
Research methods

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Introduction

Research is something fundamental in order to advance our collective knowledge of a given topic or issue. In any scientific field, new valid knowledge is obtained through following the **methods** and **methodologies** that are accepted by the scholarly community of that particular discipline.

In the discipline of International Relations (IR) we come across a wide range of research methods and methodologies. As a discipline that has undergone several profound transformations in its century of existence, its various **research traditions** have adopted different approaches and methods. Being familiar with these methods is not only necessary for us to conduct our own research, but also to be able to evaluate critically the research conducted by others.

There is no scarcity of textbooks and materials on the research methods commonly used in IR and similar social sciences. This module intends to serve as a companion for students using them. Our objective has been to concentrate in a few pages the basic notions on how to conduct research in the field of world politics and international relations. The module is divided in three main sections. The first one revolves around the notion of methodology, what it is, and why it matters. The second part addresses the difference between qualitative and quantitative approaches and reviews some of the most common methods of data collection and analysis that exist for each of these approaches. The third part is devoted to the question of research design or planning, a fundamental step before embarking on any research project.

Objectives

The objectives of this module are:

1. To guide students in their initial approximation to social science research methods, with an emphasis on the discipline of International Relations.
2. To discuss the role of theory in the IR discipline and the links between theory and research.
3. To learn the difference between ontology and epistemology.
4. To understand the philosophical underpinnings of IR research.
5. To understand the key differences between qualitative and quantitative research as well as the most common methods of each approach.
6. To discuss the advantages of mixed methods in IR research.
7. To understand the importance of a proper research design before starting any academic investigation.
8. To learn the steps and key considerations in designing a research project.

1. What is methodology and why does it matter?

The **methodology of a research project** or paper defines the actions or procedures that the researcher undertakes and the techniques used in order to investigate the problem or question of their research. In a typical research paper, these aspects are indicated in the methodology section, where the researcher informs the reader how they went about identifying, selecting, processing and analyzing the information relevant in understanding the problem. In other words, it tells the reader how the researcher gathered or generated the data used and how these data were analyzed. Therefore, the methodological section is an essential component of any research paper, project or dissertation that gives the reader important information about the validity and reliability of the study.

Given the importance of the methodological aspects mentioned above in any research endeavor, the researcher must take them into consideration during all stages of the project: when determining the field of study and formulating valid research questions (ie identifying problems); when deciding whether to pursue a quantitative or a qualitative research strategy and justifying that choice; when selecting case studies or variables to analyze; when formulating hypotheses; and so on.

In sum, a solid methodological basis is strongly linked to the quality of any research project. Therefore, methodological aspects cannot be left to improvisation. As researchers, we should not only consider what we will be researching about, but also how we plan to carry out the research.

The first part of the module will discuss several of the considerations relative to the process of research in the social sciences, placing the focus on the IR discipline. Questions such as the relationship between theory and research and the difference between ontology and epistemology will be explored.

1.1. What is theory (for) in International Relations? Ontology, epistemology and theoretical frameworks

1.1.1. Theory and research

Social research does not exist independently or in isolation from the social sciences. Research – that is, the collection and analysis of data with the purpose of answering a question or problem – is always done in relation to something else that is often a poignant social or international issue or a theory.

Not all **research** is driven primarily or purely by theoretical concerns. Very often, researchers develop a research agenda that reflects their own personal interests or passion. Sometimes, they simply want to gain a better understanding of a problem that concerns them. On other occasions, they do it because they want to propose solutions. In the field of IR, this is known as making policy recommendations. In any case, **academic research** is most significant and has **more impact** when it is **connected with theory**.

Before discussing the links between theory and research, we must analyze the concept of *theory*. So, **what is theory?** The Oxford Dictionary of the English Language defines it as “a supposition or a system of ideas intended to explain something, especially when based on general principles independent of the thing to be explained.”

The objective of every scientific field and academic discipline is to provide explanations for complex phenomena. Theories construct simplified views of the world that can be used to analyze reality. They help us to organize scientific thought, ask relevant questions, establish causal explanations and even, in some cases, to predict outcomes.

Theories are formulations and sets of principles that simplify a complex reality

Each theoretical approach used in the social sciences – and hence in IR – encompasses a series of principles, assumptions and simplifications about *what constitutes* the social world and what sort of entities form it. This is known as **ontology** (this concept is further discussed in section 1.1.3). Readers may find it useful to think of theories as different sets of glasses that we researchers have at our disposal to “see” or analyze a given reality or phenomenon. If we put on blue-tinted glasses, the world will look blue to us. If we then switch to pink-tinted glasses, the same reality will look pink. Depending on the glasses we choose to wear – that is, depending on the theory that guides our work –, our view of the same phenomenon will vary.

Each theory also has its “preferences” regarding *how to study* the reality of the social world – in this case the reality of world politics. These considerations are part of what we have come to call **epistemology** (see section 1.1.2). A good analogy is to think of theories as maps. We design maps with a certain purpose in mind. The purpose here is to answer the research question/s or problem/s formulated within the ontological framework of a particular theory. Therefore, our map would include or highlight those elements needed in order to direct the user towards the intended destination. All other details could be left out in order to avoid confusion and to present a clearer picture.

Etymology

The word *theory* comes from Ancient Greek *θεωρία* (*theōría*) and Latin *theōria*. It means contemplation, speculation, a looking at, things looked at, a mental scheme of something to be done.

In the IR discipline, theories allow us to understand and make sense of the world around us and the way it operates. IR theories are the systematic study of the observable phenomena that aims to discover the main variables, explain the behavior and identify the traits that characterize the relations between international actors.

Theories do not reflect reality

It should be clear that IR theories are conceptual toolkits that we use to analyze international relations. A common mistake among students of IR is to think that theories reflect reality. This is not the case! Theories interpret reality rather than reflect it. Therefore, we must think of theories as being “useful or not useful” rather than being “right or wrong”.

Theories are essential

In any discipline – IR is no exception – theories are essential “for an understanding of phenomena, for thinking about interrelatedness, for guiding research, and – to mention a more immediately useful objective in the social science – for recommending sound policy action” (Dougherty and Pfaltzgraff, 1990).

A typology of theories can be established according to their **level of abstraction**. The literature distinguishes between **grand theories** that operate at a higher level of abstraction (grand theories are very general) and **middle-range theories** that operate in between theory and empirical findings.

Examples of grand theories and middle-range theories

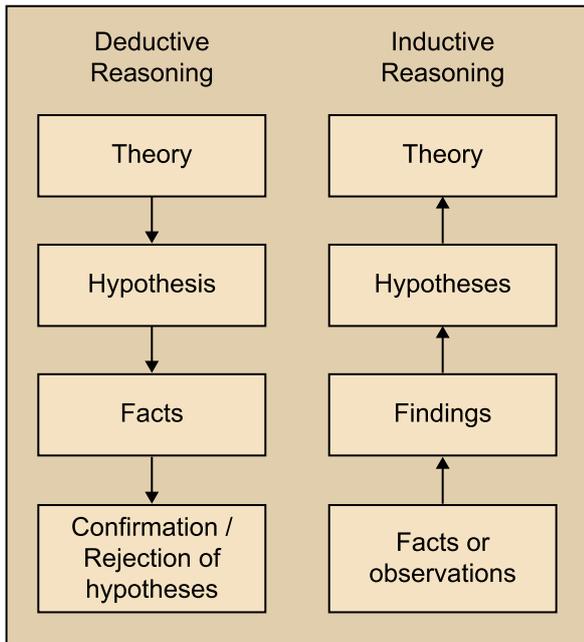
Within the discipline of IR, we can think of Realism or Liberalism as examples of grand theories. They make broad and general assumptions about the world and the nature of International Relations (ontology) and also about the aspects that are worth studying in order to obtain knowledge of that reality (epistemology). By contrast, Neoclassical Realism has often been described as a middle-range theory. Neoclassical Realism was originally conceived as a conceptual tool or framework for the analysis of foreign policy. It affirms that the systemic approach of Neorealism is incomplete and that, to understand international behavior and choices made by a state, we should also look at how stimuli coming from the international system are perceived or “processed” within the domestic institutions of that state.

It is often possible to come across research papers or projects in which research **literature** functions as what Bryman (2012) calls a “proxy for theory.” That is, literature reviews (see section 3.2) often serve to identify inconsistencies between findings, gaps in knowledge, under-explored areas, etc. in a way that theory is implicit or “latent” in the literature.

In sum, we can see how **theory** and **research** are **closely** related. From here onward, we will explore how these two aspects are actually related. There are two main ‘directions’ or **approaches** in the link between theory and research: deductive and inductive (see Figure 1).

