



Synchronization in International Relations: Triangular interactions between China, Latin American and the United States

Sincronización en Relaciones Internacionales: Las relaciones triangulares entre China, Latinoamérica y Estados Unidos

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Abstract

Currently, there is an active debate about whether China's rise is leading to it strengthening relations with other states around the world, and about what the implications of that are for the United States' interests as the current global superpower. Concretely, the arrival of China in Latin America—the “backyard” of the US—has raised questions about triangular interactions. Despite the increasing attention being paid to empirical cases of triangular interaction, on the one hand, the interactions between three states – or triangular interactions- have been far neglected in International Relations (IR) theories and also there still lack suitable methodological instruments for their evaluation. On the other hand, there is not enough empirical evidence currently available that can explain how and to what degree states in triangular interactions may be synchronized.

In order to overcome the aforementioned theoretical and empirical gaps, this article proposes: (1) to incorporate the principles of Physics—and specifically of Synchronization Theory—into IR; (2) empirically analyze the interactions between China, Latin American countries and the US from the Synchronization perspective.

Keywords: China, Latin America, United States, International Relations, Triangular interactions, Synchronization

Resumen

Actualmente, se observa un activo debate sobre si la creciente presencia de China en otros países alrededor del mundo, tiene implicaciones para los intereses de Estados Unidos, considerando

este último como la gran potencia a nivel global. Específicamente, la llegada de China a América Latina – el “patio trasero” de los EEUU – ha dado lugar a preguntas sobre posibles interacciones triangulares. A pesar de la creciente atención que se da a los casos empíricos de interacción triangular, por una parte, las relaciones entre tres países – o interacciones triangulares – no se han sido abordadas por las teorías de Relaciones Internacionales (RRII), además de la falta de instrumentos metodológicos adecuados para su evaluación. Por otra parte, actualmente no existe suficiente evidencia empírica para explicar cómo y en qué medida los países en interacciones triangulares pueden sincronizar.

En búsqueda de superar las lagunas teóricas y empíricas anteriormente mencionadas, el presente artículo propone: (1) incorporar los principios de la física – especialmente de la teoría de la sincronización – a las RRII; (2) analizar de forma empírica las interacciones entre China, los países latinoamericanos y los Estados Unidos desde la perspectiva de la sincronización.

Palabras claves: China, América Latina, Estados Unidos, Relaciones Internacionales, Interacciones triangulares, Sincronización.

Introduction

Triangular relations are still an aspect of IR that—most noticeably in theoretical approaches—has not been sufficiently studied. There are several empirical studies for these already in existence, however, and consequently it is ultimately an appropriate theoretical framework and suitable methods for studying triangular interactions that are missing. This theoretical and methodological shortfall is reflected in the current impossibility to find whether triangular interactions between states occur or to measure their degree of mutual correlation. Triangular interactions are basically the reciprocal communication between three states. The interactions can involve mutual behavioral effects, as well as effects of one side on the other as long as the three states interact. Interactions are possible regarding the different kind of matters over which states interact, such as political, diplomatic, economic, military, technology, and cultural issues.

This article scrutinizes triangular interactions from interdisciplinary and eclectic approaches. Taking an interdisciplinary approach is necessary due to the current limitations of IR theories and methods for addressing all the factors involved in triangular interactions, where the exchange between states is more complex due to the presence of a third state. In this case, the interdisciplinary approach includes the adaptations of the Physics Synchronization theory into IR.

Eclectic approach refers to the use of different theoretical approaches in IR, in this case, recurring mainly to realism, neo realism, as well as neo liberalism. “...What we refer to as analytic eclecticism is distinguished by the fact that *features of analyses in theories initially embedded in separate research traditions can be separated from their respective foundations, translated meaningfully, and recombined as part of an original permutation of concepts, methods, analytics, and empirics.*” (Katzenstein & Sil, 2008:111)

In Physics, Synchronization is understood “...as an adjustment of rhythms of oscillating objects due to their weak interaction.” (Pikovsky, Rosenblum, & Kurths, 2001). The oscillating objects are two independent systems that are connected by a third mechanism. It is the third mechanism, which permits the interactions between the two oscillating objects or systems.

Translating Synchronization into IR, it can be defined in its basic form as the correlated cooperative and/or competitive interactions between three states in similar periods of time. One of the three states plays the role of the third mechanism, which influences the interactions between the other two states.

Thus, the main research questions are: how and to what degree does a triangular interaction between states synchronize? To establish how Synchronization takes places, it looks for the necessary contextual conditions to be present, e.g. time, the presence of failure and/or improvement of bilateral demands compliance. The article assumes that although triangular interactions tend to synchronize, triangular interactions are not per se synchronized. States synchronize when the necessary conditions are present.

The degree of Synchronization indicates the intensity of the correlated interactions, translated into more or less cooperative or competitive interactions, as well as the frequency of the synchronized interactions in a period of time.

The empirical analysis will focus on the triangular interactions between China, Latin American countries, and the US. There is no doubt that China has been the country with the most exponential growth and greatest increase of power since the end of the Cold War. If we compare the expansions of the BRIC countries, China is the leader in terms of an escalation of presence in the international system in almost all areas: economic-commercial exchanges, investment, and military

expenditure for example. Therefore, the choice of China as the third state that interacts with other regions and states is fully justified.

The choice to analyze the arrival of China in Latin America is made for geopolitical reasons. First, this region is the sphere of direct influence of the US. One of the most important expectations in IR—especially from a realist perspective—is that China’s rise is threatening US interests, as the established power.

Second, the rise of China in Latin America is a relatively recent phenomenon (Dominguez, 2006; Jiang, 2006; Cesarin, 2006; Ellis E. , 2009; Fernandez & Hogenboom, 2010). The increasing presence of China during the last twenty years in Latin America has been unprecedented. At the bilateral level, China has also established key Strategic Partnerships in Latin America—thereby becoming the single most important cooperation partner for several different countries in the region.

The aims of this article are thus to: (1) propose a theoretical framework to analyze triangular interactions between states, focusing on the potential to Synchronize and (2) analyze whether and to what degree the triangular interactions between China, Latin American countries and the US, over political-diplomatic issues, and trade, have been synchronized.

For the empirical part, the article applies a mixed cross-method approach. Thus, it requires case studies, including some quantitative techniques—such as the running average of the interactions—and also a cross-correlation approach.

This article is divided into two main parts: the first contains the discussion and development of the Synchronization approach framework; more briefly, the second includes the descriptive and analytical scrutiny of China’s arrival in Latin America, with the empirical application of Synchronization to the triangular interactions formed by the cases: Argentina–China–US, Brazil–China–US, and Venezuela–China–US.

Triangular interactions in IR theories

In the literature, approaches to triangular interactions are as such almost nonexistent. However, there are some interesting studies in triangular interactions, such as Dittmer (1981), Goldstein and Freeman (1991), and Womack (2004). Dittmer (1981) developed the concept of “Strategic triangle”. It was used to analyze the interactions between China, the Soviet Union, and the US during the Cold War era. Dittmer (1981) elaborated a conceptual framework for strategic triangles and made a classification system for them. He classified triangular interactions into three possible triangles: “Ménage à trois,” “romantic triangle,” and “stable marriage.”

Nevertheless, one of the main limitations of Dittmer’s approach (1981) to the strategic triangle was the fact that he analyzed it only from the perspective of triangular interactions being static. As a result, Dittmer’s work could not be extrapolated to the dynamics of the international system, wherein such interactions are anything but static. Thus, ten years after the Dittmer publications, the empirical findings of Goldstein and Freeman (1991) would make the classification system earlier proposed by Dittmer redundant.

Goldstein and Freeman (1991) also presented an empirical advancement on the strategic triangle formed by China, the Soviet Union, and the US. They used some techniques of time-series analysis, concluding that during the Cold War era the three countries had some kind of

interdependency on each other. However, they nevertheless did not propose an alternative or improve the existing theoretical framework for triangular interactions.

For his part, Womack (2004) expanded the concept of a strategic triangle, introducing therein the concepts of an “asymmetric triangle” and “acknowledgment for deference” (AFD). Womack adapts Dittmer’s strategic triangle concept to the post-Cold War era. He also criticizes the bilateral level of analysis of Dittmer in the context of explaining triangular interactions. Due to the Cold War era having come to an end, Womack proposed to adapt Dittmer’s strategic triangle into his own Asymmetric Theory. Despite the commendable contributions of Womack to our further understanding of triangular interactions, on one hand, for Womack as for Dittmer bilateralism is still at the heart of the analysis; on the other hand, the theoretical assumptions of Womack are based on Constructivism.

Dittmer’s “Strategic Triangle”

The term “strategic triangle”¹ was used during the Cold War era for analyzing the interactions between China, the Soviet Union, and the US, especially from the end of the 1970s after Nixon’s visit to China. However, a concrete definition of a strategic triangle was never developed. Dittmer proposed to develop a comprehensible conceptual framework, wherein the three main forms of triangles are classified.

