

# Preface

## A parallel with astronomy

The main motivation for the present study can best be understood by making a parallel with astronomy and astrophysics.

For centuries human groups and civilizations have observed the sky and recorded the positions of the Sun, Moon, planets, comets and stars. Most often this led to sophisticated astrological models. Real science emerged on only two occasions:

- In Greece and the Hellenistic world from Eratosthenes of Cyrene (-276 to -195) to Ptolemy (100 to 170).
- In Western Europe with Tycho Brahe (1546–1601), Johannes Kepler (1571–1630) and Isaac Newton (1643–1727), a development which led to present-day astronomy and astrophysics.

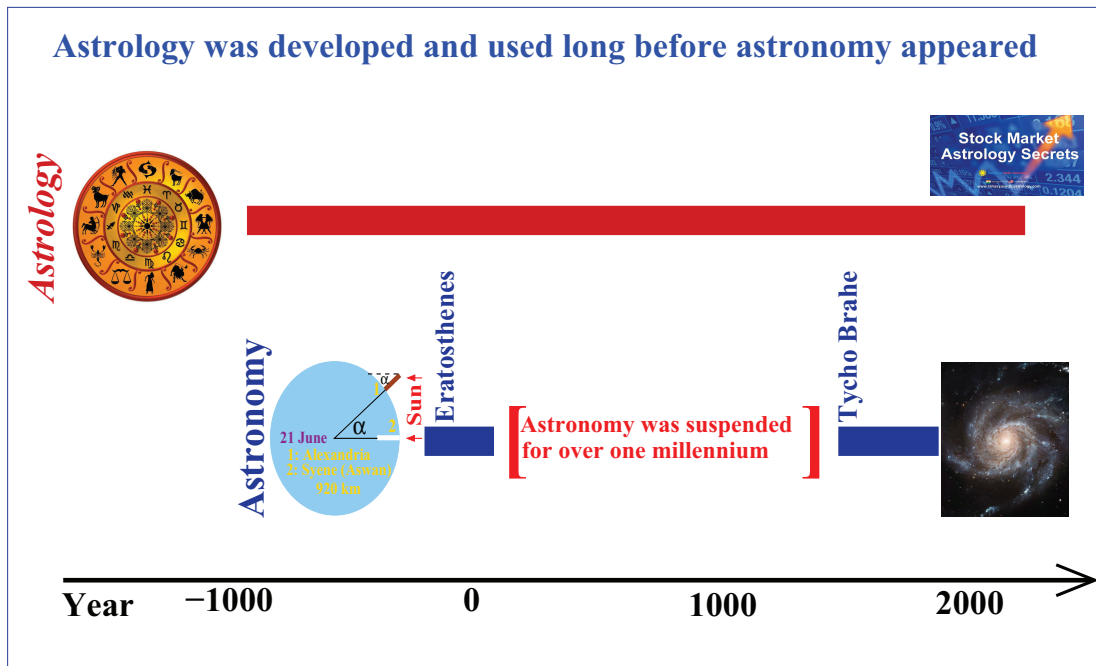
In 1563 Tycho Brahe observed a conjunction of Jupiter and Saturn, and noticed that the commonly used Ptolemaian tables were inaccurate. This led him to realize that progress in astronomy required systematic, rigorous observation. The so-called “Rudolphine Tables” which are based on his accurate observations were published by Kepler in 1627, 26 years after Tycho’s death<sup>1</sup>. Brahe was a nobleman and courtier who was attracted to astronomical observation purely by personal interest. He was ready to forsake a wealthy position at the Danish court to fulfill his dream. One question which comes to mind is whether there have been similar individuals at the Imperial court in China for instance during the Ming dynasty. More information on this point can be found in the chapter entitled “What is to be done?”

It should be noted that, apart from their work in astronomy Ptolemy, Tycho and even Kepler authored books in astrology. At the beginning of each year Tycho had to present an Almanac to the king of Denmark predicting the influence of the stars on political and economic prospects. This anthropomorphic attitude was quite understandable for astrology was thought to be much more “useful” than astronomy. As a matter of fact, many civilizations, e.g. Chinese, Indian, Maya, Western, developed elaborate systems for predicting terrestrial events from celestial observations.

How does the scientific analysis of historical events proposed in this book parallel

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<sup>1</sup>The name “Rudolphine” is in homage to Rudolf II, former Emperor of the Holy Roman Empire and main sponsor of this project.