The **deductive approach** begins by considering the theory. The researcher formulates hypotheses based on certain theoretical understandings or assumptions – ie what we know about that particular topic (see section 3.1). Then, they collect data and report findings that will allow them to confirm or reject the formulated hypotheses. Because of this, it is sometimes informally called a “top-down” approach.

Figure 1. Deductive and inductive approaches



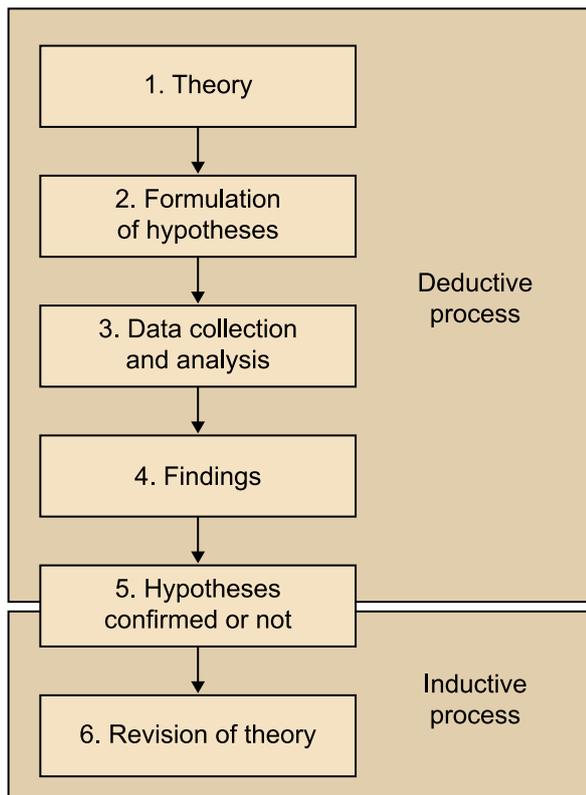
Source: self-elaboration.

In the deductive approach, the hypotheses formulated by the researcher contain implicit information about the aspects that need to be studied or analyzed. This means that, to carry out their project not only formulate a hypothesis but also break it down into easily 'researchable' or 'analyzable' elements that can be assessed through the analysis of the data collected. In turn, this entails that the data collected and analyzed (see sections 2.3.2, 2.3.3 and 3.2) must address the different elements that make up the formulated hypothesis.

Deductive approaches are often associated with quantitative research and are the most commonly found (see section 2.2).

On the other hand, an **inductive approach**, by contrast, begins with facts, observations and findings. Theory, in this case, is an outcome of research. Based on their findings, researchers make generalizations and extract principles that allow them to formulate new theories. In this way, the researcher can contribute to the body of theory that exists with regards to a topic or issue. Informally, the inductive approach is sometimes presented as a bottom-up approach. Inductive approaches are most often associated with qualitative research (see section 2.3).

Figure 2. The deductive process. Note that the last step is reverses the direction of the relationship between theory and research (element of induction)



Source: self-elaboration based on Bryman (2012).

In practical terms, however, neither deductive nor inductive approaches follow strictly the sequences described above and outlined in Figure 1. In fact, this only happens on limited occasions. Deductive studies often culminate with an inductive process in which the researcher revisits the theory that initially motivated and guided the research, especially if their findings make a contribution at the theoretical level (see Figure 2). Similarly, rather than being linear, inductive approaches often go back and forth between evidence and theory in a dynamic process known as *iteration*. Therefore, even if the distinction between deductive and inductive approaches serves us to categorize the relationship between theory and research, these two approaches should be thought of as tendencies rather than as strict roadmaps that are applicable to any project.

1.1.2. Epistemological considerations

The term **epistemology** is derived from ancient Greek ἐπιστήμη (*epistēmē*), which means “knowledge,” “acquaintance with something,” “skill” and “experience.” It refers to the study of knowledge and **how knowledge is produced**. Therefore, epistemological considerations have to do with what is or should be acceptable knowledge in a given discipline.

Epistemological questions are a fundamental factor in shaping research. Depending on the criteria that a researcher adopts on how to interpret, understand or explain the social world, a research project will take one shape or another.

IR is a discipline in which we can find a plurality of methodological approaches. Each one derives from different research traditions and comprises theories and principles that ask fundamentally different questions (see section 1.2). Our intention here is not to go deep into such debates, but to discuss briefly the two main contending epistemologies that exist in the discipline: **empiricism** and **interpretivism**.

The debate between these two research traditions does not only exist in the IR discipline. It is a divide that we find across the social sciences. In simple terms, **empiricism** states that the best way to acquire and produce knowledge about the social world is to apply the methods of the natural sciences. Thus, empiricism focuses on **explaining**. Conversely, **interpretivism** claims that the social world cannot be studied through the methods of the natural sciences. Instead, we can gain knowledge of the social world through reflective research seeking to **understand** – to interpret – rather than to explain the social world.

Most studies within the IR discipline can be categorized into one of these two epistemological traditions. Because of that, some scientists have considered that the divide between empiricism and interpretivism is a “fundamental dichotomy” within the discipline (Burchill, 2001, p. 2).

It is possible to establish a link between the main paradigms of the IR discipline and their epistemological approach. Many works within the realist and liberal paradigms of IR – including neorealism and neoliberalism – adopt an **empiricist approach**. Although these traditions disagree on fundamental aspects such as the role that non-state actors play in world politics or the phenomenon of cooperation in an anarchical international system, they also share some of the core assumptions of the empiricist epistemology. Namely, that the social world is something that exists ‘out there’ and which is distinct from and external to the researcher. Besides, these traditions also claim that hypotheses in IR research should be falsifiable as they are in the natural sciences. Accordingly, their research agenda focuses on making observations and testing hypotheses. In addition, these works very often aim to formulate policy recommendations based on their explanation of the phenomena that take place in the social world.

On the other hand, **interpretivism** aims to produce knowledge by capturing and understanding the meanings that are embedded in the social world, also in international politics. Interpretivist research in IR commonly focuses on aspects such as norms, identity, perceptions, culture, ideas, etc., and how these shape international politics. Seeking more links between IR paradigms and their preferred epistemology, we can highlight many examples of interpre-

Positivism or empiricism?

In discussing the divide between empiricism and interpretivism, some books and authors talk about **positivism** rather than about *empiricism*. Positivism is an epistemological position that claims that the only valid and relevant knowledge is scientific knowledge, which can only be obtained through a strict adherence to the scientific method. For positivists, “outside of the scientific method there is no information” (Laird, 1938). In other words, there is no knowledge.

tivist research that have been formulated within the constructivist paradigm. Unlike empiricists, interpretivists reject that the social world can be separated and distinguished from the researcher. They reject that the social world is something that has an objective existence which is independent from the researcher. Instead, the interpretivist epistemology assumes that the researcher and the social world are part of the same reality with a mutual relationship which is made up of intersubjective meanings and understandings. In the case of constructivism, this is derived from the ontological assumption that the social world is not something that is “out there” and that can be discovered and explained (see section 1.1.3). Instead, assuming that the social reality is constantly being shaped and co-constructed by the social actors – including the researcher –, it is something that we do not explain, but **interpret**.

Nevertheless, the reader should be aware that the dichotomy between empiricism and interpretivism does not correspond exactly to the division between the three main paradigms in the discipline of IR. For example, despite the fact that constructivist works tend to fall within interpretivist traditions, there are numerous cases of constructivist studies formulated under an empiricist epistemology (Finnemore and Sikkink, 2001). Therefore, the reader should be careful not to assume, for instance, that constructivist works always follow an interpretivist epistemology or that constructivism (the IR paradigm) and interpretivism (as an epistemological approach) are the same thing!

The choice: empiricism or interpretivism

In practical terms, when considering their own research project, researchers should regard the dichotomy between **empiricist** and **interpretivist** epistemologies not as a strict division, but as a choice that will determine how their research is approached. The approach taken will reflect the researchers’ own interests and the kind of questions that they wish to answer. When designing a research project (see section 3), the researcher needs to understand with which side of the divide his or her interests are best aligned.

To illustrate this, let us think of a researcher that is planning to start a project on the contemporary political relations between Japan and China. A researcher guided by an empiricist epistemology will perhaps aim to explain the root causes of the elements of rivalry and antagonism that are present in these relations. They will want to examine the historical evolution of economic exchange and interdependence between the two countries and how these have influenced their political relationship. By contrast, a researcher guided by an interpretivist epistemology would be more interested in understanding the implications that derive from the fact that the two countries have diverging and conflicting narratives of the same events in their shared history or in exploring how nationalist discourses from either side are perceived by the other.

In sum, the purpose with which the researcher tackles a project – whether to explain or to understand a given social reality – determines where they fall along the empiricist/interpretivist epistemological divide. This, in turn, will be a key factor in shaping the research project.