Dittmer claimed that a strategic triangle “may be understood as a sort of transactional game among three players” (1981: 485). Despite this perspective, he still opted to use a qualitative approach, which is not indeed wrong. But, instead he just included terms from game theory, but did not formally apply its logic to his study as such.

The main question Dittmer poses is: “Why do states fall into patterned relationships with one another in the first place, and of what do such relationships consist?” The hypothesis of Dittmer is that “states (representing their constituent members, of course) experience needs that cannot be adequately satisfied at the domestic level, leading them to enter into contact with those countries that dispose of the pertinent values” (1981: 486).

The necessities of states include several kinds of requirements: to exchange goods and services, but also information, propaganda, and/or espionage. He distinguished between the inter-state exchange of benefits (positive) and the exchange of sanctions (negative) as trade and warfare. Dittmer also clarified that the exchange between states can be reciprocal in the sense that for both players there can be benefits or sanctions, but that these exchanges are not necessarily symmetrical.

The main questions that Dittmer addresses are actually general ones, which are not of relevance primarily to the research of triangular interactions. However, one of the independent variables that Dittmer did include was the third state. Dittmer proposed three independent variables that may affect the type of exchange between states: value (positive/negative); symmetry (strong/weak); and, how “both value and symmetry of any bilateral relationship are marginally affected by each player’s relationship with the third player” (1981: 487).

¹ The concept of a “strategic triangle” was used by different authors during the Cold War era, but without being comprehensively developed as a concept: Tatu, M. (1970) *The Great Power Triangle: Washington–Moscow–Peking*; Gottlieb, T.M. (1977) *Chinese Foreign Policy Factionalism and the Origins of the Strategic Triangle*; Brown, R. G. (1976) *Chinese Politics and American Policy: A New Look at the Triangle*; Pillsbury, M. (1975) *US–Chinese Military Ties?*; Pillsbury, M. (1977) *Future Sino–American Security Ties: The View from Tokyo, Moscow, and Peking*; Garret, B. (1979) *China Policy and the Strategic Triangle*; and, Rothchild, D. and Lieber, R. (eds) (1979) *Eagle Entangled: US Foreign Policy in a Complex World*.

Dittmer refers to the effects that the third states can exact on a bilateral relationship as “marginal,” but this was not thoroughly investigated by Dittmer. Bilateral relations can be measured by their direct interactions. For its part, the third variable or third state can be understood more as being related to indirect interactions. Unfortunately, Dittmer did not develop the third angle of these interactions at all.

Dittmer also argues for the essentiality of maintaining symmetries between states, in order to preserve balance between them. Balance means that there are no winners or losers. For him, relations are more durable in a position of balance.

According to Dittmer there are two necessary conditions for a strategic triangle to exist:

First, *all participants must recognize the strategic salience of the three principals.* Second, although the three players need not be of equal strategic weight, each must be accepted by the other two as a legitimate autonomous player. Thus, the *relationship between any two participants will be influenced by each player’s relationship to the third.*” (Dittmer 198: 490–491).

Here it is important to highlight the elements of recognition between states, autonomy, and mutual influence by the third state.

The approach of Dittmer to triangular relations is strongly influenced by perceptions, with the classification of the different kinds of triangle being built on the basis of the perceptions that the three players have of each other, and as such it is not about the material capabilities that each state has. In the case of the relations between China, the Soviet Union, and the US, Dittmer characterized it as a symmetrical amity wherein:

“[...] in the absence of international enforcement mechanisms, each player must constantly and scrupulously monitor all transactions—for, aside from the danger of cheaters, the perception of symmetry in such dealings is notoriously subjective, and the data are nearly always equivocal. If confronted by evidence of cheating, a player must either check such behavior or permit the relationship to deteriorate from a positive to a negative one; otherwise that player submits willy-nilly to a losing negative–positive exchange” (Dittmer 1981, p. 488).

According to Dittmer, the symmetry between two players is not necessarily given by equal power rather it is present in an “ideal-typical patron–client relationship, in which each player accepts a different (but equally necessary) role in a shared division of labor” (1981, p. 488).

Thus it is possible in the case that a great power provides security to a small one, and the latter compensates the former through its strategic policymaking (Japan and the US, and Cuba and the Soviet Union for example). Thus, the great power will not try to establish an asymmetric relation, so as to avoid the threat of the small one seeking relations with another great power instead. Thus, it is possible to establish a strategic triangle between different powerful states and smaller ones, with it always being the case that the relationships are “symmetrical”—at least in how they are perceived.

Dittmer claims that there are at least three different kinds of relationship in these possible triangles:

- Ménage à trois. Symmetrical amities among all three players.
- Romantic triangle. Amity between one pivot player and two wing players, but enmity between each of the latter.
- Stable marriage. Amity between two of the players and enmity between each and the third.

There is a special position that one state can reach in strategic triangles, that of the pivot. The pivot position, for example, in a romantic triangle is the most advantageous one available, permitting amities with two other players and enmities with none, thereby maximizing benefits while minimizing expenditures for sanctions. [...] The pivot must maintain positive relations with both ‘wing’ players while at the same time attempting to manage the level of tension between them (Dittmer 1981, p. 510).

One of the advantages of the pivot is to play with the “threat of asymmetry” with the other two states. It means that the pivot state can threaten the possibility of “getting married” to one of them. Moreover, the pivot state has a key role in elevating or defusing conflicts between the other two states “based on the inescapable triangularity of bilateral relationships: the pivot has the capability to exacerbate tension by shifting its weight to one side or the other in the dispute, or to assuage the conflict by declining to take sides” (Dittmer 1981, p. 512).

One of the limitations of the Dittmer approach to strategic triangles, however, is that the author does not explain how to recognize each triangle or how to isolate a given triangle from the other possible ones. The conditions of strategic triangles that Dittmer has proposed are not limitations nor can they limit per se the admission of other players into the game. That makes more sense, especially when Dittmer outlines that the players do not necessarily even know that they are playing a game.

The “Three-Way Street” of Goldstein and Freeman

The work of Joshua S. Goldstein and John R. Freeman published in 1990 as the *Three-Way Street: Strategic Reciprocity in World Politics* analyzes how states and specifically powerful nations cooperate despite their conflictive interests. They used data on interactions between China, the Soviet Union, and the US, in the years from 1948 to 1989. They looked to evidence whether Chinese–Soviet–US relations responded to routine, reciprocal, or rational expectations. In other words, if these three countries were behaving more cooperatively or competitively.

Goldstein and Freeman recognized the potential effects of Chinese behavior on the complex and asymmetrical connections of US–Soviet relations, but they also found mutual influences on US–Chinese and Soviet–Chinese relations. The central research question that Goldstein and Freeman addressed was: “To what extent and how do great powers respond to each other’s behavior?” (Goldstein and Freeman 1991, p. 17).

The three possible state behaviors posited by IR theorists were not proved by Goldstein and Freeman: bureaucratic routine (states behave according their own interests, where we can identify

Classical Realism); reciprocity (behavior of states are influenced by other states, we can identify authors from the Interdependence Theory); and, third, that states respond to rational expectations (states respond not to the influence of other states, but behave according to rational expectations where reciprocity is not immediately evident, and the problem is that empirical results are contradictory) (Goldstein and Freeman 1991, p. 17).

With respect to triangular interactions, the authors also found that, “The results of these simulations are more difficult to interpret with respect to triangular responses. Briefly, they affirm that Sino–Soviet behaviors are more triangular than behaviors involving the United States: in their actions toward each other, the Soviet and Chinese consistently take into account US behavior” (Goldstein and Freeman 1991, p. 28).

The two authors empirically discovered that “great power behavior combines both bureaucratic routine and reciprocity. Our results also reveal complex, asymmetrical connections among US–Soviet, US–Chinese, and Soviet–Chinese relations—connections that imply the existence of a strategic triangle” (Goldstein and Freeman 1991, p.18). Despite the innovation of Goldstein and Freeman’s work, especially from an empirical, quasi-experimental perspective, they still used traditional IR theories to explain and interpret their findings. As such, they conservatively explained the empirical evidence according to traditional descriptions of states behavior as being a combination of bureaucratic, routine, and reciprocal.

Goldstein and Freeman contributed mainly to confirm the existence of strategic triangles between states, which can be also asymmetrical, where only a bilateral relationship (Sino-Soviet) is affected by triangular US-Sino-Soviet influences (Goldstein & Freeman, 1991, p. 30). However, one of the limitations of Goldstein and Freeman’s findings are the reduction of states’ behavior in triangular interactions as “reactive links” behaviors. Moreover, and despite the empirical findings of Goldstein and Freeman (1991), there has not since been any conceptual or theoretical improvement of our understanding of triangular interactions, apart from validating (Jervis 1976; Osgood 1962; Larson 1988) or discarding (Snidal 1985; Wagner 1983) some theorists on great power behaviors.

