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20th Century revolutions: characteristics, types, and waves

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The 20th century revolutionary process had a big impact on the World System and significantly changed its entire configuration. However, there are essential gaps in terms of theoretical approaches, in particular, in terms of the typology of revolutions. Moreover, there is clearly insufficient research related to qualitative and quantitative analysis and consideration of the revolutions of the 20th century in their entirety. This article aims to fill those gaps by pursuing three main goals: (1) comparison of revolutions of the 20th and 19th centuries, highlighting the important characteristics of the former; (2) classification of revolutions of the 20th century; (3) identification of the main revolutionary waves of the 20th century and their essential characteristics.

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Introduction

The 20th century was very rich in various revolutionary events, exceeding the number of revolutions of the 19th century. The revolutionary process had a big impact on the World System and significantly changed its entire configuration. Revolutions were one of the most important phases in historical evolution of many nations (Coccia, 2019c, 2019d). They created Communist states, wiped out the colonial empires and finally destroyed the world Communist camp. There are many studies on the revolutions of the 20th century. However, there are still essential gaps in terms of theoretical approaches, in particular, in terms of the typology of revolutions. Moreover, there is clearly insufficient research related to qualitative and quantitative analysis and consideration of the revolutions of the 20th century in their entirety. The article offers a qualitative and quantitative analysis of the revolutionary process of the 20th century. For the goals of the qualitative and quantitative analysis authors discuss some aspects of the theory of revolution as applied to 20th century revolutions. The authors propose a novel typology of revolutions and introduce an important concept of analogues of revolution. The authors also introduce a new approach to defining the waves of revolutions. This is an important issue, since, according to Colin Beck (2011, 2014), the current theories of revolution are ill equipped to explain revolutionary waves. The main research question of the article is to identify the number and contents of revolutionary waves in the 20th century using a clear set of scientific criteria.

Theoretical framework

There are plenty of studies on the revolutions of the 20th century. An analysis of the literature and paradigms was presented, in particular, in Goldstone (2001), Sanderson (2016), Lawson (2016), Grinin et al. (2016), Shults (2016) and Ardalan (2020, pp. 57–82). In the article, we study revolutionary process, including both individual revolutions and revolutionary waves, and work out typology of revolutions. Some aspects of the revolutions of the 20th century are considered. However, there are certain gaps in a number of aspects of the theory of revolutions, in particular, there is a lack of sufficient typology of revolutions and revolutionary events (Andreski, 1988; Goldstone, 2001; Shults, 2016). Modern researchers do not always consider revolutions in the general series of other political events associated with (often violent) changes in the political regime, socio-political system, etc., which do not often fit definitions of revolutions. In many respects these events are related to revolutions, although this creates great disagreement in terms of defining and classification of events as revolutions. In the present article, in order to overcome this difficulty, the authors further develop a special term to mark such sociopolitical events—an *analogue of revolution* introduced in earlier work by Grinin and Grinin (2020). We agree with Colin Beck's remark that current theories of revolution are ill equipped to explain revolutionary waves where interactive causal mechanisms at different levels of analysis and interactions between the units of analysis predominate (Beck, 2014). In this regard, this article continues the topic that has already been raised in the recent years, and since the theme of revolutionary waves is closely related to the world-systemic and international aspects of the emergence and impact of revolutions, this work continues the discussion raised by Lawson, (2015). In this article, Lawson seeks to extend the insights of this scholarship by demonstrating how the “international” has not yet been theorized all the way down (Lawson, 2015, p. 305).

It is necessary to indicate the typological differences noted by researchers with respect to the revolutions of the 20th century. First, a number of scholars divide revolutions either into classic

revolutions and others, or into revolutions in developed countries and in developing countries (Von Laue, T.H., 1964, p. 16; Tucker, 1969, pp. 137–138); or into the Western and Eastern/Third World revolutions (Huntington, 1968, pp. 266–273; 1986; Foran, 2005, p. 1, 18–24); or into revolutions in European and non-European empires (Hobsbawm, 1996). This division makes sense, since, as we have pointed above, the revolutionary process involved many societies whose developmental level was insufficient. Nevertheless, the influences of the World System and geopolitical shifts led to revolutions in these countries even before they reached the level of development necessary for the emergence of a revolutionary situation. Second, liberal ideas of the rule of law (law-based society) were less typical for the revolutions of the 20th century. Hence, some scholars like Hobsbawm (1996) divide them into revolutions of the bourgeois liberalism epoch (the 19th century and earlier) and revolutions of the 20th century which have different foundations.

Finally, there is clearly insufficient qualitative and quantitative research into the totality of revolutions in the 20th century (among those who conducted such studies, we can mention Colin Beck and Mark Beissinger (Beck, 2011; Beissinger, 2018, 2022)). We propose a database of 20th-century revolutions with a number of characteristics. Most of events from the database are shown in Table S1 in the Supplementary Online Materials. Based on the collected data, the analysis of revolutionary events of the 20th century over decades and 5-year periods was carried out. We have identified 125 revolutionary events in total. The paper includes a number of diagrams with correlations and ratios of different kinds, types and subtypes of revolutionary events, as well as waves of revolutions and their clusters. The proposed theoretical qualitative and quantitative analysis allows seeing the revolutionary process of the 20th century in new aspects. A preliminary study of the 20th century revolutions was published earlier in Russian by Grinin and Grinin (2020). In that paper, we conducted a preliminary comparison of the revolutions of the 19th and 20th century, proposed the initial version of typology of revolutionary events, and criteria for the delineation of the revolutionary waves. The present research is a direct continuation of the abovementioned work.

Study design: Methods and materials

We start with the comparison of revolutions of the 20th and 19th centuries, highlighting the important characteristics of the former. To do this, we use, on the one hand, the available generalizing works on the revolutions of the 19th century (Tilly, 1996; Beck, 2011; Grinin, 2018, 2019; Zinkina et al., 2019), and on the other hand, the database prepared by us on the revolutions of the 20th century (see the Supplementary Online Materials). The characteristics, demands, and outcomes of the revolutions of the 20th century identified during the first phase of the study are used to classify them according to the types of revolutionary events. In turn, the world-systemic causes identified by us at the first phase of the study and the classification of revolutionary events that has been developed at the second phase of the study have been used to highlight the main revolutionary waves of the twentieth century.

General characteristics give some clue to the classification and understanding of the world-systemic causes of revolutionary events, which act as a common cause for revolutions of the same wave; and the classification makes it possible to see the variety of revolutions within the framework of the revolutionary process and help in identifying their features, whereas quantitative fluctuations of different types show the connection between the general world-system processes and revolutionary waves and types of revolutions.

Results and discussion

We would like to start this section with indication of some differences between the revolutions of the 20th and of the 19th centuries. There is no doubt that the revolutions of the 20th century are in many respects similar to the revolutions of the 19th and previous centuries. This often causes difficulties in identifying their qualitative distinctions (see for example, Dunn, 1989) based on any approach. Nevertheless, it is possible to highlight some trends that came to the fore in the 20th century. In particular:

1. Growing aspiration of radical social equality, as well as the intentional elimination of the causes of social inequality. In particular, this was expressed in the growing influence of socialist and communist ideas, including the demands for the abolition of private property. Ideas of equality before the law, which spread from the end of the 18th century and in the 19th century, in 20th century transformed into the demand of consumption equality.
2. In the 20th century, the revolutionary process started to shift from the core of the World System to its semi-periphery and even to the periphery (on the connection between the core and the periphery of the World System, see e.g. Wallerstein, 1987, 2004; Coccia, 2019b, p. 4).
3. As a result, new types of revolutions emerged and widely spread. First of all, we mean, of course, communist and anti-communist revolutions. According to Huntington (1968), the eastern type of revolution different from the western one also appeared. A peculiar type of right-wing revolutions typical for Italy under Mussolini, for Nazi Germany and some other right-wing totalitarian regimes in Europe emerged in the 1920s and 1930s.
4. On the whole, the nature of revolutionary actions considerably changed. In particular, the role of guerrilla warfare, which often lasted for decades, intensified (see, for example, Wickham-Crowley, 1991, 1992; Selden, 1995; McClintock, 1998).

In the 20th century, the influence of external events on revolutions increased sharply, accelerating development of the internal crisis in a society and worsening the position of the ruling elites. It strengthened revolutionary sentiments and prepared conditions for revolutions and their success. With regard to the external factor, the following can be noted. First, the link between revolutions and wars has never been stronger than in the 20th century (Halliday, 2001; about the connection between revolution and war, see also Arendt 2006 (1963); Skocpol, 1979, 1994; Gurr, 1988; Goldstone, 2001; Walt, 1996; 2001; Graziosi, 2005; on the causes of wars see, e.g., Van Evera, 1999; Levy and Thompson, 2011; Coccia, 2019a). Second. A number of revolutions were generated by geopolitical factors, including, of course, the world wars and defeats of Germany, its allies and Japan. But one should point to some other events: the collapse of colonial empires or the transformation of some states into world revolutionary centres that profess revolutionary ideology and strive for the victory of their supporters in different countries. Geopolitical causes of revolutions were also associated with the ideological confrontation between states and socio-political systems. At first, it was the struggle between fascism and communism, later between communism and capitalism (the USSR and USA). Third, in the last decades of the 20th century, the possibility of revolutions was accelerated by expanding globalization and the impact of the World System.