1.1.3. Ontological considerations

The concept **ontology** also derives from Ancient Greek *οντολογία* (*ontología*), a compound made up of *ὄντος* (*ontos*-) “being” or “that which exists” and *-λογία* (*-logía*) “explanation,” “knowledge.” Ontology is therefore concerned with the

nature of the world, what it is and what exists in it. In the social sciences – and hence in IR – ontological questions are concerned with the nature of social entities that make up the social reality, that is, the social world.

Similar to what we saw with empiricism and interpretivism when we discussed epistemology, we find two contending positions when we talk about ontological questions: **objectivism** and **constructionism**.

The **objectivist** ontological position claims that social phenomena – ie the social world – is something that exists objectively; that is has an existence by itself beyond the reach and influence of social actors. From this ontological position, international politics are discussed as something that works according to certain rules and procedures, with a certain hierarchy and purpose. International politics exist as a reality that is external from social actors. Therefore, under this ontology, social actors – including the researcher – can look at the social reality as spectators or analysts. Among the main paradigms of IR theory, realism and liberalism are ontologically objectivist.

By contrast, the **constructionist** or **constructivist** ontology denies the claim of the former that the social world is something given that exists as a reality external to and independent from social actors. Constructivism asserts that social phenomena and their meanings are continuously shaped by social actors. In other words, constructivists understand that the social world is something “of the making” of the social actors. An example of this ontology is present in the title of Alexander Wendt’s article “Anarchy is what states make of it” (1992). That is, not even the anarchical characteristics of the international system – which realism, and liberalism to a minor extent, highlight as its fundamental feature – exist objectively. As part of the social reality, of the social world, it is also socially constructed.

Examples: ontological or epistemological?

Is the question “Should I use questionnaires or interviews for my research project?” ontological or epistemological? This is an epistemological question because it aims to find out how to best answer a research question and produce a certain knowledge (we are debating the appropriate method to use).

As for adhering to a constructivist view of the social world, is it an ontological or an epistemological consideration? In this case, it is ontological. Ontology is concerned with the kind of things that exist in the social world and the assumptions we make about how this world works. Constructivism is ontological in that it claims that social phenomena are constantly being shaped by social actors (it is something that is socially constructed and not “external” to them).

1.2. Methodology and research in the International Relations (IR) discipline

IR is an academic discipline that belongs to the wider family of the social sciences. As such, its history and development has been influenced by the meta-theoretical discussion about whether the study of world politics is a *science* or an *art*. The different research traditions have adopted contrasting po-

sitions in this regard which, in turn, are reflected in their respective ontological and methodological assumptions. Consequently, this meta-theoretical debate, which to a certain extent has existed in all the social sciences, has had an impact on the way the discipline has evolved since its emergence in the early 1920s up until today.

The IR discipline has advanced through a series of epistemic debates – that is, debates among the community of scholars, researchers and thinkers that work in this discipline – around key philosophical and methodological questions. These epistemic debates have determined the views and assumptions that have constituted the mainstream of the discipline across different moments in history. In turn, these debates have determined the underlying philosophical principles behind IR research and also what acceptable and valid research should be. It is because of this that it is important to have a basic understanding of how the discipline has gradually come to take shape.

In addition, we must bear in mind that the study of world politics is a broad field that encompasses elements of, amongst others, political economy, policy analysis, comparative politics, international organizations, foreign policy analysis, political theory and international political sociology. IR is today a discipline with a considerable methodological plurality due to the existence of different research traditions and the influence of other disciplines. The following sections address the most relevant research methods in IR.

The four Great Debates that have shaped modern IR

It is generally accepted that Modern IR began to grow in 1919 with the endowment of the first chair in International Relations at the University of Wales (today, the University of Aberystwyth). Since then, **four Great Debates** have contributed to shaping IR as it is today:

1) The **First Great Debate** (1930s-1945) was an **ontological debate** between idealism and realism. The devastation caused by World War I gave rise to idealist voices such as U.S. President Woodrow Wilson's. However, the interwar period was short and soon Europe was plunged into World War II and idealism sank into a deep crisis. In that context, realism emerged as a more prepared theory to answer the most pressing questions of the time: conflict, power politics, and war. With this ability, realism became the dominant paradigm in IR theory.

2) The **Second Great Debate** (1960s) was eminently **epistemological**. Two positions were confronted in this debate: *scientism* and *traditionalism*. On the one hand, there were the behavioralists, a research tradition that emphasized the use of the – often quantitative – objective methods of mathematics and biology in the social sciences, and also in IR and Political Science. On the other, there was a group of scholars who advocated for a more “classical” interpretive approach, one which was based on the methodology of history. The Second Debate ended when realist scholars accepted that scientific methodologies were the proper approach to follow. We must remember that Realism had been the dominant theory (the mainstream) of the IR discipline since the end of the First Great Debate.

3) The **Third Great Debate** (1970s -1980s) was an **ontological** debate. This debate confronted state-centric visions of IR, defended by realists, and a more pluralistic or globalist approach defended by the proponents of liberalism, which advocated for considering entities such as international organizations and factors such as interdependence in the analysis of world politics.

4) The **Fourth Great Debate** (1990s) was both **epistemological and ontological**. Realists and liberals (both labeled as rationalists) and reflectivists had conflicting views

on what makes up international relations and how to study world politics. Rationalists argued that scientific knowledge of international relations was possible through the study of its material characteristics. By contrast, reflectivists, who studied the role of ideas, perceptions and discourse, claimed that scientific knowledge of reality was not possible within the social sciences. The IR theory of **constructivism** is a direct result of this debate.

2. Research methods: the quantitative-qualitative divide

2.1. Making sense of the quantitative-qualitative divide

Almost every book and course on research methodologies in the social sciences makes a distinction between **quantitative** and **qualitative research**.

In simple terms, the main distinction between quantitative and qualitative methods is that researchers within the first orientation choose quantification and measurement as instruments of analysis. Conversely, qualitative researchers do not. However, the differences between the two approaches go far deeper than what is conveyed in this distinction.

Regarding the relationship between theory and research (see section 1.1.1), **quantitative research** is generally associated with the deductive approach and with the aim of testing the validity of theories. Its epistemological orientation tends to be empiricist, emphasizing the methods of the natural sciences (see section 1.1.2). Its ontological orientation is objectivist, meaning that it regards the social world as something that exists objectively and separately from the researcher as something that can be observed and studied (see section 1.1.3).

By contrast, **qualitative research** is generally associated with the inductive approach, which focuses on generating theory rather than testing it. Its epistemological orientation tends to be interpretivist; and its ontological view, constructivist (see Table 1).

Table 1. Key differences between quantitative and qualitative research strategies

	Quantitative	Qualitative
Main orientation with regards to the relation between theory and research.	Deductive. It aims to <i>test</i> theory.	Inductive. It aims to <i>generate</i> theory.
Epistemological orientation.	Empiricism. The methods of the natural sciences.	Interpretivism.
Ontological orientation.	Objectivism.	Constructivism / constructionism.

Source: adapted by author based on Bryman (2012, p. 36).

The quantitative/qualitative divide has not been free from criticism. Some scholars have even deemed it as a false dichotomy. In any case, this distinction serves to identify the general traits of two separate research strategies or cultures. Each has distinct epistemological and ontological implications, which allows us to classify and orient social science research. However, the

reader should keep in mind that, in practical terms, the limits between the two approaches are sometimes not clear-cut, as discussed in the following paragraphs. In fact, it is often the case that a single research project combines both methodological approaches. This is known as the **mixed-methods approach** (see section 2.4).

Before going deeper into the discussion on quantitative and qualitative methods, it is a good idea to be reminded that, once again, neither quantitative nor qualitative approaches (nor mixed methods, for that matter) pertain to a single theoretical tradition or subfield within IR. It is important to be aware of the difference between these concepts! We know, for example, that constructivist scholarly works *tend* to rely on qualitative methods or that realist works *often* base their research on quantitative ones, but this does not mean that they always do! IR literature has plenty of examples of constructivist research works that have relied on quantitative methods, as Finnemore and Sicking (2001) point out. Similarly, there are also numerous examples of realist scholars that have relied on qualitative methods in their research.

Democratic Peace Theory

The so-called Democratic Peace Theory is a Liberal proposition in IR that claims that democracies do not resort to war in order to solve their disagreements or disputes, hence suggesting that democracy is a precedent for peace. So as to disprove this theory, realist scholar Christopher Layne (1994) conducted a qualitative study in which he analyzed three case studies.