Womack’s Asymmetry Theory and Asymmetric Triangles

Womack (2004) proposes Asymmetry theory and asymmetric triangles. Asymmetry Theory argues that the system is multipolar, based on the strategic triangle formed by China, the Soviet Union, and the US during the Cold War era. After the Cold War ended, multipolarism was expanded by the presence now of at least five poles: the three aforementioned countries plus Japan and Europe. The asymmetry between states is observed in a stable matrix of international relations, one of which is multipolar. Womack criticizes, however, Multipolarity Theory, considering its focus to be on “expanding the circle of powers” but not on analyzing why the expansion of power is important (2004, p. 356).

Womack refers to the asymmetries of knowledge that states have. Perceptions are the main variables that determine the behavior of states. According to Womack, “Asymmetry theory is a new paradigm that addresses the effects of national disparities on international relations. It argues that asymmetry inevitable creates differences in risk perception, attention, and interactive behavior between states, and that it can lead to a vicious circle of systemic misperception” (2004, p. 351).

There is a small distinction to be made between the thinking of Wendt and Womack’s constructivism; the latter says that the asymmetry of knowledge is primary produced by the capacity and power that afterward leads to the divergence of perceptions. Disparity produces different

“attentions” from the larger to the smaller country: “Asymmetry is defined by disparity. An asymmetric relationship is one in which the disparity is great enough so that shapes the structure of the relationship. [...] Disparity implies that the larger side (A) has less to gain or lose in the relationship than does the smaller side (B)” (Womack 2010, p. 322).

However, interactions between states are basically dynamic, where attention between states cannot be defined as asymmetric or as disparities. Material capabilities permit us to affirm and measure whether there is a disparity of capacities between countries. But in the case of attention, it also depends on the context. The asymmetry between countries can be measured according to different factors and it is also a complex process—but essentially some of the factors to consider are population, economy, and military capacities.

According to Womack (2004), conflicts between states are produced by misperceptions, but he does not reveal what kind of perceptions informs knowledge. Womack criticizes Realism and Neorealism because he believes that powerful countries cannot impose their will on other states. According to him, if powerful states want to maintain their preeminence in the long term, it is not really viable for them to impose their will on others. Powerful states have the advantage of opportunities and responsibilities as compared with smaller countries, but these exist inside a stable matrix of international relations.

Womack further claims that between two states there is more than only one common relationship; they simultaneously have two sub-relations between them: of A with B and of B with A. He explains how for smaller state B these relationships are more important than they are for state A. Here it is not important what the material or symbolic exchanges the interaction includes actually are; what matters is what perceptions the states have about it.

Misperceptions are frequently present in these relationships. However when the differences of attentions between states are continual, then eventually the misperception becomes systemic in nature, leading to conflicts (Womack 2004). However, one can say that the different perceptions that the actors have in a relationship does not mean that there are at least two different relations in existence.

Basically, for any relationship to exist it is necessary to have two actors, two states that interact, and of course each of them had their own perceptions—nevertheless, there can still be only one relationship. Perceptions might also be more numerous if we observe a relationship at a different point in time, because relationships are dynamics processes. As such, there will be more than just two perceptions, as Womack himself argues.

One of Womack’s aims (2010) is to establish how asymmetries between states can affect their relations. He accurately affirms vis-à-vis triangular interactions that: “The key feature of triangular relationships in contrast to bilateral ones is the indeterminacy of simultaneous interactions” (2010, p.402).

Womack classifies triangular interactions according to the positions that the states have as players. There is one state that is the most powerful player (X), a second state with an intermediate power position (Y), and finally the least powerful player of the three states (Z). The triangular interactions are classified into four kinds of triangles: symmetrical; single head dual asymmetrical; twin head dual asymmetrical; and, triple asymmetrical (Womack 2010).

- Symmetrical triangle $X=Y=Z$

- Single head dual asymmetrical triangle $X > Y = Z$
- Twin head dual asymmetrical triangle $X = Y > Z$
- Triple asymmetrical triangle $X > Y > Z$

Critiques of approaches to triangular interactions

In more recent academic works, a little more has been written by scholars about triangular interactions. However, there are some authors who are skeptical about these kinds of interaction or this level of analysis. Thus, Lo noted that, “The notion of strategic triangulism, popular during the Cold War, has made something of a comeback in recent years” (2010, p. 7). According to this author, there are at least two elements—the decline of the US/the rising of China and the re-emergence of Russia—that in apparent coincidence with each other are now facilitating the formation of triangular relations between China, Russia, and the US.

Lo (2010) disagrees with this notion of a formation of triangular relations between the three aforementioned powers. One of the problems from his point of view is the exaggeration of the “strategic triangle” as a concept and as a form of genuine interaction: “Its value was exaggerated even during the Cold War. Today, the utility of triangularism as a tool for understanding great power relations is falling in inverse proportion to China’s rise as the next global power” (Lo 2010, pp. 7–8).

According to Lo (2010), it is not a multipolar world order that is emerging; rather what is emerging is a new Sino–American bipolarity. “[It is] less stark than the bipolarity of the Cold War, but world affairs will nevertheless come to be dominated by two superpowers, supported (or undermined) by various second-rank powers and international institutions” (Lo, 2010, p. 8).

Lo (2010) refutes the notion of the existence of any kind of strategic triangle, essentially due to the lack of three sufficiently powerful states currently interacting with each other: “An effective triangle requires three sides that are, if not equal, at least sufficiently powerful and engaged to exert a significant influence on the interactions within it. There is no such example in the contemporary international system” (2010, p.10). However, triangles do not have to have the same equality of size, as there are inter-state interactions that can be affected in different issue-areas.

The critiques of Lo (2010) regarding triangular interactions are reasonable due to the lack of a solid theoretical framework for them, as well due to the currently limited volume of empirical research that has been done on these three-way interactions.

Synchronization in International Relations

In Physics, authors agree that Synchronization is primarily a process, wherein minimally two systems interact as a consequence of the information transmitted by a third mechanism. According to (Boccaletti, Kurths, Osipov, Valladares, & Zhou, 2002) in Physics “not always the word synchronization will be taken as having the same colloquial meaning, and we will need to specify what synchrony means in all particular contexts in which we will describe its emergence” (Boccaletti, Kurths, Osipov, Valladares, & Zhou, 2002, p. 3). Thus, Boccaletti et al. define the Synchronization of chaotic systems as “a process wherein two (or many) chaotic systems (either equivalent or nonequivalent) adjust a given property of their motion to a common behavior, due to coupling or forcing” (2002: 3). For its part, Synchronization is understood as “an adjustment of [the]

rhythms of oscillating objects due to their weak interaction” (Pikovsky, Rosenblum, & Kurths, 2001, p.8).

The etymology of the word Synchronization is from Ancient Greek, meaning “to share the common time.” Thus, the word Synchronization used to be associated with the idea that phenomena occur more or less simultaneously.

Synchronization as a physical phenomenon has been studied since the 17th century. The Dutch mathematician Christiaan Huygens described the phenomenon of Synchronization by observing how a pair of clocks reacted together and influenced each other through a third mechanism, one which apparently was not interconnected with the other two. He arrived at the conclusion that an external mechanism (wall) was interacting with two independent systems (clocks). In other words, both clocks were informing each other through the medium of the wall. This apparent simple verification led to the later construction of a Synchronization Theory in Physics.

Subsequently studies of Synchronization were expanded, with this phenomenon being applied in Physics to several examples of Synchronization between different objects, such as, among others, fireflies (Boccaletti, Kurths, Osipov, Valladares, & Zhou, 2002, pp. 2–3). Additionally, the theory has been used to explain “weather” behavior, and moreover human behaviors, for example to explain why the applause in a theater tends to continue until it reaches a simultaneous rhythm.

As already mentioned above, this article proposes to use the concept of Synchronization in IR. It can be defined as the correlated cooperative and/or competitive interactions between three states in similar periods of time. One of the three states plays the role of the third mechanism, which influences the interactions between the other two states.

Despite triangular interactions tends to synchronize, it is only possible when the three states interact under *certain conditions*: when there is a mutual interaction in similar periods of time, the presence of failure and/or improvement of bilateral demands compliance, and one of the states plays as a “joker card”, then they will tend to synchronize their relationships.

The aforementioned conditions can be defined basically as the following:

- Mutual interactions in similar periods of time. The mutual interactions include the bilateral interactions as well as the eventual responses of the third state. There is not necessarily simultaneous behavior of the three states, but the behavior of one state is slowly followed by the other state.
- Failure and/or improvement of bilateral demands compliance and therefore the expansion of their relationship to a third state looking to satisfy national interests.
- The third State plays as a “joker card”. In physical sciences, it is called the third mechanism, which is in charge of transmitting the information between two independent systems. In IR, it is the State that the other two states look recurrently to in order to resolve the failure of bilateral demands.

There are currently no studies that measure these kinds of triangular interactions between states, apart from the aforementioned studies of Dittmer (1981) and Goldstein & Freeman (1991), which are limited only to the analysis of the interactions of great powers, without offering an appropriate conceptual framework to understand triangular interactions.