We would like to note that the number of revolutions in the world in the 20th century compared with previous periods grew significantly. We have identified 125 revolutionary events (revolutions and their analogues) in the 20th century. According to our estimates, the number of classic revolutions in the 19th century is

no more than 40–45. Therefore, there is an almost threefold increase in revolutions in the 20th century compared with the 19th. This is due to both an increase in the number of independent countries and the transition of revolutionary processes from Western and Central Europe (the World System core) to the semi-periphery and periphery. Eric Hobsbawm has named the 19th century “the Age of Revolution” (Hobsbawm, 1996); however, much more revolutions took place later, in the 20th century.

All revolutionary events (i.e. revolutions or analogues of revolution) are classified into different types. For the purpose of the present article, we would like to suggest our own classification of the 20th century revolutions according to their objectives and ideologies. However, one should take into account the complex character of many revolutions; thus, the pure types of revolutions according to the classification can hardly be traced. Note also that some revolutions can belong to more than one type.¹

For the 20th century, we single out the following types of revolutions on the basis of the data on the demands, objectives and ideologies of their participants.

Democratic revolutions, whose goals, first of all, are associated with the transformation of the political system. Here we define the following sub-types: (1a) *anti-monarchic* (the Portuguese revolution of 1910; the revolution in Monaco in 1910) and (1b) *anti-dictatorial* revolutions differing in some respects from anti-monarchic. Such revolutions were typical for Latin America. So, for example, both revolutions in Cuba in 1933–1934 (against Machado dictatorship) and Castro’s revolution in 1956–1959 (against the authoritarian government of Batista) were anti-dictatorial revolutions. However, the latter revolution transformed into the communist one. Many revolutions that started as democratic would change their character. For example, the Russian revolution 1917–1921 or the Spain revolution in 1931–1939. Nevertheless, for the 20th century, we have identified 22 purely democratic revolutionary events;

(2) *Social revolutions* that sought primarily to address social injustices (in relation to land use, income distribution, labour rights, etc.), while democratic, political, legal and other transformations were only tools to achieve this goal (the Mexican revolution 1910–1917, revolution in Spain 1931–1939);

(3) *Communist revolutions* directed by the communist doctrine. It seems possible to single out a special sub-type of such revolutions (or rather their analogues), African-Socialist, that were attested in the 20th century in Ethiopia, Burkina Faso, or Benin;

(4) *Anti-communist revolutions*: These revolutions to a certain extent may be considered as democratic. But since anti-communist revolutions tend to solve a number of complicated issues, such as restoration of private property, economic freedom etc., it is reasonable to consider them as a special type of events. This also explains the reason why the revolutions of the late 20th century had a different type of conflict compared to classic revolutions (see Goldstone et al., 1991, p. 3);

(5) *Power-modernist revolutions*, which supported the rise or restoration of the power of states. During such events revolutionaries were usually well aware of the backwardness of their state and tried to use revolution as a means of accelerating modernization (like the revolutions in the East of the early 20th century, e.g., both revolutions in Turkey: the Young Turk Revolution and the Kemalist Revolution; yet the latter was at the same time the war against the Greece occupation and for the Turkish national state);

(6) *National and national-liberation*, were the most numerous among all the revolutions of the 20th century. Here we distinguish (6a) *national* revolutions. Their major objective was creation of a national state (these were mostly revolutions on the ruins of multinational empires like the Austrian-Hungarian and

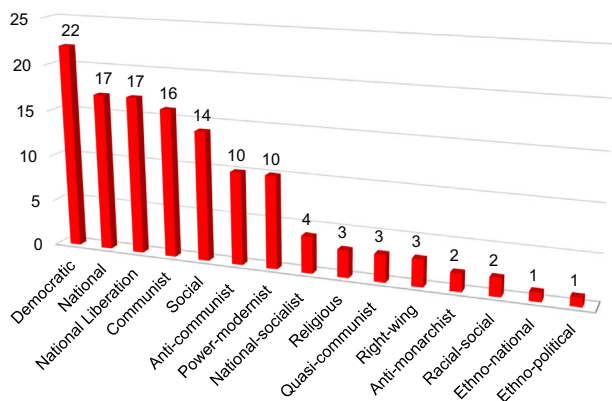


Fig. 1 Distribution of the 20th century revolutions by types.

Russian empires; the same occurred during the collapse of the USSR and Yugoslavia in the early 1990s); and (6b) *national-liberation* revolutions aimed at gaining independence/autonomy. These revolutions mostly occurred in the societies under colonial dependence that were forced to struggle for independence from metropolises. National revolutions (or analogues) usually take place in the national parts of empires or multinational states, where all the prerequisites for an independent state have already basically developed, including more or less clear administrative boundaries and often administrative bodies, or where there are often clear memories of the existence of an independent state in the past, as well as a well-formed national consciousness, that is, where it is already possible to speak of established ethnic nations. National-liberation revolution usually refers to territories where the nation and the explicit characteristics of the state have not yet been formed;

(7) *National-socialist*, or *right-wing*, revolutions with the ideology of etatism (almost worship of a state), socialism and national spirit (based on masses and anti-elite sentiments). This is in the first place, the Italian revolution (1922–1926) and the analogue of revolution in Germany (1933–1937, see also below) and also their followers in Europe (see below). It is noteworthy that national-socialist revolutionaries completely rejected democratic slogans (unlike communist revolutions);

(8) *Religious revolutions*: We can mention as their examples the Iranian revolution of 1979 (see, e.g., Keddie and Richard, 1981; Arjomand, 1988; Moghadam, 1989; Skocpol, 1982), as well as mujahideen and especially Taliban movements in Afghanistan which emerged after the so-called April revolution of 1978, and reforms conducted by the People’s Democratic Party of Afghanistan. It is possible also to speak about the religious-terrorist revolutionary type (e.g., revolutionary events under the leadership of the terrorist revolutionary affiliates of al-Qaeda or the Islamic State [Kalyvas, 2015; about the connection between revolutionary and terrorist activities, as well as general causes of terrorism see, e.g., Gassebner and Luechinger, 2011; Coccia, 2018a, 2018b; Korotayev et al., 2021]).

(9) Other types of revolutions, often quite special cases, where the “front line” was not based on ideological markers, but on confessional, ethnic or ethno-religious ones. Unfortunately, it is not possible to discuss all of them in this article. All indicated types and subtypes are presented in the Table S1 in the Supplementary Online Materials.

Below is a diagram that shows the distribution of the 20th century revolutions and their analogues by types (see Fig. 1).

In general, we have a rather wide range of types of revolutionary events. As we see, national and national liberation revolutions prevail (if we consider them together), followed by

democratic and communist. It is very important to pay attention to social revolutions, as a type of revolutionary change, during which deep transformations take place. The number of power-modernist revolutions is also noticeable, this type of revolutionary events was quite widespread in the first half of the 20th century.

Analogues of revolutions. In the 20th century, new societies were involved in the historical process as its subjects, and the level of their development was far from those that were in the World System core. Nevertheless, due to the example of the developed countries which started their rise after revolutions, ideas of necessity to introduce spread of democracy for modernization, as well as due to other reasons, there was a growth of desire for democratic and social revolutions in the peripheral countries. This led to numerous attempts to make revolutions in such societies. However, due to their underdevelopment and peculiarities of social structure, their direction of development was sometimes far from the main course of the historical process; as a result one could observe the increase in the number of a special kind of revolutionary events, which can be designated as *analogues of revolutions*², that is, events that are close to revolutions in their significance, forms of transformations and the scale of mobilization of the masses, but differ from revolutions in the form of the overthrow of a government.

To understand the differences between an analogue of a revolution and a revolution, let us consider definitions of a revolution and an analogue of a revolution.

“Revolution is anti-government (earlier or lately becoming illegal) mass actions (mass mobilization) with the following aims: (1) to overthrow or replace the existing government within a certain period of time; (2) to seize power or to provide conditions for coming to power; (3) to make significant changes in the regime, social or political institutions” (Grinin and Korotayev, 2020, p. 856). Note also Goldstone’s definition: “Revolution is the forcible overthrow of a government through mass mobilization... in the name of social justice, to create new political institutions” (Goldstone, 2014, p. 4).³

The analogue of revolution denotes a revolutionary event that is characterized by special ways of the overthrow of a government that can be achieved either (1) through a coup⁴, or (2) through elections, but in both cases involving revolutionary mass mobilization before or after the overthrow of a government. However, in the first case revolutionary mass mobilization occurs after the overthrow of the old government (within the process of socio-political transformation), and in the second case it is mostly observed at an earlier phase (that precedes the government overthrow) and has generally legal character⁵.

What is essentially common for revolutions and analogues of revolution are substantial changes in political and social structures in the name of social justice that follow the overthrow of the old government.

Thus, both revolutions and analogues of revolution are revolutionary events that result in change of political regime and profound transformations in political-social structure. The differences lie in two important points: (1) the way of changing the government; (2) the role of mobilizing the masses in the process of changing government (for mobilization of the masses as an important component of the revolution, see Tilly, 1996; Goldstone, 2001, 2014) (see Table 1):

Analogues of revolutions were observed in a number of countries. Often such events are considered as revolutions, which is both true and false, partly due to the large number of definitions of revolutions (see Sztompka, 1993; for another analysis of the definitions see Grinin et al., 2016). In this regard, the singling out of analogues of revolutions solves a number of

Table 1 Revolutions and analogues of revolution: similarities and differences.