2.2. Quantitative methods in IR research

2.2.1. What are quantitative methods?

Quantitative methods have a deep-rooted tradition in North American IR scholarship. More often than not, U.S. researchers have resorted to **mathematical models** and **statistics** – the two “golden tools” of the quantitative approach – to produce highly reliable analyses.

The quest for understanding the behavior of international actors at the height of the Cold War – *behavioralism* (see section 1.2) – popularized the use of quantitative methodologies in IR research, with this trend beginning in North America. In that context, the use of formal models and statistical tools was seen as a means to achieve a higher degree of certainty and accuracy in the analyses. Mathematical models and statistics have been used widely and consistently in our discipline since then.

Quantitative methods are **strategies for data collection and analysis** that rely on numerical data. Numbers allow us to carry out measurements (of absolute and relative values, magnitudes of change, etc.); establish differences between different objects of study; or visualize trends. They also give us information (data) to estimate the relationship between variables, which can be used either to predict values or to model interactions between international actors. Therefore, a quantitative approach is not limited to the use of descriptive statistics. Very often, researchers rely on **econometric models** to make predictive claims about how actors may or could behave, and to test theoretical claims. In this regard, quantitative methods are often used to try to explain

or prove relationships that are usually deduced from theory; that is, to prove or disprove theory. Because of this, they are very often **associated with the deductive approach**.

The use of a quantitative approach requires data to be organized and coded in a way that becomes numerically operable. Numerically operable data can be generated directly in the data collection step. If the data we have is qualitative, it can be transformed into quantitative – numerical – in several ways. This is commonly done by **coding data**. To illustrate this, let us imagine we want to conduct a qualitative study on whether the German press coverage of the US-EU relations during a certain time period has focused more on commercial aspects or on political aspects. Firstly, the researcher would need to define the parameters of their research. For example, which time frame to study and what kind of newspapers (nationwide, regional, electronic, etc.) and articles (restricted to news, including or not opinion articles, etc.) to use. Once these parameters are established, the researcher needs to do a search to collect the necessary data. Next, the data need to be *coded* to make them numerically operable. A way to do this is to assign numerical values to the different kinds of information found. So, for example, number 1 could be assigned to data on economic aspects, number 2 to data on political aspects and number 3 to mixed data. Secondly, the transformation of qualitative data into quantitative can be done through **scaling**. In the social sciences, scaling is often used to measure objects such as perceptions or attitudes in such a way that the researcher can identify basic degrees of intensity in the measurement. This allows for the determination of proximities (similarities or distances) between a set of objects. An example of scaling is when we want to measure the degree of agreement or disagreement with a given statement along a continuum. Qualitative data would need to be classified by means of numerical values and then placed along a scale (eg indicating different degrees of agreement with a certain issue using a scale of 0 to 5).

2.2.2. Advantages of the quantitative approach

Some IR researchers may be reluctant or discouraged to use quantitative methods because they feel they do not have a good command of mathematics and statistics. However, we need to keep in mind that a quantitative approach has a series of inherent advantages:

- **Aggregation:** quantitative approaches allow us to work and make sense of large amounts of data.
- **Specificity:** the use of quantitative methods requires the researcher to be explicit about the assumptions they make, for example regarding relationships between variables.

- **Transparency:** researchers must be transparent about their coding mechanisms and about their choices of what is to be part of the analysis and what is to be left out.
- **Causal inference:** quantitative methods allow us to clearly determine whether two variables have a relation of causality.
- **Testing of hypotheses and theories:** quantitative methods allow the researcher to test how theories and hypotheses stand against data – deductive approach. Conversely, qualitative approaches are not so efficient in generating new theories or formulating new hypotheses.

To illustrate this point, let's turn to the Democratic Peace Theory one more time. Numerous scholars have attempted to either prove or dismiss the tenets of this theory through quantitative studies. Many of these studies try to find relations of causality between variables of regime typology (democratic or non-democratic, for example) and the frequency and/or intensity with which these regimes resort to the use of force.

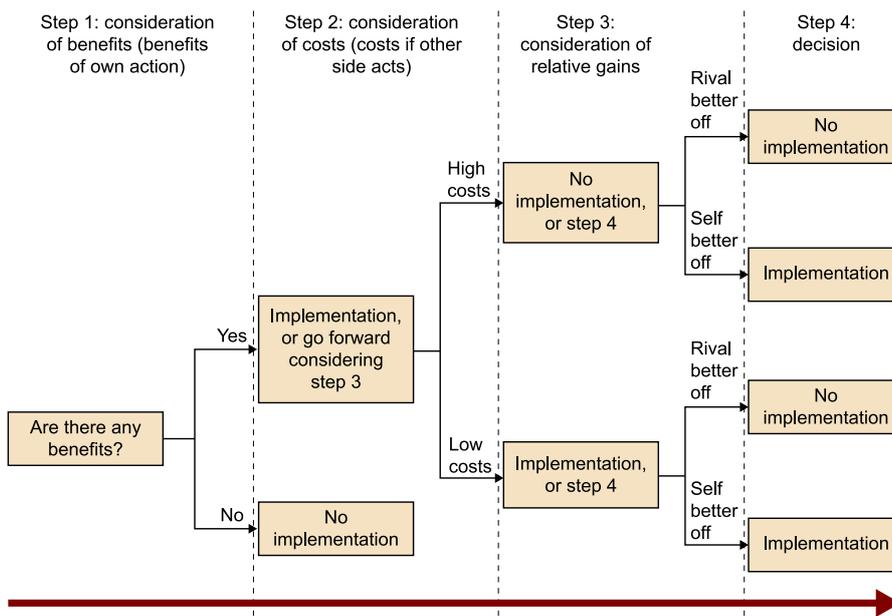
2.2.3. How to integrate quantitative methods into your research

There are several ways in which we can incorporate quantitative methods into our research.

The first is **mathematical models (formal models)**. Often, researchers try to predict the behavior of actors (states, in the case of IR) based on the use of such formal models. One of the most common ways to do this in the field of IR is through **game theory**, which is the application of formal mathematical models to understand how two or more authors interact strategically. In the discipline of IR, game theory models are convenient to explain the effect of variables – such as trust / mistrust, expectation of gains, or learning – in the behavior of actors.

In game theory-based research, games involving two or more actors are usually presented formally as data **matrixes** that reflect the expected payoffs for each of the involved players or actors. Simpler games involving one single actor – which are usually easier to follow – can be represented graphically in the form of **decision trees** (see Figure 3).

Figure 3. Example of a decision tree in IR research. The example illustrates the choices of a superpower in a bipolar system with regards to the implementation of a new technology



Source: self-elaboration by the author.

The Prisoner's Dilemma

One of the most frequent *games* that have applicability in the discipline of IR is a model of strategic interaction known as the Prisoner's Dilemma. The game goes like this: the police has isolated two prisoners (two actors) from one another, making it impossible for them to coordinate or interact. The police only have evidence of a minor felony, and if found guilty they could be sentenced to a maximum of 6 months' imprisonment. On the other hand, the police have no solid evidence that links them to yet another crime, a serious one that could see them spending 10 years in prison.

The police, who are knowledgeable about game theory, tells each of the suspects the following:

- If neither of them accuses the other, the police will only have evidence of the minor offense. If that's the case, they will spend six months in prison.
- If one remains silent but the other accuses the former, the one who is accused will spend 20 years in prison and the other will be freed.
- If the two accuse one another, each will receive a 10-year prison term.

In mathematical terms, the most efficient scenario for the prisoners would be that neither accused the other. In that case, the total jail time of the game would be one year (six months each). However, since the two prisoners cannot coordinate strategies, the uncertainty that each of them has about the cooperative behavior of the other is very high. In such scenario, given the risk and high cost of spending 20 years in jail if one cooperates while the other accuses, the game finishes with both prisoners pointing the accusatory finger at one another. They both end up getting a 10-year term.

If the game was to be replayed multiple times (**iteration**), researchers could account for the effects of other variables such as learned behavior or trust.

The Prisoner's Dilemma has some implications in IR research, for example in trying to explain the behavior of superpowers during the Cold War or the actors' compliance with non-proliferation deals.

In addition to mathematical models, another very common way of incorporating quantitative methods into our research is by using **statistical analysis**. Statistics attempt to predict a certain outcome on the basis of what we already know; that is, the **data** that we already have. This aspect differs from mathematical models, where we try to formulate predictions based on a model.

To perform statistical analysis, we need large amounts of data. One of the most convenient ways to obtain such data is through the use of **datasets** by official organizations, national statistical offices, research institutes, etc. These datasets are often made publicly available for download on the internet via open or paid access. University libraries are usually subscribed to paid databases, so typically students have access to datasets on the library's website.