It is important to highlight that Synchronization identifies the existence of synchronized events in a period of time. Synchronization recognizes that states respond to external stimulus, but the ways in which they do so, depend mainly on internal factors. Synchronization uses material facts to determine the effects of interactions between states. Nevertheless, even after the existence of Synchronization has been proved in empirical cases there is still room for different interpretations of it according to the particular IR theoretical approach taken. Thus, Synchronization is a kind of starting point from which to better understand triangular interactions.

States as dynamic and autonomous systems

States are dynamic and autonomous systems. They are dynamic, which underlines the system's capacity to react in the face of an external stimulus. However, the reactions of states depend on the domestic contexts of states and not on the international structures per se.

For its part, autonomous means that states have their own internal structures. Hence, theoretically, one can isolate a state from the international system and yet this state will still be a state without a loss of its characteristics. The importance of recognizing the characteristic of states being autonomous systems is due to their capacity to react pragmatically in the face of external stimulus, meaning reacting in such a way as to protect their national interests. Hence, Synchronization in IR also concurs with those realist approaches that consider the state to be the main actor in the international system.²

According to realist theory, states act in their own national interest, a behavior that is understood in terms of power. However, a state's behavior also has to be understood in pragmatic terms. Thus, a state's national interests are multiple, as are the issue-areas in which states interact with each other. This pragmatism can include seeking power, as well as looking for prestige, for economic development, for cultural influence, and so on.

This article understands the anarchy of states not as a lack of government, but as the capacity to react however they want to external stimulus, with the near impossibility therewith for the observer to predict how a state will react in a given context. Thus, the anarchy of the system is formed by the anarchy of the states. According to Waltz (1979), the structure is what influences the behavior of states; however, stimulus is not the same as influence.

In Synchronization I refer to the stimulus that the system exerts on states. The idea here is that states are not passive subjects that are inherently influenced by the international structures alone. Rather, while the international structures play an important role in the sense of continuously providing an external stimulus to states it is, however, the latter who are the subjects pragmatically responding to this stimulus and who also have reciprocal effects on those international structures.³

An important point in the Synchronization process is indeed that it does not focus on or analyze the domestic or national structures of the states in question. Synchronization observes instead how states receive stimulus from third states and how they respond, taking the results of these interactions as the main sources of evidence for Synchronization.

² However, this does not mean that the Synchronization can also be applied to other actors in the international system, such as transnational ones; the actors that are considered dynamic and autonomous systems are those that interact with another actor playing the role of the third mechanism.

³ This is an assumption mainly from neo-classical realism.

In Synchronization, states are independent variables but also can be dependent ones depending on the starting position that the researcher decides upon.⁴ For example, we can observe the Synchronization between Brazil and the US in their interactions with China (third state). In this case the bilateral relationship Brazil–US could be the dependent variable, with China meanwhile being the independent one. We could also attempt to analyze whether there is Synchronization in the bilateral relationship between China and the US, wherein Brazil could play the role of the third state. Thus, states interactions are not exclusively either independent or dependent variables.

States as the third state of interactions

A valid question to ask of Synchronization is why it is important to look at the third state in order to analyze triangular interactions. On the one hand, doing so is a way to theoretically isolate a state as the independent variable that could affect a bilateral relationship.⁵ On the other, the presence of this third state is an indispensable factor for the stimulation of the bilateral relationship.

To determine the intensity of effect that the third state has on a bilateral relationship is not actually that easy.⁶ The intensity of the third state has to be in some way “weak.” When the third state stimulates but also determines the kind of response of the states involucrate in the bilateral relationship, we are not any more faced with Synchronization. In other words, the effects of the stimulus produced by the third mechanism are just a stimulus, as it does not drive the response itself. The response depends on the individuality of the states involved in the bilateral relationship. The states decide according to their own pragmatic considerations if they are to opt for cooperative or competitive behavior in response to the external stimulus.

Types of synchronization

Every state has different cooperative and/or competitive responses or frequencies (in the language of Synchronization in Physics) in the face of the stimulus provided by the third state. State interactions that are synchronized (coupling of the frequencies) is what in Physics is called “an oscillatory period.” These can normally be measured per year, for example the oscillatory periods of trade between Brazil and the US as a result of the former’s interactions with China.

The responses or reactions of states (cooperative or competitive) will normally be stable. During this time, the interactions of the two parties within the bilateral relationship will tend to be stable, with them taking on either a cooperative or competitive relationship (or a mixture of both). However, some perturbations might appear that could produce changes in the behavior of the states, but only temporarily—which could be the synchronized events.

⁴ This is also a principle of Physics. The classical example is of a train in motion.

⁵ Regarding the way to isolate variables, Waltz gives a valid answer when he argues that—despite everything in reality being related to everything else—the task of theory is to “isolate one realm from all others in order to deal with it intellectually” (1988, pp. 615–616).

⁶ It is a difficulty in Physics to determine what constitutes the “weak” or “strong” influence of the third mechanism prior to the systems’ eventual unification: “Usually it is rather difficult, if at all possible, to determine strictly what can be considered as a weak coupling, where the border between ‘weak and ‘strong’ lies, and, in turn, whether we are looking at a synchronization problem or should be studying the new unified system. In rather vague terms, we can say that the introduction of coupling should not qualitatively change the behavior of either one of the interacting systems and should not qualitatively change the behavior of either one of the interacting systems and should not deprive the systems of their individuality. In particular, if one system ceases to oscillate, it should not prevent the second one keeping its own rhythm” (Pikovsky; Rosenblum; Kurths 2001: 17).

Synchronization measures the coinciding of behaviors as well as opposing ones (mismatch) so as to determine whether the synchronization of phenomena is occurring. Thus, Synchronization can happen both in the same direction and in different directions as well. Thus, according to the oscillatory periods observed in Synchronization, this article classifies Synchronization in IR as having at least two possible forms⁷:

- Positive Synchronization: the results of the interactions between the states are showed visually and under certain measurable parameters. The absence of Synchronization is 0, and a positive Synchronization is a quantity superior to 0 and up to 1. Qualitatively explained, when states are at least cross-correlated with an index superior to 0 and up to 1, the states interacts cooperatively, which is called positive Synchronization.

In other words, the cooperative synchronization between three states indicates the degree of similar collaborative responses of their behaviors with each other.

- Negative Synchronization: the principle is the same as in positive Synchronization however, in a negative Synchronization, the cross-correlation index shows a result between -0 and -1. A negative Synchronization indicates that the states are interacting in a competitive way.

The negative Synchronization between three states indicates the degree of similar antagonistic responses of their behaviors with each other.

There may be several formula to apply for calculating Synchronization, depending of the data. In this article, we applied a cross-correlation⁸, which supposes one has two time series X_k and Y_k where k runs from 1 to L .

At the first step one calculates averages:

$$\bar{X} = \frac{X_1 + X_2 + \dots + X_L}{L} \quad \bar{Y} = \frac{Y_1 + Y_2 + \dots + Y_L}{L}$$

Then one subtracts these averages from the time series

$$\tilde{X}_k = X_k - \bar{X} \quad \tilde{Y}_k = Y_k - \bar{Y}$$

Then one calculates the variances

$$V_x = \frac{(\tilde{X}_1)^2 + (\tilde{X}_2)^2 + \dots + (\tilde{X}_L)^2}{L - 1} \quad V_y = \frac{(\tilde{Y}_1)^2 + (\tilde{Y}_2)^2 + \dots + (\tilde{Y}_L)^2}{L - 1}$$

⁷ Physics distinguishes between unidirectional and bidirectional coupling as the basic forms of Synchronization. However, there are in fact at least seven types of synchronization for chaotic systems (Boccaletti et al. 2002, pp. 3–4).

⁸ The author thanks Prof. Dr. Arkady Pikosky from the Department of Physics and Astronomy at the University of Postdam, for facilitating the formula.

Then one calculates the correlation coefficient as follows

$$C_{xy} = \frac{\tilde{X}_1\tilde{Y}_1 + \tilde{X}_2\tilde{Y}_2 + \dots + \tilde{X}_L\tilde{Y}_L}{L\sqrt{V_xV_y}}$$

This coefficient can vary from -1 to 1. C_{xy} close to 1 means a strong positive correlation. C_{xy} close to -1 means a strong negative correlation (or also called anti-correlation). C_{xy} close to zero means no correlation (they are “independent” processes).

Synchronization is not a simple verification of reactive behaviors between states. It is more about how states in triangular interactions are correlated, sharing properties, and interests, among others.

Triangular interactions between China, Latin American countries, and the United States

In recent years, China has expanded its political, economic, technological, and cultural presence on the global stage by making greater financial investments, developing new technology, and establishing partnerships with states around the world. It has led to scholars striving to deduce whether the interests of the US are now being affected by this turn of events (Gu, Humphrey, & Messner, 2007). The continued rise in China’s importance within the international system has been identified as the single most important geopolitical challenge that the US will face in the coming decades (Fukuyama, Ikenberry, & Wright, 2005; Rudolf, 2006) or has been defined as the relationship that will dominate the future of international politics and that will produce an eventual transition from a unipolar to a multipolar order (Bergsten, 2008; Gu, Humphrey, & Messner, 2007).