	Revolutions	Analogues of revolution	
		Coup version	Election version
Similarities	Substantial changes in political and social structures in the name of social justice that follow the overthrow of the old government	Change of government through coup, or elections	
Differences	Overthrow of a government through mass mobilization	(1) Change of government through coup (2) Revolutionary mass mobilization occurs after the overthrow of the old government	(1) Change of government through elections (2) Revolutionary mass mobilization is mostly observed at an earlier phase (that precedes the change of government)

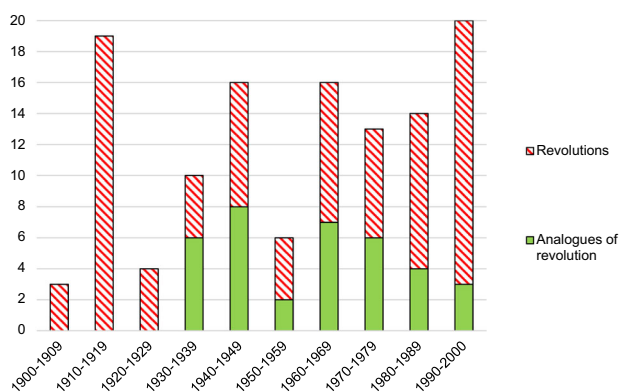


Fig. 2 Number of the 20th century revolutionary events started per decade.

contradictions. In particular, in the 1950s and 1960s there occurred several military coups d'état in the Arab world which launched epochs of radical revolutionary changes in these countries (in Egypt in 1952, Iraq in 1958, Yemen 1962, or Libya 1969). The events in the Republic of South Africa (RSA) of the 1990s can be also considered as an analogue of revolution since the revolution actually started after the 1994 elections which had been preceded by a public confrontation, general liberalization and changes in election laws. More recent examples include the so-called “Bolivarian Revolution” in Venezuela (Hugo Chavez’s coming to power in 1999 through elections with subsequent revolutionary transformations that marked the beginning of the revolutionary era in Venezuela). In Table S1 of the Supplementary Online Materials and in some figures, we summarize revolutions and analogues of revolution. Accordingly, in the column “kind of revolutionary event” (Table S1) every revolutionary event has a status of a revolution or an analogue of revolution. We also use the term “kinds of revolutionary event” in Fig. 6.

The role of analogues of revolutions in the revolutionary process can be seen in Fig. 2, which shows the total number of revolutionary events in each decade with the division into classic revolutions and analogues. This diagram allows us to see that analogues of revolutions began to appear from the 1930s, which is not accidental, since during this period (post World War I) the World System was seriously changed by revolutionary processes and the socioeconomic crisis of the late 1920s and in the early 1930s. It is also very typical that in some periods, for example, from 1930 to 1939, as well as from 1964 to 1975 analogues of revolutions even prevailed, since the last interval was the period of the formation of young statehood in Asia and Africa. In some periods one can even observe no revolutions at all, but only their analogues (1936–1940; 1966–1970) (see Table S1 in the Supplementary Online Materials).

As has already been mentioned, within the 21st century, we identify 125 revolutionary events. This number consists of 89

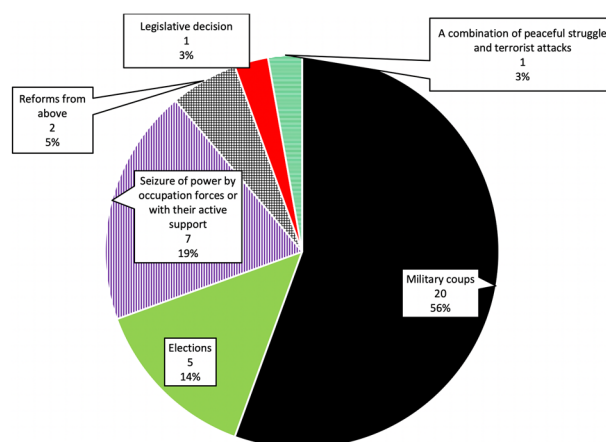


Fig. 3 Forms of analogues of the revolution in the 20th century, distribution in absolute numbers and percentages.

revolutions and 36 analogues. Thus, analogues of revolutions account for almost 30% of the total number of revolutionary events. For the 20th century, the ratio of revolutions to their analogues was 2.5 to 1, that is, for every five revolutions on average there were 2 analogues of revolutions. In other words, the introduction of the concept of an analogue of revolutions is necessary for understanding the revolutionary process as a whole, as it clarifies how the revolutionary process has changed in different periods and regions.

There were especially many military coups among the analogues of revolutions. This shows that in a number of countries the role of the military as revolutionary force was very significant. According to our data, out of 36 analogues, 20 were triggered by military coups (more than 55%). However, sometimes a legitimate and peaceful transfer of power to revolutionaries through elections (14%), as well as power change in other peaceful forms, took place. A special case is a peaceful analogue of a revolution with the support of the occupying authorities or the threat of occupation. There are also some very special cases of analogues of revolution, although they make up a small percentage (see Fig. 3).

As the analogues of revolutions played a very important role in the revolutionary process of the 20th century, accounting for a rather substantial number of revolutionary events recorded during this period of the human global history, the introduction of the notion of “analogue of revolution” has allowed us to arrive at a much wider and richer picture of the revolutionary waves of the 20th century.

It has long been recognized that revolutions come in waves, covering a number of countries in a relatively short period. However, a systematic analysis of revolutionary waves was made only in recent decades (Goldstone, 1991, 2001, 2002; Tilly, 1996; Markoff, 1995, 1996; Katz, 1997; Tarrow, 1998; Kurzman, 2008;

Beck, 2011, 2014; Zinkina et al., 2019; Rozov et al., 2019). There are different views on how many revolutionary waves have been in modern history since the 16th century (e.g. Beck, 2011; Rozov et al., 2019). It is possible to agree that (a) revolutionary waves should be placed in the centre of revolutionary theory and study as the most transformative revolutions (Beck, 2014: p. 198); (b) the key question for theorizing revolutionary waves is determining the best way to conceptualize them (Beck, 2011, p. 169). Despite a considerable amount of research, the theory of revolutionary waves is still under development and requires considerable effort. It is not surprising that there are different approaches to the distribution of waves in the Modern History, especially in the 20th century. Beck highlights five waves in the twentieth century: the democratic revolutions of the early 20th century; revolutions associated with the First World War; Fascism; Revolutions associated with the Second World War; anti-communist revolutions of 1989 (Beck, 2011, Table 1, pp. 182–183), Goldstone also identifies five waves in the 20th century: the anti-colonial revolutions of the 1950–1970s; communist revolutions of 1945–1979; Arab National Revolutions in the Middle East and North Africa 1952–1969; Islamic revolutions in Iran, Sudan and Afghanistan in the 1970–1980s; anti-communist revolutions in the USSR and Eastern Europe (Goldstone, 2001, p. 145). However, as we see, these authors have only one common wave.

Our approaches are closer to what Beck stands out for. However, it is important to determine the differences in the nature of the events causing the revolutionary waves. Beck believes that revolutionary waves are “deeply cultural events that involve alternative ideals in the political order” (Beck, 2011, p. 168; Beck, 2014, p. 208). He also supposes that waves trigger ideological and other cultural interaction and influence within supranational and international frameworks. However, we believe that these factors are far from enough to start a revolutionary wave. In our opinion, only powerful world-system events or changes, which, of course, have to have a cultural and ideological aspect, can become sources of revolutionary waves⁶. Such events may be a world war, a major economic crisis affecting many countries, a powerful (and successful) revolution, the collapse/weakening of a large empire or coalition, or something similar. At the same time, a revolutionary wave is usually only part of the overall process, since a world-system event (for example, world war) along with revolutions is a very powerful source of changes (Grinin, 2013). For example, the anti-colonial process after WWII brought together national-liberation revolutions with different types of national-liberation events and movements without revolutions. Most of colonies gained independence without revolutions.

It has already been suggested to distinguish revolutionary waves according to the following criteria (Grinin and Grinin, 2020): (1) the presence of an objective common cause underlying events within the World System framework; (2) the number of revolutions should not be small (minimum 4–5 revolutions if they occur in more or less large and medium-size countries and more revolutions in smaller states)⁷; it is worth noting that events within one state (even a very large and multinational one) should not be considered as a revolutionary wave, as, for example, Beck does for events in the Balkans in the 1870s (Beck, 2011, p. 196); (3) there should be a limited time interval between revolutionary events, not more than 10 years between the beginning of the first and the beginning of the last event (see below); (4) there can be only one wave in one period (Goldstone has up to 3 or 4).

Based on abovementioned criteria, we distinguish five waves of revolutions.