**Fig. Pref.1a Respective development of astrology and astronomy.** From a historical perspective astrology has been in existence for much longer than astronomy; it was developed in all major civilizations: Chinese, Greek, Maya, Persian. The small picture next to the name of Eratosthenes shows the clever experiment that he had designed and implemented between the cities of Alexandria and Syene (now Aswan some 920km to the south) in order to measure the radius of the Earth (his result was quite correct). It should be noted that in this calculation one must assume that the Sun rays are parallel which rests on the assumption that the Sun is far away. The long suspension which lasted over one millenium was a dark age during which previous knowledge was partly forgotten. Although Christopher Columbus was aware of the measurements made in Greece he misinterpreted the unit of measurement; otherwise he would have known that India was out of reach for his expedition.

the emergence of astronomy and its separation from astrology?

Following the invention of writing, for millennia human societies have recorded historical events. To recount facts rather than the thoughts and beliefs of the author was a first challenge. It seems that with the biographies of their emperors Chinese scholars were among the first to produce factual accounts [references and more details are needed]. In the west, Herodotus (-484 to -425) and Thucydides (-460 to -400) were two early historians. In contrast, when one reads the story of the Great Fire of London in 1666 as told by contemporary English writers one learns more about the Romans, the Bible and the justice of God than about the fire itself.

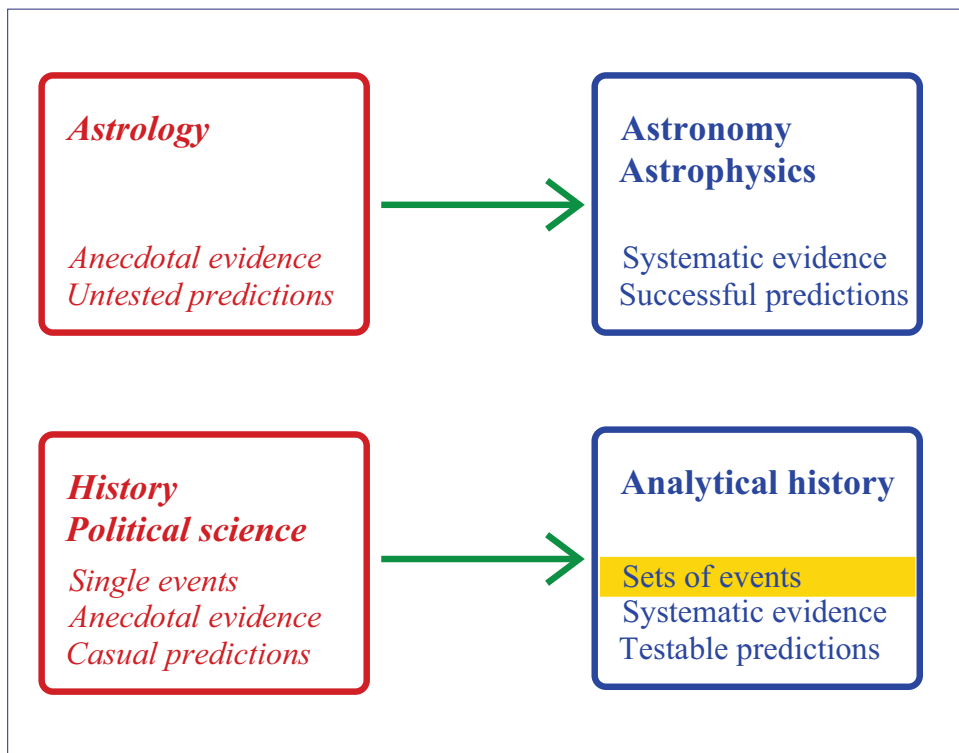
### The key idea of what we wish to do

Because there can be no science of individual events (they can only be described) a crucial step on the way to scientific analysis is to build sets of *similar events*.

The idea is simple. What conclusion can an astronomer of the 16th century draw by



**Fig. Pref.1b** Two measurement devices used by Tycho Brahe. On the left a wall quadrant in the Uraniborg observatory on the island of Hven (or Ven) located between Denmark and the southern Swedish province of Scania. On the right, Tycho's oversized sextant. *Source: Wikipedia article (in French) about Tycho Brahe.*



**Fig. Pref.1c** Switching to a scientific approach. The transition from astrology to astronomy took place in Ancient Greece and a second time in western Europe in the 16th century. In the transition to a scientific conception of social phenomena that we propose the focus on sets of similar events is fundamental. Although already emphasized by Vilfredo Pareto (1916) and by the French “Ecole des Annales” the importance of this step is still not well recognized; one may even say that it is less recognized in 2016 than it was back in 1916.

comparing the orbits of Venus and of comets? Basically none, because these objects are too different and the data for the comets too imprecise to be compared in an

**A box intended for persons who know OOP**

(Can be safely skipped by others!)