Hence, some academics have suggested in future a probable confrontation between the US—as the current hegemonic power, albeit one in decline—and China—the rising power. As a result, academic analyses include likely scenarios ranging from military confrontation between China and the US (Brzezinski & Mearsheimer, 2005) to intermediate conflicts between China and the West over economic and geopolitical concerns (Kupchan, 2001) or, alternatively, to cooperative behavior in international institutions, as proposed mainly by institutionalists, with the predicted cultivation of cooperative relationships alongside peaceful transitions (Xintian, 2009)

However, the notion of conflicts arising from recent global power shifts has been present since the Cold War era and is most visible in the Realist approach. On the one hand, some realist scholars who placed a stronger focus on the security dimension of IR emphasize the potential for conflict occurring due to: the uncertainties stemming from multipolarization (Waltz 1987); shifting cost–benefit patterns that incentivize revisionist action in the course of a power transition (Organski, 1968; Organski & Kugler, 1980; Gilpin, 1981) and, the military overstretch of the incumbent power (Kennedy, 1987).

For more recently scholars, such as neoclassical realists, the era of unipolarity is seen as being far from over and hence they adjudge the possibility of direct conflict breaking out in the near future to be relatively low (Ikenberry, Mastanduno, & Wohlforth, 2009; Pape, 2005; Paul, 2005). On the other hand, liberal-institutionalists—who place a stronger focus on political-economic issues—

suggest that growing interdependencies and processes of institutionalization at both the global and regional levels reduce the probability of conflicts occurring (Keohane & Nye, 1977; Keohane, 1984; Russett & Oneal, 2001).

However, neither realists nor neo-institutionalists are able to explain the relationships that exist as part of these triangular interactions. In the current process, the strong focus on the security dimension does not, however, also explain the level of cooperation as well; it focuses mainly on the powerful states, and not on the role of countries with limited resources, such as for example Argentina and Venezuela in the current international system. For their part liberal-institutionalists—with their strong focus on economic interdependence—are not able to satisfactorily address the issue of a persistent level of competition between states. Also, it is not clear how this interdependence plays out in other arenas aside from that of economics.

Although the complexity between China and the US is observed, it is necessary to include the strategies implies for those countries in order to build alliances and how other rising but also minor powers could be potentially play a role in the interactions between China and the US.

For its part, simultaneously to the China's rising, countries in Latin America such as Argentina, Brazil, and Venezuela have been furthering their goal of partner diversification, finding therein China to be a convenient and supportive strategic partner, which is not the case of Mexico, although it has signed a strategic partnership with China. As a result, official and academic concerns have been articulated in the US about the possible implications of this China-related development for the US' own national interests and its relationships with the aforementioned Latin American countries.

The growing presence of China in Latin America has a special meaning for the US with regard to its own geographical and historical zone of influence. US officials as well as scholars have thus scrutinized the increasing influence of China in Latin America. General Craddock, former US Head of the Southern Command, declared the presence of China in Latin America to be “an emerging dynamic that could not be ignored.”⁹ On the occasion of an official visit to Beijing in 2006, Thomas Shannon, US Assistant Secretary of State for Western Hemisphere Affairs, discussed the increased presence of China in Latin America, as was also done in the subsequent meeting held in Washington D.C. in 2007, as well as in Beijing in 2008. This discussion has also occurred in the different reports of the US Congress' US–China Economic and Security Review Commission.¹⁰ Moreover, Secretary of State Hillary Clinton said in 2009 that China and Iran were disturbing the Latin American region.

According to Ellis (2005), the presence of China in Latin America is seen by the US as a phenomenon that undermines its own power. Hakim (2006), Pérez Le-Fort (2006), and Hsiang (2009) have also mentioned that for Latin American countries China seems to be an economic and political alternative to US predominance.

The exponentially increasing presence of China in the Latin American region leads to deep questions about whether and how China interactions with Latin American countries could potentially be correlated with the bilateral Latin American–US relationships. In other words, to corroborate evidence—in issue-areas beyond just the economic one—for possible changes in the relationships between Latin American countries and the US due to the presence of China in the

⁹ In Pablo Bachelet, “China's Latin influence is Growing, General Says,” *The Miami Herald*, March 10, 2005.

¹⁰ <http://www.uscc.gov>.

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region. There exists a gap in our knowledge that the literature until now has been unable to fill with concrete evidence.

Applying Synchronization Empirically

This article applies the typical case approach to select the cases in Latin America; it is also called the representative case (Gerring 2008). “The typical case exemplifies what is considered to be a typical set of values, giving some general understanding of a phenomenon” (Gerring 2008, p. 648). The advantage of the typical case approach is also its exploratory investigation also of the phenomenon of Synchronization.

The typical case approach is also advantageous for this research because “depending upon the results of the case study, the author may confirm an existing hypothesis, disconfirm that hypothesis, or reframe it in a way that is consistent with the findings of the case study” (Gerring 2008, p. 650). The article also chooses to use a typical case approach given “that the probability of the cases’ representativeness is high, relative to other cases” (Gerring 2008, p. 650). It also uses the case study method because it enables case analysis and comparison. The use of comparative case studies allows us to apply mixed methods, including also a combination of deduction and induction. As well as these benefits, case studies also have an explanatory value or theory-building purpose (Bennett 2004). Another reason to choose case studies is their advantages in identifying any new hypotheses during the process of investigation (Bennett 2004). This chosen approach is thus also useful for improving the theoretical framework of Synchronization.

Case Selection

Considering that there are several cases of triangular interactions in international relations, the article conducts a comparative study of the political-diplomatic and commercial bilateral relationships of Argentina, Brazil, and Venezuela with the US.

China, as the most intensely and extensively rising power in the international system during the last two decades, has in recent years been increasing its political, economic, cultural, and technological exchange with countries around the world.

The countries in Latin America are selected according to the Chinese side’s hierarchy vis-à-vis bilateral interactions in the region, wherein Argentina, Brazil and Venezuela as Strategic Partnerships of China¹¹ are recognized as the most comprehensive and relevant interactions due to the political and strategic gains to be had from them.

Thus, the chosen cases are the triangular interactions existing between Argentina–China-US, Brazil–China-US, and Venezuela–China-US.

¹¹ The other Strategic Partners of China in Latin America are Chile, Mexico, and Peru. The case of Chile is discarded due to its recent establishment—this Strategic Partnership was signed in 2012, and is thus still under construction. Mexico is a deviant case, as political, economic, and geographical reasons make it completely different to the others. The article seeks to include only the cases that can be considered typical. In the case of Peru, meanwhile, despite signing up to a Strategic Partnership with China in 2008 the country also signed up to a Free Trade Agreement with the Asian country—and almost all of their bilateral interactions are circumscribed to this instrument, and not to the Strategic Partnership.

Indicators to measure empirical cases

The indicators for the behavior of states in this article are focused mainly on political-diplomatic matters and trade interactions. However the indicators of Synchronization can be many, depending on the area that the research is interested in investigating. It is important to consider that the article does not pretend to apply empirically Synchronization in all areas of the triangular interactions. It is a limited initial test for some indicators.

Thus, indicators of political exchange are the bilateral political-diplomatic interactions, in the form of the bilateral agreements signed in the years from 1990 to 2012. The official reciprocal state visits of presidents or heads of state are also part of these indicators. Likewise, the trade exchange is included. The selection coincides with the end of the Cold War, and thus with the end of the bipolarity of the international system. It is the period that also coincides with the exponential rise of China and with the relative global supremacy of the US. The cut-off point being set at 2012 is related to the availability of data. Each of the indicators is divided into quarterly sequences of time.

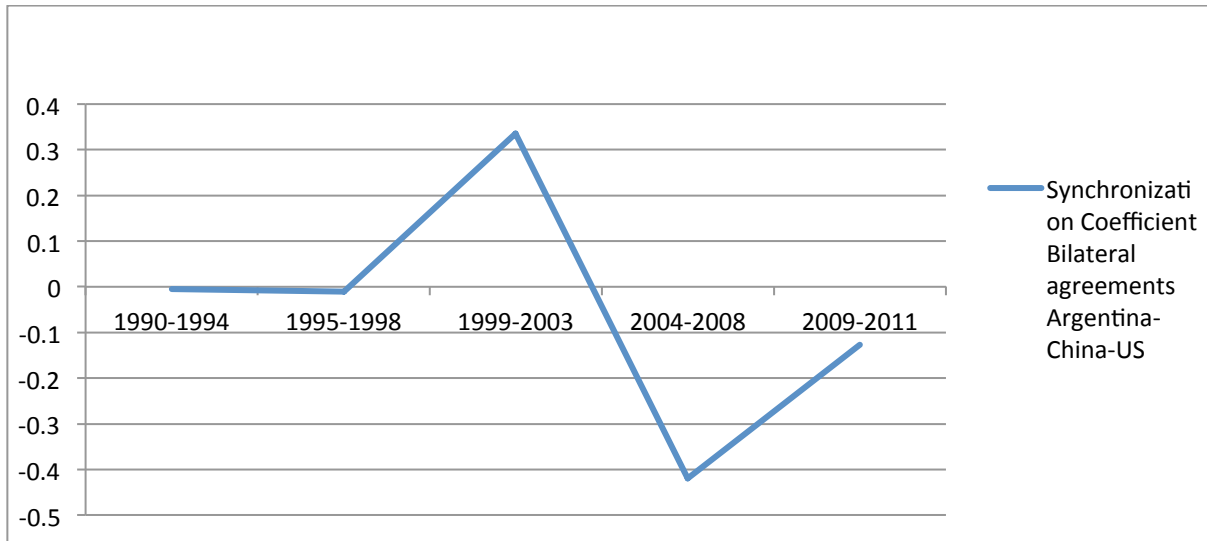
Testing Synchronization on the cases

In the case of Argentina–China–US vis-à-vis political-diplomatic interactions, the bilateral agreements signed by this South American country with the US and China respectively were analyzed first. The bilateral interactions between Argentina and the US included 122 bilateral agreements signed between 1990 and 2012. The bilateral interactions between Argentina and China included 62 bilateral agreements signed in the same period of time.