Persia (1905–1911), China (1911–1913), and Mexico (1910–1917), i.e. the wave spread over widely dispersed territories, from Mexico to China (Kurzman, 2008). The root causes of the last four revolutions have been associated with modernization and related changes, including the public consciousness, as well as the attempts to eliminate dependence on the West (with the exception of Russia, which was an imperialist country itself⁸). In a certain sense this may be considered not as the end of agrarian-bureaucratic societies according to Skocpol (1979) but as a shift toward modernized societies. The general events of the World System that caused this wave were associated with the colonial division of the world and the struggle for its redistribution, which intensified at the beginning of the 20th century. Another common event was the modernization of the oppressed countries, which was also the main trigger of these revolutions. The impetus for these revolutions was the Russian Revolution of 1905–1907, which considerably intensified revolutions in Asia. Russian revolution was also connected with the necessity to bring in correspondence the social and political institutions with economic development (Grinin, 2017a, 2017b). At the same time, it was of a peculiar character (in comparison to others from this wave) and can be characterized as social-democratic. It took a long time for this revolution to ripen. The trigger of the revolution was the military defeat of Russia in the war with Japan. Other revolutions of this wave were to a large extent connected with the rise of peripheral statehood and strengthening of sovereignty since the revolutions would break out in the East and in the periphery (Mexico). The Xinhai Revolution of 1911 in China (similar in many respects to the Persian revolution) was caused by the painful national humiliation and aspiration to make China truly independent. This revolution also caused a revolution in Mongolia in 1911 (and declaration of its independence from China) which was supported by the Russian interference. The Young Turk revolution in 1908, organized by revolutionary officers, was aimed at restoring the former greatness of the Ottoman Empire. The revolutionaries in many parts of the world were often brought up by the European (American) examples, and respectively, the European institutions and ideas were taken as models. However, the attempts to introduce constitutional and democratic regime in Persia, Turkey and China ended in establishing the dictatorship (in Iran a new dynasty came to power, in Turkey—the coup d'état led by Enver Pasha; in China dictatorship was established as well). Eventually, these revolutions opened the path for modernization for the countries, although, it was long and fraught with pitfalls. The Ottoman Empire needed another revolution. In Iran and China, the revolutions started a long epoch of disturbances and unrest which in both countries lasted until the mid-1920s. After that Iran entered the epoch of stability, while China was engaged into a war with Japan and the civil war which lasted until 1949. A better situation was observed in Mexico (possibly due to progress in modernization compared to Iran or China; also, due to the economic growth connected with WWI which was favourable for Mexican Constitutionalists in 1915 and later (David-Fox, 2017)).⁹ A radical constitution was adopted in the country and partial democracy was introduced; land and some other reforms were undertaken; the country's sovereignty was strengthened and its modernization accelerated. As a result, the role of the state in the economy increased with time. Mexico was also the least prone to military coups among other Latin American countries (Skocpol, 1979). See distribution of revolutions by types within the first revolutionary wave (in absolute numbers and percentages) in Fig. 4a.

The first revolutionary wave (1905–1911). The main revolutions of this wave were in Russia (1905–1907), Turkey (1908–1909),

The second revolutionary wave (1917–1923). This wave was related to WWI and its results, including the exhaustion of

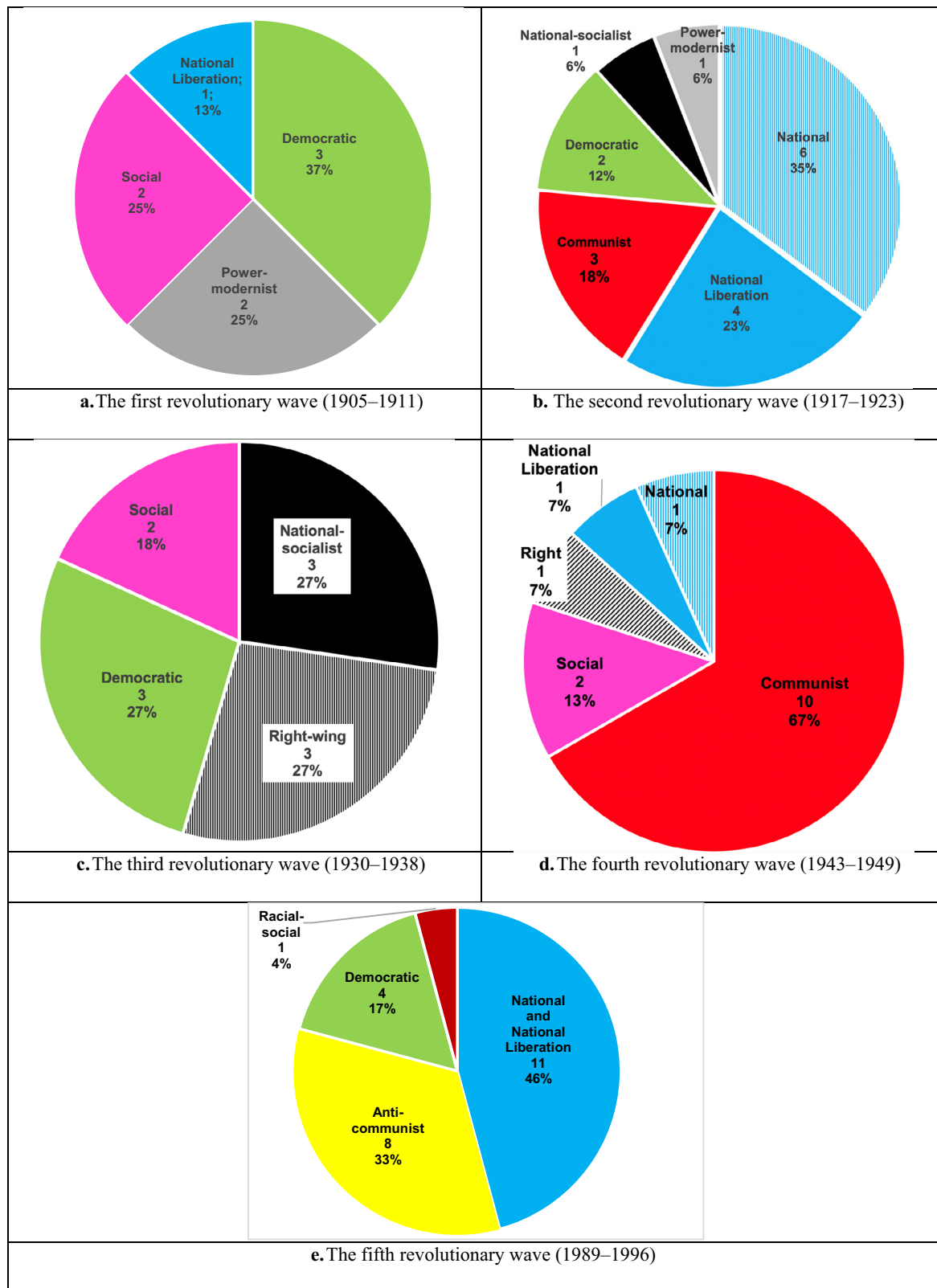


Fig. 4 Distribution of revolutions by types in the five revolutionary waves of the 20th century (in absolute numbers and percentages). **a.** The first revolutionary wave (1905–1911). **b.** The second revolutionary wave (1917–1923). **c.** The third revolutionary wave (1930–1938). **d.** The fourth revolutionary wave (1943–1949). **e.** The fifth revolutionary wave (1989–1996).

warring countries, the collapse of four empires, the rise of national and national liberation movements. It was started again by the Russian Revolution of 1917. It led to the emergence of many new states and also to a considerable revision of

boundaries. A new revolutionary line—communist—emerged within this wave. The others (as national/national-liberation and power-modernist) were reinforced. In the situation of declining or collapsing multinational empires (the Austro-Hungarian and

Russian) there was opened the way for a number of national revolutions. In Russia, national revolutions mostly began peacefully, although they later turned into brutal civil wars. In the Austro-Hungarian empire, some revolutions were also peaceful and carried out in partially legitimate ways. However, in Hungary there was a civil war. The revolution in Germany was not that smooth, there were relatively a few bloody incidents (for example, the defeat of the insurgents in Berlin in January 1919) despite the attempts of the communists to turn it into a more intensive communist revolution. The launched process of changes could hardly proceed without serious hardships, especially in the context of difficult peace; so it turned into a revolutionary epoch. The situation in Greece and the Ottoman Empire was also serious due to the war between them. The defeat of the Greek forces in Turkey in 1922 and the forced resettlement of the Minor Asia Greeks to their homeland in September 1922 gave rise to a revolution in Greece (most of which was carried out by the Greek military). The monarchy was overthrown and a republic was established. But there were no other consequences. In Turkey under the influence of severe defeat and Greek intervention there also started a revolution (1919–1923) led by Kemal Atatürk (later this revolution was named after him) which led to dramatic transformation of the state and life in Turkey, as well as its accelerated modernization along the Western model. Even the winning countries had grim prospects. Ireland would revolt, and Italy had a terrible economic situation. In this situation in Italy nationalism and a strong paternalist state seemed a way out. Finally, by stirring up the fascist active members and followers to participate in the armed march to Rome in 1922 the fascists led by Benito Mussolini managed to come to power and create government. Thus, Mussolini and his party won the power hands down. The fascist (national-socialist) revolution in Italy (1922–1926) generated a series of similar revolutions which obviously perceived democracy as a burden (Mussolini supported the Ustaša Movement in Croatia, the fascist movement in Albania and in some other places). On the whole, the second revolutionary wave of revolutions of the 20th century led to the emergence of communist states, enhanced modernization in some Asian states and strengthened dictatorships in new and defeated European countries. See distribution of revolutions by types within the second revolutionary wave (in absolute numbers and percentages) in Fig. 4b.

