverging preferences on the same issues or regions, their relations will become conflictual and they will find themselves in a continuous struggle against each other for the materialization of their own priorities and aspirations within the world system. The probable consequences of such a permanent conflict is either a constant *disorder*—in which none of the alternatives can succeed to impose its will on the others—or a series of fragile hegemonic orders replacing one another in quick succession. That is particularly true under the conditions of entropic entrapment that have the potential to intensify the rivalry and struggle among alternative orders *for regeneration* under the conditions of diminishing resource base. Even under the conditions of constant struggle over systemic preferences the stability of a system can be ensured as long as an H-Order capable of imposing its will through coercion and persuasion exist. However, when and if the hegemonic actor within a system becomes incapable of imposing its systemic preferences on the other actors and of determining the evolutionary trajectory of the system, the instability will quickly rise due to the discharge of potential energy that has been accumulated due to their suppression by the hegemonic power.[62]

In the contemporary world system, it is becoming more apparent that the existing H-Order is weakening as USA, the hegemonic power, is increasingly becoming incapable of imposing its will on the other constituent units within the world system. Although, USA is still powerful in destructive terms as it still possess a military dominance, it seems to be incapacitated in constructive terms as its ability to reshape/(re)construct the world system according to its own preferences has been weakened. The decrease in its ability is a result of its relative decline in economy and diplomacy: although USA is still the most prosperous nation with the largest productive capacity and gross domestic

[62] For conceptualization of potential, alternative and hegemonic orders and their characteristics, see Şükrü Yazğan, *Sistem ve Kriz: Sistemsel Kriz ve Uluslararası Sistemin Yeniden Kurgulanması* (The System and Crisis: Systemic Crisis and the Reformulation of the International System) Unpublished PhD Thesis, İstanbul, Marmara University, Social Sciences Institute, 2009, pp. 130-135.

MARMARA ÜNİVERSİTESİ YAYINEVİ

production, it has lost its dominant position.[63] A-Orders within the system are strengthening their power position visa via USA and thus they are becoming more assertive in international relations as exemplified by China, EU, Russia and even emerging regional power like Turkey, Brazil, India etc.[64] This incapacitation is also partly related to the confusion on the part of the hegemon's ruling about the best or more appropriate way to tackle with the problems of weakening hegemony.

Thus, it is becoming more visible that the current hegemon is either not powerful enough or willing to suppress or control the rising A-Orders (other regional and global actors with their own preferences for the future of the world system) and the exponentially increasing systemic possibilities throughout the complexification process. The direct or indirect resistance to the hegemon and its policies is accelerating through anti-hegemonic discourses and actions by different actors within the international system. The loss of intellectual leadership is also further weakening the hegemon's position as its ability to persuade other actors through hegemonic discourses based on ideational power has also been weakened.

Incapacitation of the hegemon is contributing to the rising instability in the world system as different A-orders with differing and even conflicting priorities and preferences are trying to materialize different order patterns on

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[63] There exist heated debates on the relative decline of the USA's hegemonic position within the world system and its increasing incapacitation to impose its will on the other actors. For the relative decline of USA, see Kenneth S. Zagacki, "The Rhetoric of American Decline: Paul Kennedy, Conservatives, and the Solvency Debate," *Western Journal of Communication* 56 (Fall 92), pp. 372-393; Stephen G. Brooks and William C. Wohlforth, "The Rise and Fall of the Great Powers in the Twenty-First Century: China's Rise and the Fate of America's Global Position," *International Security* 40 No. 3 (Winter 2015/16), pp 7-53; Immanuel Wallerstein, "The Curve of American Power," *New Left Review* 40 (July-August 2006), pp. 77-94; and Francis Shor, "War in the Era of Declining U.S. Global Hegemony," *Journal of Critical Globalisation Studies* Issue: 2 (2010), pp. 65-81.

[64] Although the debates are centered on the possibility of China's ascendancy to hegemonic power position within the world system, many other emerging power centers ("the rest") are also improving their power positions against the "West" and the USA. For rise of *the rest*, see Charles Kelly, *The Upside of Down: Why Rise of the Rest Is Good for the West*, Philadelphia: Basic Books, 2013; Alice H. Amsden, *The Rise of the "Rest": Challenges to the West from Late-Industrializing Economies*, New York: Oxford University Press, 2001; and Fareed Zakaria, *The Post-American World: Release 2.0*, London: Penguin Books, 2011. For the rise of China, see K. Heng, "The Rise of China: Global Threat or International Peace?" *UC Occasional Paper Series* 1 Issue: 1 (2017), pp. 1-18; Wayne M. Morrison, "China's Economic Rise: History, Trends, Challenges, and Implications for the United States," *Congressional Research Service Report* (February 5, 2018), pp. 1-49; and Yan Xuetong, "The Rise of China and its Power Status," *Chinese Journal of International Politics* 1 (2006), pp. 5-33.

MARMARA ÜNİVERSİTESİ YAYINEVİ

the same geographical and functional areas. The possibility of regional and global conflict is rising particularly because of rising competition for resources, and there exist no hegemonic power willing or capable of regulating competition and arbitrating conflicts. Also, the gradual transformation of the hegemon into just another A-order within the system increases the possibility of an eventual hegemonic struggle similar to historical examples, but more destructive because of the new technologies of destruction including the WMDs.

D. Conclusion

Increasing instability in the international system is a consequence of the thermodynamic entrapment that weaken the resource-energy basis of the human societies, inability of the existing socio-political institutions to control or suppress cascading systemic possibilities produced by the increasing complexity, and the increasing hegemonic struggle due to systemic uncertainties and fluctuations created by the process of hegemonic transition. The impact of these different sources of instability is strengthened by a "crisis systematic" produced by positive feedback loops between and among them and this crisis systematic exponentially enhance the magnitude of uncertainty and unpredictability for the international system.

The increasing instability has the potential to endanger the survival of the humanity as a species, and any solution to it should include: a) harmonization and alignment of the SoSVs of different actors within the system and thus replacing destructive rivalry among the constituent units of the system with a constructive cooperation; b) improving the resource-energy basis of the human societies through generic technological innovations (such as fusion power stations) or through geographical expansion by effective colonization of solar system and beyond; c) redesigning the human societies' life styles (the way they produce, distribute, consume and live) root and branch, and ensuring more effective and efficient utilization of the existing resource basis; and d) inventing and establishing new institutional structures (Order Creating Mechanisms) at the local, national and global levels that are capable of controlling and repressing the cascading systemic possibilities produced by increasing complexity.

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