The results of the Synchronization of the bilateral agreements show that from 1990 until 1999 there was no correlation between the three states. However the years of 1999–2003 seem to have been a period of Synchronization, with the three states interacting in correlation with each other. Moreover, this was a period of positive Synchronization—meaning that the three countries were interacting more or less cooperatively, without competitive responses to the triangular exchange.

For its part, the period of 2004–2008 was one of negative Synchronization; with some kind of Synchronization. This period coincided when the US stopped signing agreements with Argentina in connection with the latter's relationship with China. The period of 2009–2011 was one when correlation was almost nonexistent (Graph 1).

Graph 1. Synchronization Coefficient of Argentina–China–US due to their bilateral agreements, 1990–2012

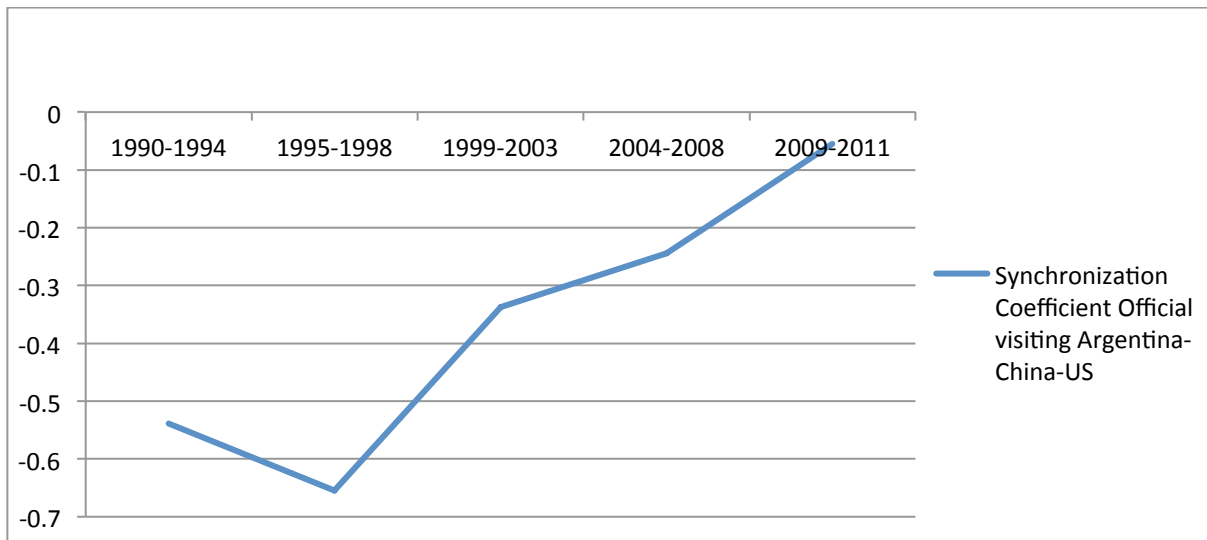


Source: Author's own compilation, based on data from the Foreign Affairs Ministry of Argentina.

The indicator of reciprocal bilateral official state visits between the countries suggests Synchronization from 1999 onward. The number of state visits by high-level officials was low: in the case of Argentina–US it included 21 official visits; in the case of Argentina–China there were 28 such official visits in the years from 1990–2012.

Regarding the Synchronization of the reciprocal official state visits between Argentina–China–US, the results indicate a permanent negative Synchronization between the three states. Only in the last period of 2009–2012 is there almost no Synchronization. This last period also coincided with the absence of Synchronization vis-à-vis the bilateral agreements (Graph 2).

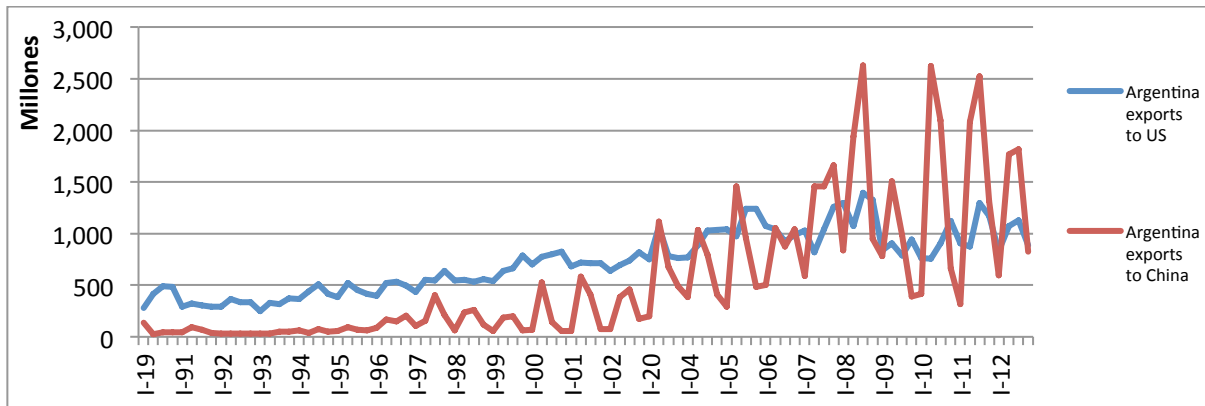
Graph 2. Synchronization of Argentina–China–US due to their official state visits, 1990–2012



Source: Author’s own compilation, based on data from Ministry of Foreign Affairs of Argentina and Newspapers.

Finally, the commercial data shows the nonpresence of Synchronization between the cases. There was an observable tendency to increase commerce—in the form of exports and imports—between the cases, but only proportional with the global increase in trade and without correlation between the three states.

Graph 3: Comparison of Argentina’s exports to China and the US, 1990-2012



Source: Author’s own compilation, based on data from INDEC Argentina

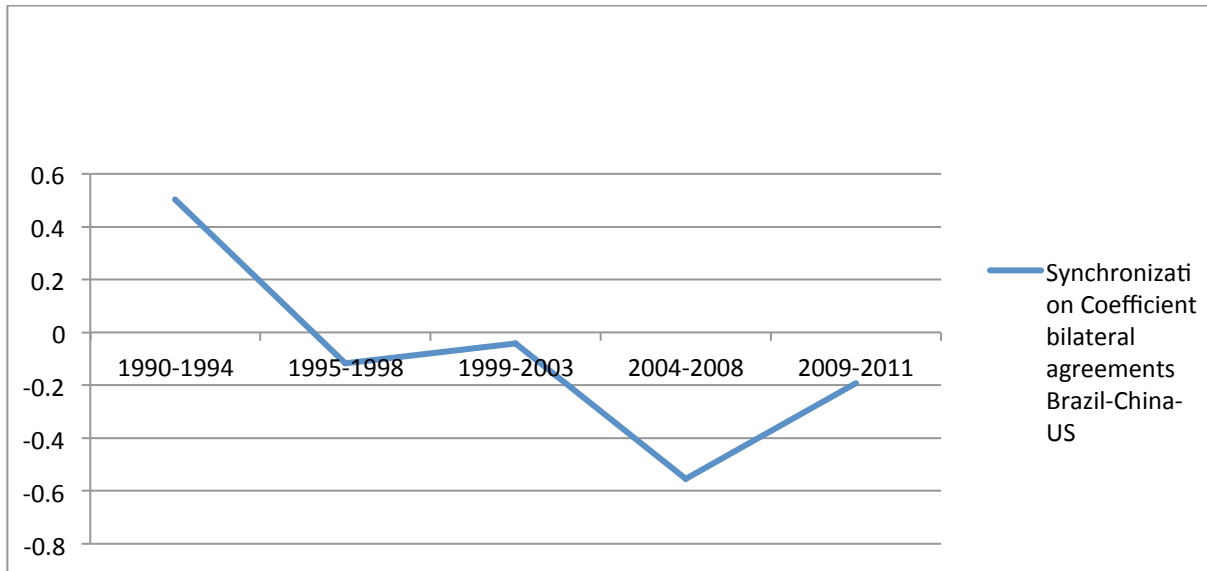
In the case of Brazil–China–US vis-à-vis political-diplomatic interactions, the bilateral agreements signed by Brazil with the US and China respectively were analyzed first. The bilateral interactions between Brazil and the US included 74 bilateral agreements signed between 1990 and 2012. The bilateral interactions between Brazil and China included 76 bilateral agreements signed in the same period of time.