The third revolutionary wave (1930–1938). This wave was a part of the very serious change in the world, and these transformative events were of different nature. It is not surprising that with this wave we begin to distinguish the analogues of revolution among other revolutionary events. Note that actually this revolutionary wave was weaker than the previous and subsequent ones, since there were many other changes—in particular dictatorships or authoritarian forms of government arose one after another. In the 1920s and 1930s in many European countries the dictatorship regimes would emerge or proliferate. Such regimes were somehow connected with fascism/Nazism either already from the 1920s or from the second half of the 1930s (along with Spain and Portugal, in Hungary, Romania, Bulgaria and others). The first world-systemic event of the third wave was the unprecedented global economic crisis (the Great Depression), which hit many countries. In particular, Latin America was hit hard by trade barriers and declining demand for their goods. Here one can mention the so-called revolution in Brazil in 1930 (which we would call an analogue of revolution), the revolutionary events in Chile in 1931–1932 (where the military dictatorship was overthrown and replaced by a fragile socialist republic)¹⁰, revolution in Cuba in 1933–1934, and also a number of other events. In

particular, in 1930 in Salvador there failed a communist revolt (a movement that arose back in 1927). In 1926–1934 in Nicaragua the insurgent army of Augusto Sandino organized a guerrilla war against the government and American troops; however, after certain success it ended with disarmament of the insurgents under the agreement with government, subsequent arrest and assassination of Sandino and the establishment of a forty-year dictatorship of the Somoza dynasty. Revolutionary events took place in 1930–1932 in Peru; the economic crisis also generated an antidemocratic coup in Argentina in 1930, etc. Among the biggest revolutions of this wave, the Spanish Revolution of 1931–1939 can be noted. Probably, it was the most vivid revolutionary event of the 1930s. This revolution passed through all possible stages of revolution, as well as through the intervention and interference of other countries and ended with a very significant right-wing dictatorship. Extremely important for the entire World System was the analogue of the rightist revolution in Germany (1933–1937), which gave impetus to other analogues of the right-wing revolutions in some European countries (see also above). With its “fifth column”, Germany managed to destabilize the situation in Austria and Sudetenland in Czechoslovakia which both served as a pretext and facilitated the conquest. To a certain extent the events of 1938 in Austria and the Sudetenland can be considered as analogues of revolutions. The fascist parties in the conquered lands considerably facilitated their integration into the Nazi German system since they had prepared social forces and apparatus loyal to the Nazis. See distribution of revolutions by types within the 3rd revolutionary wave (in absolute numbers and percentages) in Fig. 4c below.

The fourth wave of revolutions in 1943–1949. This wave was associated with the results of the Second World War. This wave of revolutions was predetermined by the outcomes of WWII, that is by the defeat of Germany, its allies and Japan and the liberation of countries they had conquered with subsequent occupation of the territories by the members of the anti-Hitler coalition. The USSR victory in WWII promoted the diffusion of communist ideology. All the to-be communist countries were somehow supported by the USSR (at least for a while). However, the internal readiness for such changes varied in different countries. In most Eastern European countries, there were no classic revolutions, but only analogues of revolutions. The analogues of revolutions in the five to-be communist countries of Eastern Europe may be divided into two groups: (1) revolutions that started as antifascist revolts and democratic in their nature but due to the circumstances would later transform into communist (Poland, Czechoslovakia); (2) revolutions that broke out in the end of the WWII or as a result of defeat (Bulgaria, Romania, Hungary). But in a number of cases the influence of communist parties and its ideology was so strong that the communists succeeded to come to power without any help there (thus, in Albania and Yugoslavia the participation in Resistance brought communists to power; China and Vietnam also had their peculiar paths to socialism). Communist revolutions were committed mostly independently, while the USSR assistance only strengthened their positions, although the communist nature of the revolution could come to the fore only later. For example, in the course of the August 1945 revolt in Vietnam the communists led by Hồ Chí Minh came to power. But intensive communist transformations would start only in the late 1940s—early 1950s. It is important to note that they were conducted during the first Indochina war when Vietnam struggled with the French colonizers. That is the revolution was rather complicated. In China after 1945, there were negotiations with the government of national unity; in other words, the transition to communism occurred far from

immediately. Among the revolutions connected with long-lasting armed resistance in the countries occupied by Nazis (besides Yugoslavia and Albania), we can also find a similar situation in Greece where the resistance army, led by Communists, succeeded to liberate almost the entire country. However, the confrontation between communists and royalists turned into a civil war from 1946 to 1949 which ended in the defeat of the communists. So, if one speaks about the Greek revolution then it should be defined as a national-liberation revolution, with its unsuccessful transformation into a communist one. In all Balkan's cases the revolutionary pattern implies peripheral advance (see Huntington, 1968; Goldstone, 2014, pp. 27–29). Some revolutions were caused by the defeat of Japan and the weakening of European metropolises. Here one can list, in addition to the revolution (uprising) in Vietnam in August 1945, the fight against Japan that marked a turning point in the national liberation struggle and subsequent cataclysms in Burma. Finally, it put an end to the civil war in China. After 1945, the communist forces got Manchuria from the USSR as their base which had a broad border with the USSR and a huge amount of weapons captured from the Kwantung Army. Finally, the communists became strong and succeeded to defeat the Kuomintang. We also have to speak about the revolutionary events of peculiar type in India and Pakistan. One may argue that the revolutionary movement in India and Pakistan had developed for over 20 years until it transformed into a national-liberation revolution with certain peculiarities. The actual apogee of the revolutionary events was reached in 1942 while the revolution itself occurred only in 1947–1949. Here we also should point to the struggle for the establishment of the state of Israel (1943–1948) against Great Britain (which possessed a mandate for the Palestine territories). See distribution of revolutions by types within the 4th revolutionary wave (in absolute numbers and percentages) in Fig. 4d.

Jack Goldstone (2001, p. 145) defined the following waves of revolutions in the second part of 20th century: the anticolonial revolutions of the 1950s through 1970s, propelled by nationalism; the communist revolutions of 1945–1979 in Eastern Europe, China, Cuba, Vietnam, and other developing countries; the Arab Nationalist revolutions in the Middle East and North Africa in 1952–1969; the Islamic revolutions in Iran, Sudan, and Afghanistan; and the anti-communist revolutions in the Soviet Union and Eastern Europe.

From what we have said above, we can hardly agree to place the anti-colonial revolutions of the 1950s–1970s, the communist revolutions of 1945–1979, and the Islamic revolutions in the category of waves of revolutions. We would better define them as lines of revolutions. The reasons are the following. The duration of such waves would be too long and would not fit the revolution wave criteria specified above. But even if we disregard this point, the wave launched by World War II in fact includes quite different types of revolutions (anti-monarchical and democratic, antifascist, anticolonial and communist, anti-dictatorial and anticommunist). To be sure, one type of revolution could transform into another and vice versa. But still this was one and the same wave and not several: the anticolonial revolutions started in 1945 and not in the early 1950s. The 'density' of revolutions per year and the number of revolutionary years per decade in the 1950s–1970s was much lower than in the 1940s (see Table S1 of the Supplementary Online Materials). Besides, there were many analogues of revolutions in these decades. Thus, for the second half of the 20th century we distinguish only the fourth wave of 1942–1949 and the fifth wave of 1989–1996.

The fifth revolutionary wave in 1989–1996. Anti-communist revolutions in Eastern Europe, some Soviet republics and

Mongolia. By the late 1980s the failed Mikhail Gorbachev's attempts of modernization and democratization led to dramatically weakened influence of the USSR on its smaller allies. The weakening of the core of the socialist camp led to a wave of anti-communist revolutions in its periphery resulting in the establishment of young democratic non-socialist regimes in most East European countries. In most cases, except for Romania, these were peaceful and bloodless revolutions, respectively called Velvet revolutions. These revolutions had many common causes: dependence on the USSR which was a burden; and its natural weakening which changed the balance of power; the threat of violence which restrained the opposition, common problems of socialist regimes (shortage of goods, egalitarianism; advantages of the Western countries, lack of freedom, etc.);¹¹ for the studies of the collapse of communism in the Soviet Union and Eastern Europe, see Bunce, 1989; Chirot, 1991; Goodwin, 1994, 2001; Huntington, 1993; Lupher, 1996; Goldstone, 1994, 1998; Sanderson, 2016). The Federal Republic of Germany, being a wealthy and powerful German state, considered East Germans as its potential citizens. This determined the direction of the revolution. It is not surprising that after the fall of the regime in the GDR the reunification of two German states occurred almost immediately. The spontaneous demolition of the Berlin Wall also started, and it was officially destroyed in January 1990. The destruction of the Berlin Wall as a symbol of separation of a single nation marked the victory of the revolution. The opposition had already formed in Poland (the Solidarity trade union)—thus, the fall of the regime took place through the expression of the will of the people in the elections to the Seim (1989) and the presidential elections (1990). Long-term reforms in Hungary weakened socialist relations. The regime of János Kádár was rather mild and, according to some analysts, resembled the authoritarianism of Franco's dictatorship on the eve of its decline. Development adopted the Spanish scenario of a post-1975 democracy transition (Huntington, 1993). The movement to democracy was rather vigorous at least after 1987. In Hungary the transition to democracy occurred not through ousting of the old regime but via adoption of parliamentary law which included pluralism of trade-unions, freedom of associations, meetings and press, new election law, and a radical revision of constitution. This distinguished the Hungarian revolution from a radical break with the old regime that happened in the GDR or Czechoslovakia. In the Czechoslovak Socialist Republic, they had fresh memories of the failure to establish freedom in 1968. An official condemnation of the suppression of the democratic movement was an important landmark. In November 1989 the Civic Forum organized protests and general strike supported by the majority of the population. The communist government headed by Gustáv Husák was forced to surrender power. On December 10 a government of national accord was formed. So, the revolution won. In Bulgaria the revolution actually proceeded from above through resignation of Todor Zhivkov at the plenary session of the Central Committee of the Bulgarian Communist Party, after which the new government started to change the constitution and political regime (a 'tender revolution'). The transformation of Bulgaria into a democratic state with a market economy was peculiar since the Bulgarian Communist Party changed its name to the Bulgarian Socialist Party on April 3, 1990, and remained ruling even after Zhivkov resignation (Loshchakova, 2008, p. 26). The discontent in Romania transformed into a single revolution with bloody incidents both on the government and revolutionaries side including the assassination of the Ceaușescu couple. Thus, by the end of 1989, revolutions in all these countries were crowned with success, after which the destruction of communist parties, political systems, the organization of elections and the rise to power of new or modernized political forces would begin. In 1991 as a