However, when researchers cannot rely on preexisting databases, they need to generate their own data. This can be a labor-intensive and time-consuming job. Large datasets compiled by international or domestic institutions are the result of the collective work of many researchers and statisticians. At the individual level, elaborating such datasets is a cumbersome task, although we can speed up the process of **coding** and generating data with the help of specialized software.

In practical terms, due to time and resource constraints, individual IR researchers and students often generate quantitative data limited through two methods: **surveys and questionnaires**. These two methods are good ways of collecting data on a particular population. We can learn about who they are, what do they do, and what they think or perceive. Surveys and questionnaires allow us to ask **different types of questions**:

- Nominal questions. Closed-ended questions that require categorical answers from the respondent; generally, to be chosen from a preset list.
- Ordinal questions. The respondent is required to indicate an order or hierarchy among several items.
- Multiple choice questions. The typical questions we find in test-type examinations. A question comes with several pre-given answers and the respondent is instructed to select only one.
- Interval questions. The respondent must give an answer that corresponds to an interval between two values, for example age, number of years of schooling, etc.
- Scale questions. The respondents is asked about an item in terms of intensity. For example, about the extent of their agreement with a given statement.

Data sources

Many governments and institutions such as the OECD, World Bank, UN, or the European Union publish up-to-date datasets on a wide range of issues regularly.

The UOC's University Library has a comprehensive list of datasets that can be consulted here: <http://biblioteca.uoc.edu/en/resources/data-sources-story-telling>.

As researchers, when we design questionnaires and/or surveys we need to make sure that our sample is **representative** of the population that we are studying. In this regard, we should think carefully about how to distribute the questionnaires (ie how to select our pool of respondents). Random sampling would be ideal if we want to prevent biases, but this possibility is not always available to individual researchers or students.

Statistics allow us to analyze quantitative data in several ways. The most basic way would be to describe or summarize the features of such data using **descriptive statistics**. However, researchers often go beyond that and make use of **inferential statistics** – also known as **inductive statistics** –, which allow us to test hypotheses and anticipate estimates. The most commonly used instrument of inferential statistics is **linear regression**. There are two kinds of regression analysis: **bivariate**, in which we analyze how a **dependent variable** changes with respect to an **independent variable** (see section 3.2), and **multivariate regression**, in which we work with three or more variables. By using multivariate regression analysis we can tell whether the relationship between two variables is spurious, that is, whether it is caused by a third variable.

Therefore, a key aspect that researchers should be particularly aware of when performing regression analysis is the fact that **correlation does not automatically imply causation!**

Spurious correlations

Let's suppose we take data on coffee consumption per capita around the world from the International Coffee Organization and use statistics on freedom in the world according to Freedom House. Next, we decide to run regression analysis through a statistical analysis software and observe that there is a positive relationship between the two. Does this mean that a higher degree of freedom causes people to drink more coffee? Most likely not! If we run another regression analysis using data on coffee consumption per capita worldwide and data on purchasing power parity (PPP) per capita (according to the World Bank, for example) we will observe how the positive relationship becomes much clearer. If we agree that countries with higher degrees of freedom tend to be wealthier (this can also be demonstrated via quantitative analysis), we can then determine that in the regression analysis between coffee consumption and freedom the relationship it establishes is spurious.

For more information on spurious correlations, visit: <<https://www.bbc.com/news/magazine-27537142>>.

In sum, what follows on from the reasons above mentioned is that many scholars and IR specialists consider that quantitative literacy is a necessary skill for those who wish to carry out research in IR.

The best method is the one that best suits our research

Many researchers working in the discipline of IR are reluctant to applying quantitative methods to their research projects because they are not confident enough in their mathematical and statistical skills. However, students and researchers should not opt for qualitative methods only because they dislike or fear quantitative methods. Each of these methods gives us a different account of reality since their attention to detail and focus of attention are different. We should adopt the approach that best suits our research question and the objectives of our project.

2.3. Qualitative methods in IR research

Qualitative methods have been used across a wide range of disciplines and works in the social sciences; from empiricist explanatory scholarship through to interpretive studies that aim to reflect on social meanings and how the world is constructed.

2.3.1. What are qualitative methods?

Qualitative methods are a data collection and analysis strategy that relies mostly on **non-numerical data**. Qualitative methods emphasize the analysis of **spoken and written language**.

Qualitative methods are used to make sense of the world around us. In IR, qualitative methods help us gain a profound and qualified **understanding of the meanings** of social action and the **processes** that make up world politics. They allow for an in-depth study of events and phenomena that make up the reality of international affairs.

As mentioned earlier, **qualitative methods** often rely on **inductive reasoning (inductive approach)**. Rather than testing theory, research works often use a qualitative methodology to formulate theoretical propositions (see section 1.1.1). However, bear in mind that this does not rule out the possibility of qualitative methods being used in works following a deductive approach! We shouldn't take for granted that qualitative methods are simply a form of interpretive research, either. Bryman (2012) appears to make such an association, but we must bear in mind that qualitative methods comprise wide range of other methods that have been used by scholars within a variety of approaches and research traditions.

2.3.2. Qualitative data collection

Researchers can **collect qualitative data** in many different ways. It is common practice to resort to interviews, focus groups, internet-based research and research based on archival records and official documents. In most research by individual researchers and students, the last two methods are almost always used.

Most commonly, qualitative studies focus on the analysis of language (written or spoken). However, qualitative data may include non-textual materials, such as images or audiovisuals.

When we rely on qualitative data for our research, we must keep in mind that it is very important to ensure the **validity of our data**. Data should be free from any bias that may potentially distort our findings. A strategy to prevent this is **triangulation**. Triangulation consists in cross-referencing data from different sources in order to spot inconsistencies, uncertainties and biases. This

is particularly important when we rely on data collected through **interviews**, since the interviewees could – deliberately or not – provide us with non-neutral information, omit aspects that would make them “look bad” and speak from a position of interest or prejudice, among others. Therefore, it is important not to rely exclusively on the data collected through interviews unless we triangulate – cross-check – that information with other sources. Sources of data for triangulation include, among others, newspaper articles, press coverages and academic articles. We can also triangulate data by asking other interviewees about the data we want to cross-check.

Depending on the source, qualitative data can be classified in two types. Sources that reflect original, unprocessed content are considered **primary sources**. Interview audios or transcripts, speech transcripts or official documents are all examples of primary sources. Official documents are particularly useful primary sources. Unfortunately, researchers usually find themselves with very limited access to these sources. Because of this, researchers run the risk of overly relying on a limited array of documents or sources. We should be aware of such limitations and try our best to avoid them.

On the other hand, **secondary sources** are sources that refer to, analyze, reflect or “process” the original documents (the primary sources). Typical examples of secondary sources include journalistic articles, books or academic articles. Media are a particularly valuable and relevant source of secondary data. When working with data from media, it is important to distinguish between international media sources – particularly those that have a consolidated reputation, such as the BBC or *The New York Times* – and local media sources. In the latter case, we will always need to make sure that we are working with reliable and neutral or unbiased sources. If we are studying an unfamiliar reality, local scholars or analysts can be of great help in guiding us. Ask yourself relevant questions such as: are these media neutral? Do they cater to certain groups, for example ideological, political or religious?

Similarly, when we work with documental research or internet-based research, we must be aware of the existing limitations. In particular, we must consider that many aspects in the realm of social interactions, which may be very important to understand a given reality, may remain invisible to us if we base our work only on such sources.

1) Interviews

Interviews are a rich resource for gathering qualitative data. We conduct interviews to collect in-depth **information about a given phenomenon, event or object**. Interviews are a very versatile tool and we can therefore use them to research **into almost any topic in IR**.

Wikileaks

Given the restrictive policies that most governments follow with regards to accessing sensitive information, many researchers found an interesting and unusual access to primary source documents with the publication of leaked diplomatic cables and other documents by *Wikileaks*.

There are several types of interviews. The first type is **structured interviews**. This type is more like a questionnaire conducted in person rather than what we normally understand an interview to be. Structured interviews include a menu of possible responses that the interviewee must select from. Therefore, structured interviews produce **quantitative data**, not qualitative! They are usually conducted by teams of interviewers. An illustrative example of this type of interviews are the opinion polls conducted prior to an election or periodical surveys such as the Eurobarometer (ie an EU-wide opinion survey conducted twice a year that draws on a sample of about 1,000 interviews). Because of their standardized character, the teams or researchers that carry out these structured interviews must make an effort to “stay on script” and not influence the respondent in any way, as this could distort their responses.

Secondly, and given the wide range of interests in the IR discipline, **semi-structured interviews** are the most common type. They are often referred to as **elite interviews** because the researcher interviews particularly relevant people for his object or question of interest. The use of either name often depends on the definition of elite the researcher works with. **Elites** can be any person with a position of influence or importance for a given topic. However, we could also define any relevant stakeholder in our topic of interest as elite.