The results of the Synchronization calculated for the bilateral agreements show that between 1990 and 1994 these countries appear to have been involved in a period of positive Synchronization. However, in the period of 1995–2003 there was no kind of Synchronization, due to the nonexistence of correlations between the interactions.

For its part, the period of 2004–2008 was a period of negative correlations, with some kind of Synchronization. In the period of 2009–2011 correlations were almost nonexistent, which could be taken to indicate the absence of any triangular interactions (Graph 4).

The indicator of reciprocal bilateral official state visits between these countries suggests at least that some kind of correlation occurred from 1999 onward. The number of state visits by high-level officials in the case of Brazil–US was 21. In the case of Brazil–China, there were 28 such official visits in the period of 1990–2012.

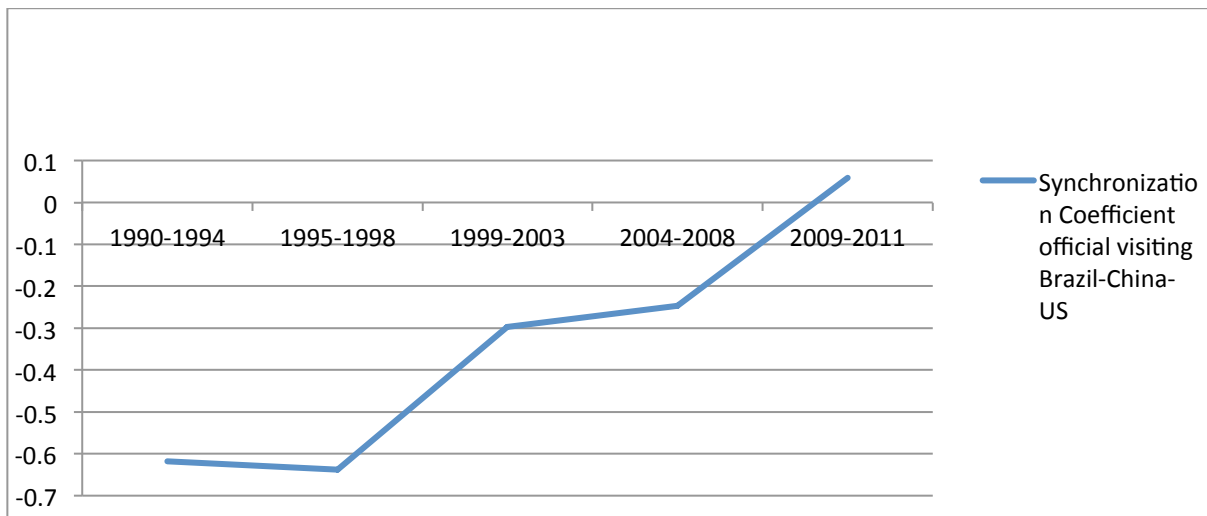
Graph 4: Synchronization of Brazil–China–US due to their bilateral agreements, 1990–2012



Source: Author’s own elaboration, based on data from the Ministry of Foreign Affairs of Brazil.

The results of the application of the cross-correlation coefficient to the reciprocal official state visits between Brazil–US and Brazil–China indicate a permanent negative correlation between the three states. Only in the last period of 2009–2011 is there almost no correlation. This last period also coincided with the absence of correlations vis-à-vis the bilateral agreements (Graph 5).

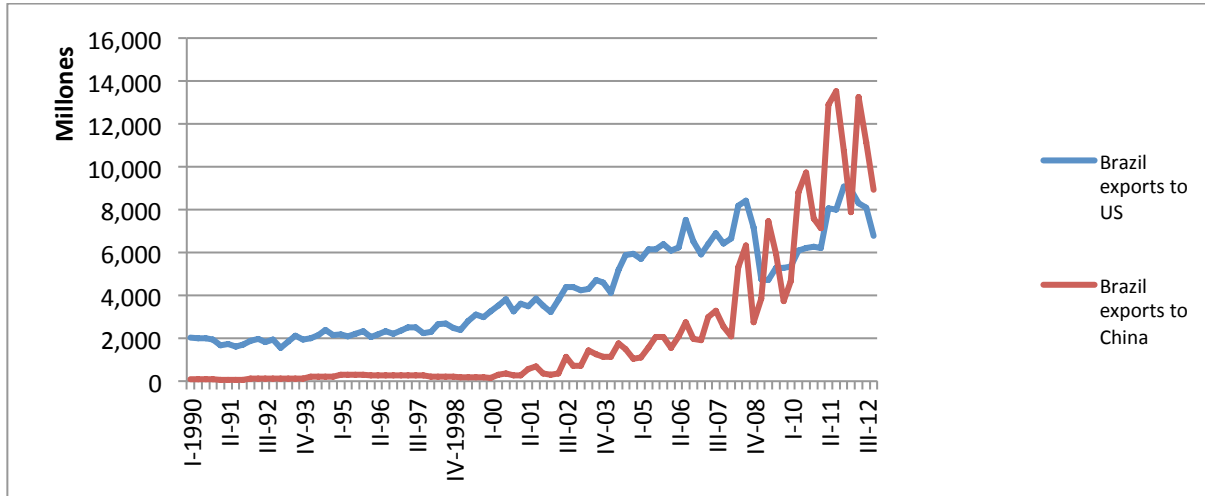
Graph 5: Synchronization of Brazil–China–US due to their reciprocal bilateral official state visits, 1990–2012



Source: Author’s own compilation, based on data from the Ministry of Foreign Affairs of Brazil and Newspapers.

As with the previous case, also for Brazil–China–US no period of Synchronization was found for the three countries vis-à-vis commercial exchange.

Graph 6: Comparison of Brazilian exports to China and the US, 1990-2012

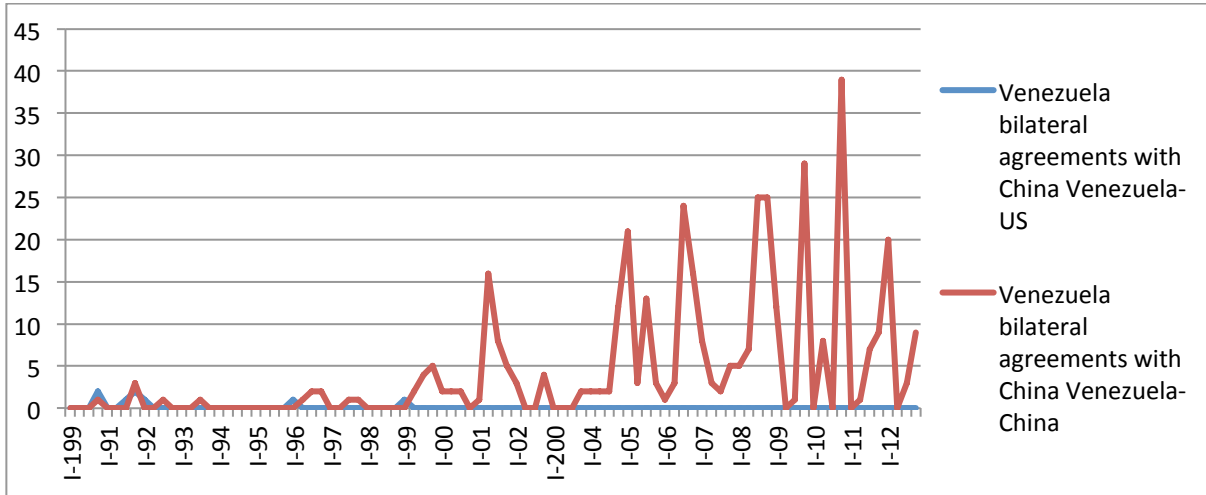


Source: Author’s own compilation, based on data from the Ministry of Commerce of Brazil

In the case of Venezuela–China–US vis-à-vis political-diplomatic interactions, the bilateral agreements signed by this South American country with the US and China respectively were analyzed. The bilateral interactions between Venezuela and the US included only eight bilateral agreements signed between 1990 and 2012. The bilateral interactions between Venezuela and China included 369 bilateral agreements signed in the same period of time.