result of powerless politics of the center along with growing separatism and active Western impact, the USSR collapsed which was followed by changes (and in some places revolutions) in the rest of communist countries such as Mongolia and Albania. The collapse of the USSR was the logical outcome of Gorbachev's failed reforms which also set free the political and social forces that the Soviet regime failed to cope with. Also, a completely ineffective economic and financial policy was carried out. Nevertheless, if not been pushed, the regime would have endured. Thus, the meeting of Boris Yeltsin, Stanislav Shushkevich and Leonid Kravchuk in Belovezhskaya Pushcha (Belarus) in late 1991, at which the decision was made to dissolve the Soviet Union and create the Commonwealth of Independent States (CIS), looks like a conspiracy. However, it produced a huge effect so it may be said that the meeting launched the events equal to an analogue of revolution (for the USSR and the republics it comprised). Besides, in some post-Soviet republics the events resembled revolutions or their analogues. But unlike in East Europe, in the USSR republics (similar to the Yugoslavian republics) the revolutions were primarily nationalist or ethno-nationalist. However, at the same time, they inevitably became anti-communist, since communist ideology was replaced with the national one. In particular, this especially refers to the Baltic republics— Estonia, Latvia and Lithuania—where revolutions were called the Singing Revolution. One may also speak about a revolution in Georgia which became independent in the very end of 1991. Yet, soon military and civil revolts started there and the first president was ousted, so actually, there started a small-scale civil war. Later, national-liberation revolutions occurred in the Georgian national peripheries— Abkhazia and South Ossetia (1992) which grew into rather long and bloody conflicts with Georgia. Later the events in Chechnya in 1994–1999 resembled a national-liberation revolutionary movement. In Yugoslavia the impact of the USSR was hardly direct and strong; nevertheless, the wave of separatism overwhelmed this country and led to its split. It is difficult to characterize the Yugoslavian events in terms of the theory of revolutions since there was a chain of independent and complicated episodes during the period from 1989 to 1999. But on the whole, it is obvious that in the first place these were primarily ethno-nationalist revolutions and then anticommunist ones. In a number of cases (as in Slovenia and Croatia) the revolutions, manifested in the declaration of independence (in 1991) by the governments of the republics with the support of the population (in 1992 Macedonia and Kosovo also proclaimed independence). Certainly, these were not classic revolutions but revolutions from above since the parliament simply declared independence. However, this would launch the changes in every separate republic and province provoking chains of violent and later bloody confrontations and armed clashes.

See distribution of revolutions by types within the 5th revolutionary wave (in absolute numbers and percentages) in Fig. 4e.

The preliminary results of our quantitative analysis of the waves of revolutions of the 20th century look as follows (see Figs. 5 and 6):

The chart shows that of the total number of revolutions and their analogues in the 20th century, waves account for 75 events (60%), including 1st wave—8 events; 2nd—17; 3rd—11; 4th—15; 5th—24. Accordingly, 50 revolutionary events occurred outside the waves. Thus, it is clear that the waves with the most events were the 2nd, the 4th, and the 5th. But, in terms of the impact on the world revolutions of the second and the fourth waves were more significant than the fifth revolutionary wave, although the latter also greatly changed the World System. However, of course, the comparison of the degree of influence on the world is largely subjective. Although the third wave in terms of the number of revolutionary events exceeds the first one (10 and 8 events,

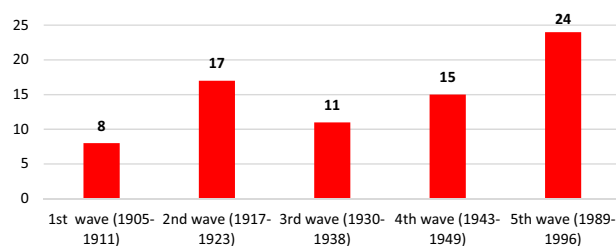


Fig. 5 Number of the 20th century revolutionary events per wave.

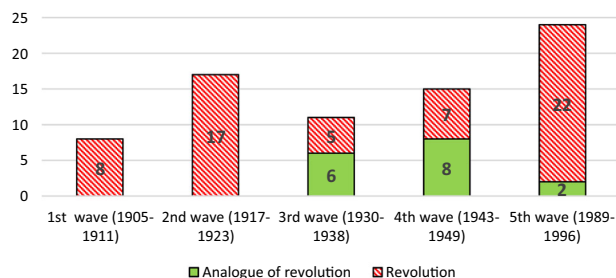


Fig. 6 Kinds of revolutionary events in revolutionary waves.

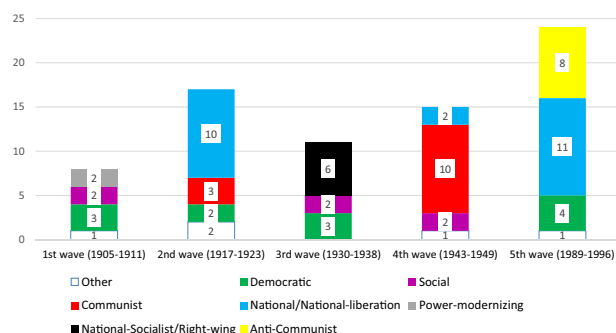


Fig. 7 Types of revolutionary events in five waves of revolutions of the 20th century. For each wave, we single out the three most widely represented types of revolutionary events that characterize the corresponding wave of revolutions.

respectively), in general, the first wave consisted only of classic revolutions (without analogues), which mainly affected large countries (Russia, China, Turkey, Persia and Mexico). Besides, the scale of the first wave was larger than the one of the third since almost half of revolutions of the third wave occurred in small Latin America's countries.

Now let us consider five waves of 20th century revolutions in relation to the typology of revolutionary events that formed these waves (see Fig. 7).

As one can see, our analysis allows us to make a few significant observations.

Most of the revolutionary events in the 1st (1905–1911) and 3rd (1930–1938) waves belong to democratic and social types. However, a peculiar character of the first wave appears to be determined by the presence of the power-modernizing revolutions, whereas a peculiar character of the third wave appears to be determined by the national-socialist/right-wing revolutionary events.

The main world historical significance of the 2nd wave (1917–1923) appears to have been produced by the communist revolution in Russia; however, our qualitative and quantitative analysis demonstrates that most revolutions of this wave belonged to the national/national liberation type (10 of 17 revolutions, that is 59%). On the other hand, the main world historical significance

of the 5th wave (1989–1996) appears to have been produced by anticommunist revolutions; although, our qualitative and quantitative analysis demonstrates that more revolutions of this wave belonged to the national/national liberation type than to the anticommunist one (10 as compared to 8). It was the 4th (1943–1949) wave where most evolutionary events (10 of 15, that is 67%) belonged to the communist type.

Conclusion

In this article, we attempt to show the main characteristics of the revolutions of the 20th century and their difference from the revolutions of the 19th century. The revolutions of the 20th century had a very large structural influence on the World System, significantly changing its entire configuration. The revolutionary events moved more and more from the World System core to its semi-periphery or even to the periphery (although, in the 19th century, they often occurred close to the core, which sometimes allowed countries that survived the revolution to move to the core). Also, guerrilla warfare in the revolutionary societies of periphery and semi-periphery became very common. New types of revolution emerged, whereas less widespread ones widely diffused. First of all, these were communist revolutions, and then with the decline of communism anti-communist revolution appeared. As a result, the influence of revolutions on the historical process changed and their role as driving forces of progress in respect of the World System generally decreased.

The paper offers a new typology of revolutions. The revolutionary process of the 20th century is described in chronological order as five revolutionary waves along with periods (such as the 1950s–1970s) when revolutionary waves were not observed. It shows significant differences in the characteristics of revolutions of the first and second half of the 20th century. The article discusses some aspects of the theory of revolution in relation to the revolutions of the 20th century, in particular in relation to the waves of revolutions.