Semi-structured interviews have significant advantages over other types of interview. First, the fact that they are only *semi* structured means that the scope of the responses is not as limited as is in the previous type. In this type of interview, the respondent is freer to formulate their own responses outside of the preset menu of options. At the same time, however, and precisely because it is semi-structured, this type of interview lends itself to cross-referencing data easily.

Thirdly, **unstructured interviews** are those that most resemble an ordinary conversation. This type of interview is normally used to gain an insight into a person’s perceptions or opinions on a given topic without any interference or condition (unfiltered perceptions). Because of this, these interviews usually **begin with a broad, open-ended question**. When conducting unstructured interviews, the researcher should be aware of their role at all times; they do **participate** in the conversation, but they should **not lead** it! You need to be especially careful not to influence the interviewee’s responses.

When preparing interviews, we often realize that **gaining access** to the interviewees is the most difficult part. It can be difficult to gain access to certain stakeholders – in particular elites with greater responsibilities or of higher rank. We must take into consideration that people in such positions usually have busy schedules and may not have much time at their disposal to attend researchers. We may also find ourselves needing to travel in order to meet the interviewee(s). Fortunately, the popularization of social media and communication technologies such as Skype or Google Hangouts have made worldwide

communication easier and cheaper. Nonetheless, in-person interviews continue to be the most common method. These aspects should be considered in the stage of research design (see section 3.2).

Interviews are a very good way of gathering first-hand information, impressions or opinions on the features of the social world we are studying. So, to make the most of every interview opportunity we have, we should keep in mind the following aspects. First, we must **know** as much as we can **about our interviewee(s)** and be prepared to ask questions that are relevant to that person: an interview is a good opportunity to triangulate information, so we should be prepared to do so. Second, before we begin an interview, we must be **clear about the time** we will need so that the interviewee is aware of it and agrees with the proposed schedule. It is key for the researcher to organize the interview making sure they will not run out of time before they have covered all the relevant issues. Third, we should also be explicit about **how we will use the data collected**, the reason why we collect them and the **confidentiality** measures we want to adopt. Fourth, we must also inform the interviewee if we are going to record the interview to make transcripts. This can be done using a consent form. Once the interview is over, researchers usually send a thank-you note to the interviewee(s). Fifth, researchers must remain **neutral** before the interviewee. We should be particularly attentive to not show signs of approval or disapproval that could influence the respondent, including non-verbal communication. We should watch our **spoken and body language**. Last, it is important to spend time making **transcripts** of the interview right after conducting it as the information provided is still fresh in our memory. A very useful tip is to make annotations as we transcribe the recorded content.

2) Focus groups

Another popular qualitative methodology in the social sciences is **focus groups**. A focus group is a gathering of people who take part in a planned discussion so that their perceptions on a given topic can be elicited. Focus groups require the intervention of a **facilitator/moderator**, which is usually the researcher. The help of more than one researcher is very often necessary.

In many regards, a focus group can be understood as a group interview that the researcher can use to enquire about the topic they are interested in and observe social interactions.

Focus groups are an interesting technique, but they are rarely used by individual researchers or students because they are highly time-consuming.

3) Internet-based search

For most of us, looking for information on the internet has become second nature. When we perform internet searches for research purposes, however, there are several key considerations that we must keep in mind. First, we must always check the **credibility and accuracy of the sources**.

Today, anybody with a computer and a connection can post information on the internet without having to undergo any prior check or control. Therefore, the greater the number of **gatekeepers** a source of information has, the more likely it is to be reliable. We must always make sure the information we use comes from reputable sources. We should prioritize **peer-reviewed** material whenever we have the opportunity to do so.

In this regard, we should be particularly cautious when using information from **social media**. Even though these websites can be a good source of data if we want to measure the perceptions of a certain population of netizens, they should not be used as a source for factual data.

A controversial source in that regard is **Wikipedia**. As of mid 2019, the free online encyclopedia ranks as the 5th most visited site on the internet and the most visited website in the general reference category. Wikipedia has an open editing policy, which means that any registered user can edit content. Because of this, and despite the efforts made to progressively incorporate mechanisms to enhance and ensure accuracy, Wikipedia still is a potentially unreliable source. Therefore, we should always avoid quoting directly from it. This said, Wikipedia is a useful tool when used as a starting point to gain knowledge and insight of a topic. For students and researchers, it is also a useful tool to find relevant bibliographic references about a topic. We need to keep in mind is that the veracity of the content must always be checked.

In order to find **factual information** about particular topics or events online, two sources are particularly valuable for researchers. On the one hand, reputable international media sites such as the BBC or *The New York Times*, and on the other, official websites such as those of national governments or international organizations. These sources may be readily available or only accessible upon registration or subscription.

2.3.3. Qualitative data analysis

Once the data is collected – qualitative, in this case – we need to process it and analyze it. A significant difference between qualitative and quantitative data is that qualitative data can lead to different interpretations. Why? Because, unlike in quantitative data analysis where the rules are always explicit, qualitative data analysis allows more room for subjectivity.

There are two main techniques for qualitative data analysis in IR: **content analysis** and **discourse analysis**.

Content analysis involves processing or “breaking down” qualitative data – mostly textual – so that it can be compared and analyzed more easily. Content analysis relies on some form of **coding** (see section 2.2.1) or **categorization**, so some authors label it as a quantitative method. Strictly speaking, however, content analysis is neither entirely quantitative nor qualitative: it can be both.

When planning to carry out a research project that involves content analysis, we must first define the scope and parameters of our investigation clearly, considering aspects such as: will we collect qualitative data from media? If so, from what type of sources? Domestic newspapers, international news outlets, etc.? Will we only collect data from speech transcripts and official documents? What time period will we focus on?

Once we have established these parameters during the research design stage (see section 3.2) we will then collect the data in order to do the analysis. To answer the research question or problem, the researcher needs to define or establish categories that are meaningful and, as mentioned above, encode or categorize the data collected (for more information on coding, see section 2.2.1). Once the content is properly coded, the researcher can either analyze it using qualitative methods such as a written descriptive analysis or quantitative methods such as statistical tests.

In addition to content analysis, another common technique to analyze qualitative data is discourse analysis.

Discourse analysis is a technique that aims to interpret language (semantics). Authors such as Hardy *et al.* (2004) define it as “a methodology for analyzing social phenomena that is qualitative, interpretive and constructivist.” This is important because, despite being an analytical methodology, discourse analysis makes certain assumptions about the role of language in the social construction of the world around us. In other words, discourse analysts see the world as constructed by intersubjective meanings and understandings. Accordingly, language plays a major role in both their ontology and epistemology.

In order to perform discourse analysis, researchers must know how important it is to accurately select the texts (sources) and justify these choices. This is a key because when we use this method, the texts we select are supposed to be representative of a broader discourse that constitutes and produces something meaningful in IR. Once this identification and justification is done, we researchers do not simply want to categorize or code data – as in the case of content analysis –, but understand how and why certain actors defend/adhere to/support a particular discourse.

Even though discourse analysis is a tool in qualitative IR research that can effectively contribute to our understanding of how language shapes the world around us and how we understand and categorize it, we must not forget that its critics generally point out that it is an unscientific methodology.

2.4. Mixed methods in IR research

Mixed methods is an increasingly popular choice among students and IR scholars alike. As said earlier in this module, the division between quantitative and qualitative methods has influenced a great deal of courses and books on research methods in social sciences. The emergence and increasing relevance of the mixed methods approach has to do with the willingness of some scholars to leave this dichotomy behind.

Mixed methods can be seen as a third approach that bridges the gap between quantitative and qualitative approaches.

With regards to the empiricist-interpretivist divide, let us recall that neither qualitative nor quantitative methods are purely interpretivist nor purely empiricist. The same can be said about mixed methods. First of all, if we decide to use mixed methods in our research project, we researchers need to be very aware of the claims that we make and of the goals/objectives that we set for our research. Regardless of whether we want to explain a given reality or to interpret it, either of these objectives involves certain implicit claims or ontological assumptions regarding IR and the social world.

The mixed methods approach is useful beyond empiricism. It is an approach that seeks **complementarity**. For example, quantitative methods can offer a good insight into the correlation between two variables. However, they do not tell us much about how these variables are related. Conversely, qualitative research can provide a lot of detailed information, but it tends to be weak in terms of establishing correlations unequivocally. Through mixed methods we can overcome such limitations. In a way, mixed methods is like a triangulation made across different methods; an opportunity to gather **more information** about a topic.