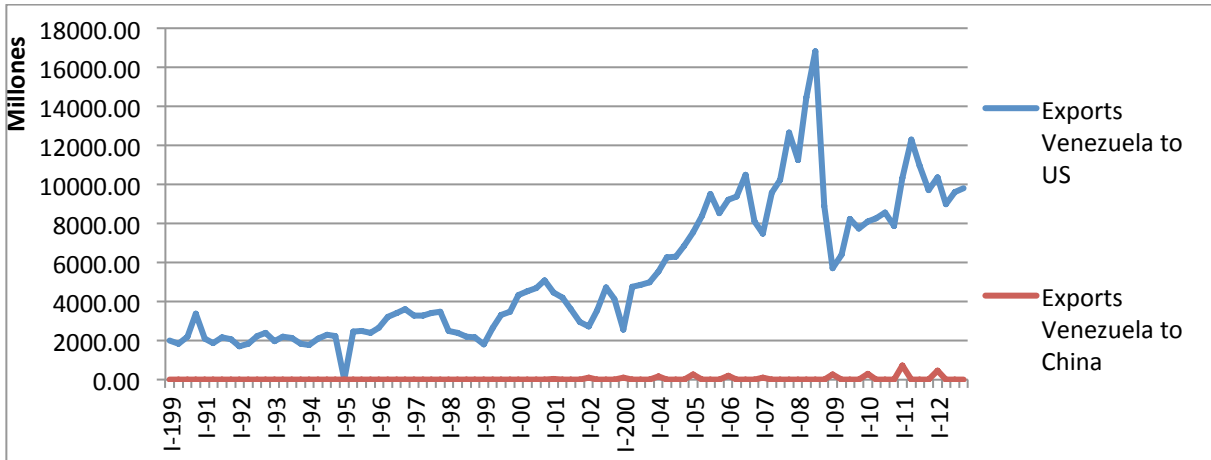
The analysis of the data showed that there was no kind of correlation between the three states regarding the signing of bilateral agreements, as was also true vis-à-vis reciprocal bilateral official state visits. It is explained mainly for the absence of a triangular interaction, in reference to the absence of concrete bilateral interactions between Venezuela and the United States (Graph 7, graph 8).

Graph 7: Comparison of the bilateral agreements and official visiting Venezuela-US and Venezuela-China, 1990-2012



Source: Author’s own compilation, based on data from the Ministry of Foreign Relations of Venezuela B.R

Graph 8: Comparison of Venezuelan exports to China and the US, 1990-2012



Source: Author’s own compilation, based on data from COMTRADE

Comparing Synchronization between the cases

The empirical data presented here also indicates that the presence of China at in Argentina, Brazil, and Venezuela has not produced simultaneous periods of Synchronization between the cases, but rather that these periods occur at different points in time depending on the country in question. Thus, it would be not possible to refer to some kind of Synchronization between China–US and the South American region for example; rather, periods of Synchronization are limited to the level of states and not to that of the region. Thus, we have Synchronization periods both between Argentina–China–US and between Brazil–China–US in the political and diplomatic areas analyzed, and no Synchronization between Venezuela–China–US in the analyzed areas.

Comparing the time sequence of the bilateral agreements signed by Argentina with China and the US between 1990 and 2012, we can observe some kind of related events occurring since 2004. During the 1990s, the interactions between Argentina and the US were notably intense. According to the Synchronization, there is a marked positive correlation in the period 1999–2003 and a marked negative correlation in the period 2004–2008.

In the case of Brazil–China–US, the bilateral agreements signed are especially numerous in 1993, 2004, and 2010. In 1993 the main form of interaction was that taking place in the arena of technology. In both 2004 and 2010, however, technology-related mutual interests were overshadowed by economic agreements. According to the Synchronization, there were an also a positive correlation in the period 1999–2003 and a notable negative correlation in the period 2004–2008.

Regarding official state visits, in the case of Argentina–China–US during the 1990s there is a negative correlation between the countries. In the period 2009–2011 there was a tendency for the correlation to be zero, with there being almost no periods of Synchronization between these three countries. In the case of official visits between Argentina–China–US during the 1990s—and especially in the period 1990–1995—there was also a negative correlation. However, and representing a difference with the case of Argentina, while visits by US officials to Argentina were frequent those by Chinese officials were often made to Brazil instead. However, in the case of Brazil the situation changes in the period 1999–2011, when the correlation with China and US was positive. This means that the visits from both sides, China and the US, were closely correlated with Brazil.

Curiously, there are no correlations between the bilateral official visits and the signing of bilateral agreements by Argentina–China–US. This could be taken to indicate that the interests existing between these three countries are assigned only a minor diplomatic ranking, evidenced by the lack of high-level visits made during the signing of the agreements. The case of Brazil is different, however, as the majority of bilateral agreements were signed during the course of high-level official state visits.

Comparing the periods of Synchronization between Argentina–China–US and Brazil–China–US, it is observable that the first event or period was the case of Brazil–China–US, which was then followed by the period of Argentina–China–US. Thus, there were no simultaneous interactions between China and both countries in the region, with China instead apparently first interacting only with Brazil.

Investigating periods of Synchronization on trade exchange between the different cases, there was no evidence found that indicates correlations between the interactions of the different states. Trade exchange showed a trend toward increasing, with some periods of decrease, especially during the global financial crisis (2008–2009), but there is nothing to indicate that China, the South American countries, and the US participate in some kind of triangular interaction in this particular issue-area. It also reflects that the *necessary conditions* to synchronize are not present in trade exchange. There are pragmatic exchanges, differently from those in political and diplomatic arenas.

For their part, the regular correlations—both negative and positive—between Argentina–China–US and Brazil–China–US show that the triangular interactions between China, the South American countries, and the US are not necessarily static cooperative and/or conflictive interactions. Both of these situations are ones that could be taken to evidence the pragmatism of their relationships, which are sustained without the building of permanent alignments.

The case of Venezuela–China–US did not reveal any kind of correlations, and consequently the results indicate that the three countries—at least in the period 1990–2012—did not participate in any kind of triangular interaction. Initially, in the official discourse of Venezuela the country’s relationship with China was used as an instrument to gain more autonomy from the US. Thus, the unilateral decision or foreign policy choice of a country to actively engage with other countries so as to increase its interactions with one of them to the detriment of the other cannot be said to produce or represent a triangular interaction.

The lack of triangular interactions in the case of Venezuela–China–US could be taken to indicate that China and the US were interacting with Venezuela for reasons complete independent of the latter’s own foreign strategy. It could thus be considered evidence of pragmatic policies being pursued by China and the US. The supposedly more “ideological” interactions between Venezuela and China thus did not actually exist, at least in the sense of links being cultivated to deliberately harm US interests. The results that have been presented in this article indicate at least that the exchanges of China in Venezuela in some political and diplomatic areas are not related to the bilateral relationship between Venezuela and the US.

The Synchronization occurring in triangular interactions is not a permanent phenomenon, but rather a dynamic one that is more or less often present in the cases examined in this article. The presence or not of Synchronizations depends on the presence of certain conditions such as: mutual interaction in similar periods of time, the presence of failure and/or improvement of bilateral demands compliance, and one of the states playing as a “joker card”. If these conditions are present, then they will tend to synchronize their relationships.

Thus, Synchronization is not present in all areas of interaction that were examined for these cases: while it was mainly present in the political-diplomatic arena this was not the case in the commercial exchanges occurring between the different countries. Trade is a permanent tendency between states to increase their commercial exchange, without a real triangulation of the interactions.

The finding of there being an absence of Synchronization in the arena of trade exchange is one of considerable importance, in the sense that it refutes the conclusion reached by some of the literature on the increasing economic presence of China in Latin America that this development represents a serious threat to the economic interests of the US in the region. In light of this finding, it might be the case that in reality these states act purely in economically-minded and pragmatic ways and as such ideological considerations are not anywhere near as important as they have hitherto been believed to be.

Final considerations

The general relevance of this article arises from it combining the study of the following key topics: first, the new level of analysis in IR that is triangular interactions, which is as relevant as bilateralism, considering its potential contribution to more comprehensive understanding of the interactions between States; second, the testing of a new concept that incorporates principles of Physics in IR under the nomenclature “Synchronization”; third, that Synchronization could also be relevant in a way to anticipate desirable conducts of states in triangular interactions, where the conduct of one of them follows the dynamic of the other states; finally, the potential empirical

findings and comparative outcomes from the triangular interactions between China, Latin American countries, and the US.

The improvement in every science comes from taking risks, specifically by proposing new ways to tackle phenomena. In this particular case, the risk was to take a theory from another science, Physics, and thus to adapt it to the concepts of Synchronization to IR. I have sought to make an innovative contribution by analyzing triangular interactions between states, due to the lack of relevant literature thereon and to the uncertainties that remain in that empirical research which has already been done on this phenomenon. As in Physics, there are several research techniques available to the scholar wishing to analyze the possible presence of Synchronization. The kind of technique to be applied will depend on the kind of data that is available.

Thus, this article represents a first proposal of a specific theoretical framework of triangular interactions, as a particular level of analysis in IR. Future research could henceforth seek to undertake more empirical applications of this innovative framework. The need for more empirical cases in this regard is great, and the possibility now exists to conduct more complex and nuanced analysis. For future research it will be both possible and also desirable to expand the application of Synchronization to a larger population of cases including more political, economic, and other indicators.

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