An attention is paid to the analysis of revolution as one of the transformative changes (along with others—including coups, reforms, violent modernization, etc.) in theory and in relation to different periods. For such an analysis, the term “the analogue of revolution” is developed. Analogues of revolutions are those socio-political events that result in a change in the political regime and profound transformations in the socio-political structure. Typically, the overthrow of a government within the analogues of revolution does not occur through mass mobilization, but by other means: either (1) through a coup, or (2) through elections, but in both cases involving revolutionary mass mobilization before or after the overthrow of a government. However, in the first case revolutionary mass mobilization occurs after the overthrow of the old government (within the process of socio-political transformation), and in the second case it is mostly observed at an earlier phase (that precedes the government overthrow) and has generally legal character. What is essentially common for revolutions and analogues of revolution are substantial changes in political and social structures in the name of social justice that follow the overthrow of the old government.

Analogues of revolution appeared from the 1930s, which is no accident, since during this period, under the influence of the First World War, revolutionary processes and a deep socio-economic crisis of the late 1920s and early 1930s took place, which seriously changed the entire World System. It is also very typical that in some periods, for example, from 1930 to 1939, as well as from 1964 to 1975 analogues of revolutions even prevailed, since the last interval was the period of the formation of young statehood in Asia and Africa.

We propose a database of 20th-century revolutions with a number of characteristics (it is available as Table S1). Based on

the collected data on the characteristics of revolutionary events, an analysis of revolutions and analogues of revolutions of the twentieth century over decades and five years has been carried out. We have identified 125 revolutionary events in total. This number consists of 79 revolutions and 36 their analogues. The article presents for the first time a qualitative and quantitative analysis of the types of revolutions. Our qualitative and quantitative analysis shows a fairly wide range of types of revolutionary events. Among them, national and national liberation revolutions prevail (if we consider them together), followed by democratic and communist ones. The number of social and power modernist revolutions is also noticeable, especially since they were common in the first half of the 20th century.

However, this study has its own limitations that, on the other hand, implies perspectives for further research.

A taxonomy of revolution as presented above is of course incomplete; e.g., for future development of taxonomy of revolutions it makes sense to take into account the spatial aspects (indeed, for example, revolutions in South or Central America are different from other places in the world (see e.g. Puig, Álvarez, A., 2020; Artz, 2020), and such things should be taken into consideration in the future taxonomies).

This research also implies certain policy recommendations. As we have seen, revolutions played a very important role in the history of the 20th century. However, they, especially deep social revolutions, especially in countries not sufficiently prepared for the introduction of democracy, clearly showed that they are an extremely costly and dangerous way of transforming power, while the more backward society was, the more dangerous revolutions were for it. This is all the more important since modern research shows that authoritarian regimes founded in violent social revolutions are especially durable (Lachapelle et al. 2020).

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Notes

- For example, some national liberation movements were also communist. In general, leaders of national liberation movements do not usually consider their revolutions to solely be about independence or autonomy. For leaders like Amílcar Cabral, they were about both social revolution and independence. In Table S1 of the Supplementary Online Materials we characterize every revolutionary event according to its main and additional types. So, we define revolutions in Yugoslavia (1943–1945), Greece (1943–1949), and Albania (1944–1945) both as Communist and National Liberation. However, for our calculations we take only one (main) type.
- One can agree with Sanderson that understanding revolutions in the Third World is a special task compared to earlier revolutions, due to their peculiarity (Sanderson, 2016). Third World revolutions, whether in Latin America, Asia or Africa, differed not only from the revolutions of the 18th and 19th centuries, but also from many revolutions of the first half of the 20th century in Europe and Russia, as well as of the revolutions in Asia in early 20th century (for analysis of anti-colonial and anti-dictatorial revolutions in the Third World, see Dix, 1984; Dunn, 1989; Shugart, 1989; Goodwin and Skocpol, 1989; Farhi, 1990; Kim, 1991, 1996; Goldstone et al., 1991; Foran, 1992, 1997; Foran and Goodwin, 1993; Johnson, 1993; Goldstone, 1994; Snyder, 1999; on the role of social revolution for the Third World see Venkateswaran, 2020, p. 5 and others).
- On the goals of revolutions, see also Nieva (2021, p. 230).
- They could be military coup d'état, conspiracy or palace reshuffle, constitutional coup (e.g., impeachment of president), etc.
- The Nazi analogue of revolution after 1933, with Hitler's rise to power through elections with preceding and subsequent mass mobilization can serve as an example.
- Thus, the first wave was connected with the Russian Revolution of 1905–1907; the second was related to WWI and its results; the world-systemic event of the third wave was the unprecedented global economic crisis (the “Great Depression”); the fourth wave of revolutions was associated with the results of the Second World War; the fifth revolutionary wave was connected with the failed Mikhail Gorbachev's attempts of modernization and democratization that led to dramatically weakened influence of the USSR on its smaller allies.

- 7 Meanwhile, Beck believes that at least two revolutions are required to define a wave, which, in our opinion, is clearly not enough (Beck 2011, p. 195).
- 8 Besides the revolution in Russia was defeated while other revolutions it had inspired turned successful.
- 9 The guerrilla war would last until 1920 there.
- 10 The events of this period in Chile can be considered as a democratic revolution which failed to transform into a socialist revolution. Yet, here the peculiar features of Latin American revolutions manifested to the full so they were accompanied with military coups and counter coups.
- 11 However, different countries had their peculiar revolution course and driving forces and also some causes.