There are several ways in which researchers can mix the quantitative and qualitative approaches, depending on the characteristics of the research project and the objectives defined. For example, we can adopt a mixed methods approach **to combine** a quantitative analysis of a large dataset (**large n**) and a qualitative analysis of a few selected cases (**small n**). We can also use mixed methods to **confirm findings** across methods: a kind of triangulation carried out across different methods.

If we decide to use mixed methods for our research, it is important to justify our choice very well. We must be explicit about what we expect to gain from its use. It is also important to tell our readers how we have designed the study in order to apply a mixed methods approach.

In sum, thanks to the popularization of mixed methods in IR research, we have new information and insights that could not be gained through quantitative or qualitative methods alone.

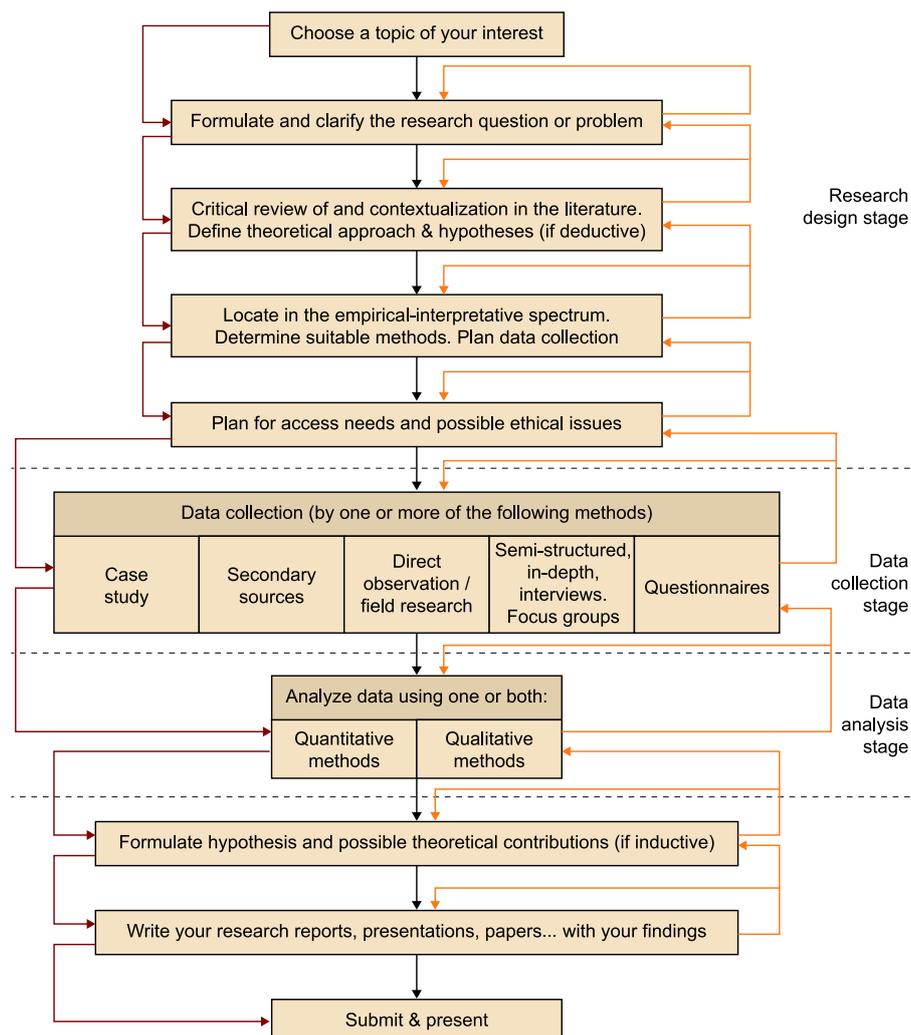
3. Research design

In the first part of this module we discussed the concept of methodology and its importance, explored how theory and research are related and clarified the concepts of ontology and epistemology. In the second part we presented the main research methods and techniques that are relevant to the International Relations discipline along the qualitative/quantitative divide. With all this in mind, this section is devoted to the concept of **research design**. What is research design? Where does research design fit in the overall research process?

3.1. What is research design and why is it important?

Research design, which is done in the early stages of research, is key to any research project. In this stage, researchers determine the objectives and structure of their projects.

Figure 4. Stages of the research process



Source: adapted by the author based on Saunders *et al.* (2009).

In this **research plan** researchers decide **what they will do, with what purpose, and how they will do it** and present it in a justified manner.

An analogy is often made between a research design and the construction of a building. Just as the construction process cannot start without proper planning, neither can a research project begin without a proper research design.

Social research needs to have a design – structure – before data collection and analysis can effectively begin. With a proper research design in place we can make sure that the evidence we collect will serve to answer the research question or problem in the most unambiguous possible way. Given our research question (and, if applicable, the theoretical basis we base our project upon), what kind of evidence will we need?

Preparing the research design is, therefore, a **logical** rather than logistical task.

Research design should not be confused with choosing the method with which we will collect and analyze our data! A research design must always be in place regardless of the method we use. If we mistake research design for research methods, the evaluation or assessment of our research design will be flawed. A research design should be assessed or evaluated on the basis of what we want to achieve with our research project (ie our research goals). That is, can our research design allow us to answer our research question(s) completely and unequivocally? We should not evaluate our research design according to of the strengths or weaknesses of the chosen methods!

The need for a proper research design comes from a **skeptical view of research**. The underlying premise is that knowledge is in constant evolution. The researcher should not seek evidence that is consistent with their view of theory, that is, that informs their hypotheses.

Regardless of the methods we choose to adopt, we should seek evidence that puts our theory or hypotheses to the test. A researcher could adopt two possible strategies:

- First, eliminating possible rival or alternative explanations. We must identify other variables that can offer alternative explanations for the phenomenon we aim to describe, and then try to disprove them. This process must be thought carefully. When the researcher formulates hypotheses, they should avoid making fallacious conclusions such as *affirming the consequent*. That is, knowing that “when A occurs B must necessarily occur” does not imply that “when B occurs, then A must have necessarily occurred.”
- Second, looking for evidence that could disprove the theory or hypothesis. This is known as falsification.

The importance of a proper research design

We should always avoid designing questionnaires and circulating them, conducting interviews, or doing any data collection without having a proper research design. Otherwise, the data collected will be very weak and our research question or problem will most likely go unanswered. Design flaws are very difficult to overturn once we have begun collecting and analyzing data.

Skeptical view of research

Prior to Einstein’s relativity theory, Newton’s theory of gravity had defined the way we understood the universe since 1687. Despite being a consolidated theory, a skeptical view of research allowed this knowledge to be challenged and eventually disproven in some respects.

Hypothesis

A hypothesis is a claim that the researcher makes regarding the relationship between several variables (normally the dependent and independent variables). In a way, it is like an anticipated conclusion, an *educated guess* that the researcher makes prior to the analysis that will ultimately determine whether the hypothesis can be accepted or discarded.

As researchers, we must not only try to eliminate alternative explanations, but also to reevaluate and reconsider our own theories or hypotheses. How? Finding evidence that proves a theory is often easy. However, a valid theory should be able to withstand tests aiming to disprove it. However, we simply cannot reject an entire theory because there is a single case that disproves it. Generally, more evidence is needed. The collective findings of the research community contribute to determining which theories or hypotheses are acceptable and which ones are discarded.

3.2. Designing your research

When elaborating a research design, there are several questions we must take into consideration (see Figure 2).

Prior to starting, we need to develop an idea of what we want to do and what we want to achieve with our research. First, we will choose a **topic** of our interest – generally in broad terms.

Then we will formulate a **research question** or **research problem**, which is what our research project aims to answer and that guides everything we do during the research process. Once we have narrowed down the scope of the research question, we will be able to formulate the objectives or purpose of our research.

In the social sciences, and therefore in IR, the research question also determines whether our research is descriptive or explanatory. Do we focus on *what* happens (ie **descriptive research**) or on *why* it happens (ie **explanatory research**)?

1) **Descriptive research** is sometimes deemed as a “minor” or less important research. However, descriptive works are essential if we want to increase our overall knowledge of certain topics. In this regard, we are not exclusively talking about the knowledge that a person may have individually, but about the overall body of knowledge that humans have about a topic. Descriptive research is also important because it provides answers to *what* questions, in turn becoming a catalyst to pose relevant *why* questions (explanatory questions). In other words, we need to know the answer to *what* before we can enquire about *why*.

In a descriptive research project, we will need to formulate a viable research question that narrows down the scope of our research to the phenomenon or object we aim to describe.

To do that, the researcher must pay special attention to aspects such as **conceptual precision**. For example, if we want to describe the influence that one variable exerts on another, we will need to provide a working definition that specifies what we understand by “influence.” Similarly, we must specify the time frame of our research. We will also have to consider how general or specific the description must be and the specific aspects we will look at. In sum, researchers must be very clear and specific about the object of their analysis.