References

- Andreski SL (1988) A typology of revolutions from a morphological viewpoint. *Int J World Peace* 5(1):25–43
- Ardalan K (2020) *Understanding revolution: a multi-paradigmatic approach*. Springer, Cham.
- Arendt H (2006 [1963]) *On Revolution*. Penguin, New York
- Arjomand SA (1988) *The turban for the crown: the Islamic revolution in Iran*. Oxford University Press, New York.
- Artz L (2020) A political economy for social movements and revolution: popular media access, power and cultural hegemony. *Third World Q* 41(8): 1388–1405
- Beck CJ (2011) The world-cultural origins of revolutionary waves: five centuries of European contention. *Soc Sci Hist* 35(2):167–207
- Beck CJ (2014) Reflections on the revolutionary wave in 2011. *Theory Soc* 43(2):197–223. <https://doi.org/10.1007/s11186-014-9213-8>
- Beissinger MR (2018) The economic cost of revolution. Paper presented at the annual meeting of the American Political Science Association. American Political Science Association, Boston, MA
- Beissinger MR (2022) *The revolutionary city. Urbanization and the global transformation of rebellion*. Princeton University Press, Princeton, NJ.
- Bunce V (1989) The Polish crisis of 1980–1981 and theories of revolution. In Boswell T (ed.) *Revolution in the modern world system*. Verso, New York, pp. 167–188
- Chirot D (1991) *The crisis of Leninism and the decline of the left: the revolutions of 1989*. University of Washington Press, Seattle
- Coccia M (2018a) A theory of general causes of terrorism: high population growth, income inequality and relative deprivation. *Arch Psychol* 2(4):22–47 <https://doi.org/10.31296/aop.v2i4.32>
- Coccia M (2018b) Terrorism driven by high population growth. *Contemp Voices: St Andrews J Int Relat* 1(1):1–13
- Coccia M (2019a) Comparative theories and causes of war. In: Farazmand A (ed.) *Global encyclopedia of public administration, public policy, and governance*. Springer Nature Switzerland AG, Cham
- Coccia M (2019b) Comparative world-systems theories. In: Farazmand A (ed.) *Global encyclopedia of public administration, public policy, and governance*. Springer Nature Switzerland AG, Cham
- Coccia M (2019c) Revolutions and evolutions. In: Farazmand A (ed.) *Global encyclopedia of public administration, public policy, and governance*. Springer Nature Switzerland AG, Cham
- Coccia M (2019d) Theories of revolution. In: Farazmand A (ed.) *Global encyclopedia of public administration, public policy, and governance*. Springer Nature Switzerland AG, Cham
- David-Fox M (2017) Toward a life cycle analysis of the Russian revolution. *Kritika* 18(4):741–783. <https://doi.org/10.1353/kri.2017.0049>
- Dix RH (1984) Why revolutions succeed & fail. *Polity* 16(3):423–446
- Dunn J (1989) *Modern revolutions: an introduction to the analysis of a political phenomenon*. Cambridge University Press, Cambridge
- Farhi F (1990) *States and urban-based revolutions: Iran and Nicaragua*. University of Illinois Press
- Foran J (1997) The comparative-historical sociology of third world social revolutions: why a few succeed, why most fail. In: Foran J (ed.) *Theorizing revolutions*. Routledge, London and New York, pp. 227–267
- Foran J (1992) A theory of Third World social revolutions: Iran, Nicaragua, and El Salvador compared. *Crit Social* 19(2):3–27
- Foran J (2005) *Taking power: on the origins of third world revolutions*. Cambridge University Press, Cambridge
- Foran J, Goodwin J (1993) Revolutionary outcomes in Iran and Nicaragua: coalition fragmentation, war, and the limits of social transformation. *Theory Soc* 22(2):209–247
- Gassebner M, Luechinger S (2011) Lock, stock, and barrel: a comprehensive assessment of the determinants of terror. *Public Choice* 149:235–261
- Goldstone JA (1991). *Revolution and rebellion in the early modern world*. University of California Press, Berkeley
- Goldstone JA (1994) *Revolutions in modern dictatorships—revolutions: theoretical, comparative, and historical studies*, 2nd edn. Harcourt Brace, Fort Worth, TX
- Goldstone JA (1998) The Soviet Union: Revolution and Transformation. In: Dogan M and Hingley J (eds), *Elutes, Crises and the Origins of Regimes*. Rowman and Littlefield, Lanham, pp 95–124
- Goldstone JA (2001) Toward a fourth generation of revolutionary theory. *Annu Rev Political Sci* 4(1):139–187. <https://doi.org/10.1146/annurev.polisci.4.1.139>
- Goldstone JA (2002) The longue durée and cycles of revolt in European history. In: Marino JA (ed.) *Early modern history and the social sciences testing the limits of Braudel's Mediterranean-Sixteenth Century essays & studies*, vol 61. Truman State University Press, Kirksville, MO, pp. 169–187
- Goldstone JA (2014) *Revolutions: a very short introduction*. Oxford University Press, Oxford
- Goldstone JA, Gurr TR, Moshiri F (1991) *Revolutions of the late twentieth century*. Westview, Boulder
- Goodwin J (1994) Old regimes and revolutions in the Second and Third Worlds: a comparative perspective. *Soc Sci Hist* 18(4):575–604
- Goodwin J (2001) No other way out: states and revolutionary movements, 1945–1991. Cambridge University Press, Cambridge
- Goodwin J, Skocpol T (1989) Explaining revolutions in the contemporary Third World. *Politics Soc* 17(4):489–509
- Graziosi A (2005) *Voina i revolyutsiya v Evrope, 1905–1956*. ROSSPAN, Moscow
- Grinin LE (2013) State and socio-political crises in the process of modernization. *Soc Evol Hist* 12(2):35–76
- Grinin LE (2017a) *Russkaya revolyutsiya i lovushki modernizatsii*. Polis. Politicheskiye issled 4:138–155
- Grinin LE (2017b) *Rossiyskaya revolyutsiya v svete teorii modernizatsii*. *Istor sovrem* 2:22–57
- Grinin L (2018) Revolutions and historical process. *J Glob Stud* 9(2):126–141
- Grinin L (2019) Revolutions in the light of historical process. *Soc Evol Hist* 18(2):260–285
- Grinin L, Grinin A (2020) Revolutions of the 20th century: a theoretical-quantitative analysis. *Polis. Politicheskiye issledovaniya* 5:130–147. <https://doi.org/10.17976/jpps/2020.05.10>
- Grinin LE, Issaev LM, Korotayev AV (2016) *Revolutsii i nestabil'nost' na Blizhnem Vostoke [Revolutions and instability in the Middle East]*, 2nd edn. Uchitel, Moscow
- Grinin L, Korotayev A (2020) *Metodologicheskiye poyasneniya k issledovaniyu revolyutsionnykh sobytiy. Sistemnyi monitoring globalnyh i regionalnyh riskov* 11:854–861
- Gurr TR (1988) *War, Revolution, and the Growth of the Coercive State*. *Comparative Political Studies* 21:45–65
- Halliday F (2001) *The World at 2000: Perils and Promises*. Palgrave, New York
- Hobsbawm E (1996) *The Age of Revolution: Europe, 1789–1848*. Vintage, New York
- Huntington SP (1968) *Political order in changing societies*. Yale University Press, New Haven, CT
- Huntington SP (1986) *Revolution and Political Order*. In: Goldstone J (ed.) *Revolutions: theoretical, comparative, and historical studies*. Harcourt Brace Jovanovich, Inc., San Diego, New York etc., pp 39–47
- Huntington SP (1993) *The third wave: democratization in the late twentieth century*. University of Oklahoma Press
- Johnson VD (1993) The structural causes of anticolonial revolutions in Africa. *Alternatives* 18(2):201–227
- Kalyvas SN (2015) Is ISIS a revolutionary group and if yes, what are the implications? *Perspect Terror* 9(4):42–47
- Katz MN (1997) *Revolutions and revolutionary waves*. St. Martin's, New York
- Keddie NR, Richard Y (1981) *Roots of revolution: an interpretive history of modern Iran*. Yale University Press, New Haven
- Kim Q-Y (1991) *Revolutions in the Third World*. Brill Academic Publishers, Leiden
- Kim Q-Y (1996) From protest to change of regime: the 4–19 Revolt and the fall of the Rhee regime in South Korea. *Soc Forces* 74(4):1179–1208
- Korotayev A, Vaskin I, Tsirel S (2021) Economic growth, education, and terrorism: a re-analysis. *Terror Political Violence* 33(3):572–595. <https://doi.org/10.1080/09546553.2018.1559835>
- Kurzban C (2008) *Democracy denied, 1905–1915*. Harvard University Press, Cambridge, MA
- Lachapelle J, Levitsky S, Way LA, Casey AE (2020) Social revolution and authoritarian durability. *World Politics* 72(4):557–600
- Lawson G (2015) Revolutions and the international. *Theory Soc* 44(4):299–319. <https://doi.org/10.1007/s11186-015-9251-x>
- Lawson G (2016) Within and beyond the “Fourth Generation” of Revolutionary Theory. *Sociol Theory* 34(2):106–127. <https://doi.org/10.1177/0735275116649221>
- Levy JS, Thompson WR (2011) *Causes of war*. John Wiley & Sons, Hoboken, NJ
- Loshchakova O (2008) *Centralnaya i yugo-vostochnaya Evropa na rubezhe XX–XXI vv*. YarGU, Yaroslavl
- Lupher M (1996) *Power restructuring in China and Russia*. Westview, Boulder, CO
- Markoff J (1995) *The great wave of democracy in historical perspective*. Cornell University, Ithaca, NY
- Markoff J (1996) *Waves of democracy: social movements and political change*. Pine Forge Press, Thousand Oaks, CA

- McClintock C (1998) *Revolutionary Movements in Latin America: El Salvador's FMLN and Peru's Shining Path*. US Inst. Peace, Washington, DC
- Moghadam V (1989) The revolution and the Regime: populism, Islam and the state in Iran. *Soc Compass* 36(4):415–450
- Nieva R (2021) Heterogeneous coalitions and social revolutions. *Ration Soc* 33(2):229–275
- Puig SMI, Martín Álvarez A (2020) Repensar la insurgencia: Movimientos sociales y vanguardias revolucionarias en América Central. *Perfiles Latinoam* 28(56):51–74
- Rozov NS, Pustovoit Yu. A., Filippov SE, Tsygankov VV (2019) *Revolutsionnye volny v ritmakh globalnoi modernizatsii* [Revolutionary waves in the rhythms of global modernization]. URSS, Moscow
- Sanderson SK (2016) *Revolutions. A worldwide introduction to social and political contention*, 2nd edn. Routledge, London
- Selden M (1995) *China in Revolution: the Yanan Way Revisited*. Sharpe, Armonk, NY
- Shugart MS (1989) Patterns of revolution. *Theory Soc* 18(2):249–271
- Shults EE (2016) *Teoriya revolyutsii. Revolyutsii i sovremennye tsivilizatsii* (Theory of revolution. Revolutions and modern civilizations). LENAND, Moscow
- Skocpol T (1979) *States and social revolutions: a comparative analysis of France, Russia and China*. Cambridge University Press
- Skocpol T (1982) Rentier state and Shi'a Islam in the Iranian revolution. *Theory Soc* 11(3):265–283
- Snyder RS (1999) The US and Third World revolutionary states: understanding the breakdown in relations. *Int Stud Q* 43(2):265–290
- Sztompka P (1993) *The sociology of social change*. Blackwell, Oxford
- Tarrow SG (1998) *Power in movement: social movements and contentious politics*. Cambridge University Press, Cambridge, UK
- Tilly C (1996) *European Revolutions: 1492–1992*. Wiley-Blackwell
- Tucker RC (1969) *The Marxian revolutionary idea*. WW Norton & Company, New York
- Van Evera S (1999) *Causes of war: power and the roots of conflict*. Cornell University Press, Ithaca, NY
- Venkateswaran TV (2020) 'Science for social revolution': People's Science Movements and democratizing science in India. *J Sci Commun* 19(6):1–14
- Von Laue TH (1964) *Why Lenin? Why Stalin?: a reappraisal of the Russian revolution, 1900–1930*. Lippincott, Philadelphia
- Wallerstein I (1987) World-systems analysis. In Giddens A, Turner J (eds.) *Social theory today*. Cambridge: Polity Press, pp. 309–324
- Wallerstein I (2004) *World-systems analysis: an introduction*. Duke University Press, Durham, NC
- Walt SM (2001) A Theory of Revolution and War. In: Katz MN (ed) *Revolution. International Dimensions*. CQ Press, Washington, pp 32–62.
- Walt SM (1996) *Revolution and War*. Cornell University Press, Ithaca, NY
- Wickham-Crowley T (1991) *Exploring Revolution: Essays on Latin American Insurgency and Revolutionary Theory*. Sharpe, Armonk, NY
- Wickham-Crowley T (1992) *Guerrillas and Revolution in Latin America*. Princeton Univ. Press, Princeton, NJ
- Zinkina J, Christian D, Grinin L, Ilyin I, Andreev A, Aleshkovski I, Shulgin S, Korotayev A (2019). *A big history of globalization. The emergence of a global world system*. Springer, Cham

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