2) **Explanatory research**, on the other hand, focuses on searching for reasons. It aims to determine what causes the phenomenon that we study. Explanatory research can have either an **empiricist** or **interpretivist orientation**. From an **empiricist** perspective, explanatory research seeks to determine *why* something occurs. It involves developing **causal explanations**. It seeks to identify “law-like” causal relationships that, in the best-case scenario, can be extended to other cases. For example, through an empiricist explanatory research we may conclude that a phenomenon Y causes X to happen. On the other hand, the focus of explanatory research from an **interpretivist** perspective is to understand the subjective meanings that social actors create and share about the social world.

When we pose an explanatory research question, we need to specify **what** we want to explain. Like in the previous case, the research question must be concise. It should clearly specify the causes and/or consequences that the research aims to explain.

Common mistakes

Once students have identified a topic or area of interest and defined a viable research question, they tend to make certain common **mistakes** that **should be avoided**.

One such common mistake is to project the research question into the future. For example: *How will Australia adapt to the rise of China?* We are used to seeing this kind of questions, speculative in nature, in political discussions or debates. However, they are not viable questions for academic research. As we have seen throughout this module, there are instruments (eg statistics) that allow us to formulate predictions or anticipations of the future based on what we already know. We should be aware that when we make such projections, we are always dealing with some degree of uncertainty. Therefore, we should avoid formulating this type of questions as the main research question or problem of a study. In this regard, it is advisable to reformulate the question in a more viable way; one that can be objectively analyzed. It is always preferable to analyze something that is happening in the present or that has happened in the past. If we find it convenient or relevant, we can propose future scenarios from that analysis, but such type of questions cannot be the main ones in any research project.

Another common mistake is to formulate normative rather than objective research questions. For example: *What policy should Australia adopt vis-a-vis before the rise of China?* These questions are also problematic, and they should not be used as the leading question of our research. Of course, we can formulate policy recommendations or give some advice based on our analysis. However, these should be included as part of the conclusions that result from our analysis of a given phenomenon or reality. As an example, a viable research question in that regard could be, *Does the rise*

of China pose any threat to Australia's maritime security? In this case, policy recommendations answering the question we had posed initially could result from the analysis conducted to answer the latter question.

During the research design stage, we should also make a **critical review of the literature**. This is an essential step prior to embarking on any research project. Research builds on accumulated knowledge. Researchers do not start from scratch every time; their starting point is the accumulated knowledge generated by all the scholarly community. Therefore, it is essential to contextualize our project within what has already been written on the topic. Additionally, this will help us to identify the contributions that we can make to knowledge about that topic, that is, to identify what is new in our project.

A literature review does not only tell us what we – humankind – know about an issue, but also how we have achieved or acquired that knowledge. It also gives us valuable information regarding the methodology – approaches – that other researchers have used so far. Based on that, we can choose to use different methods, complement what has already been done, or try a new approach to study the same phenomenon. Novelty in our research can come from the methods we use.

It is important to keep in mind that posing the research question (narrowing down the topic), formulating hypotheses and making a critical literature review are closely related. Therefore, moving from one to the other might not happen in a linear way. It is often the case that students or researchers initially pose a research question based on what they know about the subject or after a preliminary literature review. However, after a more comprehensive literature review they will revisit and modify the initial question. This is a positive thing to do and it should happen during the research design stage, before collecting and analyzing data.

Once we have formulated our research question and contextualized it with respect to the relevant literature, we will proceed to locating our research project along the **empirical-interpretive spectrum**.

At this stage, if we are carrying out explanatory research, we should **identify the variables** to be used in our analysis. These variables should be relevant in answering the research question we want to address. Variables are categorized according to their function in the following way:

- The **dependent variable** is the variable that changes under the influence of other factors. It is the **outcome** variable. In other words, the dependent variable is what we want to explain – the effect or phenomenon we want to explain. In statistical research and formal models, this variable is usually identified with the letter Y.

- The **independent variable** is the presumed cause for the dependent variable. It is also known as the **predictor variable**. It is usually identified with the letter X. When we try to eliminate alternative explanations, we define several independent variables. In our analysis we may find out that some have a causal relationship with the dependent variable, and others may not.
- **Intervening variable(s)** come in between the independent and the dependent variable in a causal chain. They are usually identified with the letter Z.
- **Extraneous variable(s)** are those that show a correlation but are not causally related.

We can illustrate this with an example. Let us imagine that we want to study the extent to which North Korea's missile testing influences South Korea's defense spending in air defense assets. In this case, the dependent variable – what we want to answer – would be South Korea's defense spending. The independent variable – the presumed cause of the former – would be North Korea's missile testing. In addition, a comprehensive research project would consider the study of intervening variables such as the factors that link X with Y. In this case, an intervening variable could be how South Korean governmental and military authorities perceive North Korea's tests, since this perception is presumably a factor that moderates the intensity of the causal link between the independent and the dependent variable.

Explanatory research can be done in several ways:

- **Searching for causes and effects.** This is the least focused type of explanatory research. It consists in identifying a phenomenon we want to explain and exploring possible causal factors.
- **Exploring a single causal proposition.** In this case, we focus on a particular causal proposition and check if causality exists and, if so, we try to estimate the impact.
- More **complex models** are used when the research requires to assess a more comprehensive analysis (with more variables). In such cases, we should identify: 1) what we try to explain (dependent variables); 2) any possible causes (independent variable); 3) which case(s) we will explore; and 4) what possible connections may exist between the independent and dependent variables (intervening variables).

The type of explanations we come up with can be **partial** or **full explanations**. Partial explanations are known as **nomothetic explanations**. They are obtained by exploring a series of factors across a large number of cases. In other words, nomothetic explanations are obtained from the analysis of a given

set of variables for a certain number of cases. By contrast, **full** or **idiographic explanations** focus on particular cases (small n) and explore as many factors as possible, including those variables that are unique to that particular case.

Up until this point we have posed the research question, reviewed the literature, formulated hypotheses (if it was relevant), contextualized our research project within the existing literature, located our research along the empirical-interpretive spectrum and determined the most suitable data collection and analysis methods. Once we have all this, we need to work on our **access needs**. For example, if we have to interview elites or relevant stakeholders, we need to make sure we can gain access to them. Can we have access to official documents? Is it possible for us to travel in order to conduct interviews or do field research? All these aspects must be considered at this stage, together with the contingency measures we may have to resort to in case things do not go as initially planned. In addition, we need to be prepared to deal with any possible **ethical issues** connected to our research, as for example: are we dealing with confidential data? How will we treat our data? How will we ensure privacy for our sources?

Aspects to consider before data collection and analysis

After finishing our research design and before starting to collect and analyze data, we should be very clear about four aspects:

1) **Research question:** we must have chosen a broad topic or area where to easily contextualize our project. From that broad topic we must have formulated a specific, objective and viable research question (narrowing down the scope). We must be able to justify how we came up with the research question and to give arguments as to why it is worth knowing or conducting research about that particular topic.

2) **Contextualization:** we must be familiar with the state of the art of the topic/issue under study. We must at least know the major works and authors linked to that particular field. We must be able to contextualize our intended research within the context of relevant literature and existing knowledge. What will our contribution be? What is new in our research?

3) **Our approach:** how do we plan to tackle the issue or topic under study? In this regard, if our research follows a deductive approach, we must be able to present our guiding theoretical assumptions (theoretical framework). We must be able to present our hypothesis/es in a justified way and explain how we formulated them. We must also be able to identify the variables or factors that should be analyzed so as to answer our question and determine whether we can confirm or discard any existing hypothesis.

4) **Our method:** we need to be clear about what type of data we will need and how we are going to get these data. Can we collect them or do we need to generate them? How? Which method of data analysis will we use, quantitative or qualitative? We must be able to justify how this choice of method can help us answer the research question in an unequivocal way. Besides, we must anticipate and be explicit about any limitations or shortcomings of our work in the research design.

Summary

As we exposed in the introduction, the purpose of this module is to be a companion for students in their first approximation to research methods in International Relations.

In the first part we have discussed the question of what methodology is and why it is relevant. The second part presented the most common methods of data collection and analysis for both qualitative and quantitative approaches. The third part was devoted to research design or planning, a fundamental step before embarking on any research project. In this stage we lay down the roadmap we will follow in order to answer our research question and meet our investigation goals.

We have tried to offer a comprehensive introduction within the limited scope of this module. However, we have not been able to examine in depth the analysis and discussion of each of these aspects. Because of this, students should complement the study of this module with a textbook or any other relevant materials. Below is a list of resources that students may find useful to become familiar with research methods in IR.

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