OOP is “Object Oriented Programming”. What is the gist of OOP? The key-step is to define a *class* of objects each of which has certain characteristics and certain pre-defined functions. Once a class has been defined, the programming language (say PHP or any other) allows you to spawn as many instances of the class as you like. Each of these realizations is an independent object with its own characteristics and functions, yet in some sense related to the class through which it was generated.

What we wish to do is the reverse procedure. We have collected a number of realizations which, for some good (or bad) reasons, we think have been generated by the same class (also called core-mechanism elsewhere in this book). Starting from this diverse collection of instances, what we want to do is to find out the common core-mechanism through which they can be generated.

If successful, this operation will bring a measure of order where there was none. Actually, this classification step is an essential pre-requirement in any science.

**A box intended for persons who think they know dogs**

(Can be safely skipped by others!)

Dogs can be very different in size, color, shape, behavior (think of dogs which are especially good at sniffing drugs). Yet, they are all called dogs for a very simple reason which is the fact that they can mate with one another. As a matter of fact, it is this requirement which, despite their diversity, defines them as a single species.

Now imagine that you have a collection of animals which comprises not only dogs but also other species: wolves (actually wolves are wild dogs), raccoons, rabbits, hyenas, fennecs and others. Your task is to separate the dogs from the other animals. That will not be an easy task. If you take size or color as your main criterions you will surely fail. Obviously the mating criterion which should in principle give a clear answer is not easy to implement. Ultimately, the best procedure would be to perform a DNA analysis for each animal. This procedure will be costly and will take time but it is the only way to get clear answers.

This example illustrates the kind of quandary in which one is when one tries to find out which historical events are related and which are not. As explained in the OOP box, the challenge is to find a mechanism through which all events can be generated.

effective way. However, if the same astronomer compares the orbits of Venus and Mars, he may well be led to the discovery of what we now know as “Kepler’s laws”.

It works the same way in the social sciences. In order to be able to draw any conclusion, one must compare events which are sharply defined and sufficiently similar.

This is the idea which underpins the whole book. That is also why we hope that

astronomers and astrophysicists may view it with some interest.

### **Analysis and prediction based on the categorization methodology**

The method described above which is based on laws (like Kepler's laws) works well when the phenomenon can be described through a small number of parameters. As a particularly simple example, for a pendulum one needs only to measure its length to be able to predict its period. However, in other fields than physics the variability and number of parameters of the phenomena is often too high to make predictions based on laws. In such cases the law-based method must be enlarged into what we will call a categorization (or ascription) method. Let us illustrate this generalization through three examples.

- The evolution of a star depends upon several parameters, for instance its mass, age and color. Based on these parameters astrophysicists have defined standardized types. For each type its timeline is well defined. Therefore, when one wishes to predict the evolution of a new star one needs only to determine its type.
- The same method is used in medicine. Based on a number of observed symptoms, a doctor will decide that a case is influenza, tuberculosis or lung cancer. Thus, a medical diagnosis is just a special case of categorization. Here too, categorization entails prediction concerning the evolution of the disease.
- Categorization is also used in physics. Suppose one wants to predict how air flows around an airfoil. Getting such a prediction from first principles (that is to say by solving the Navier-Stokes equations of hydrodynamics) would be a very difficult problem. On the contrary, through categorization the problem can be solved rather easily. According to their shape, airfoils are ascribed to different families and in addition in each family there is a sub-classification based on an index number which describes a parameter, for instance the curvature. As examples of such families one can mention the following: NACA 0012, Eppler E 193, Wortman FX 75-141. So, in order to make a prediction for a new airfoil one needs only to determine to which family it belongs and what is its index. Of course, for this method to work, all standard airfoils must have been tested in wind tunnel experiments. As there are hundreds of different shapes this represents an extensive research program.

For historical events the variability is even higher than for stars, diseases or airfoils. In addition the classification work has hardly started. That is why at present time the categorization method can be used only in a fairly rudimentary way. For further progress the key is to identify and define many families of similar events. In medicine the classification of diseases took centuries. Currently, the "International Classification of Diseases" (ICD-10) comprises thousands of classes. This suggests that one needs to be patient but also that this classification work must be pushed forward as vigorously as possible.



## **A tortuous road**

The road which led to the publication of the present book in Chinese was fairly long and tortuous. A first draft was written in French in 1993. An English version was published by “Harvard University Press” in 2002, and finally this version destined to the Chinese public is a completely new book largely based on examples taken from Chinese history. What it has in common with the two previous publications is the methodology and the main concepts.

The story which led from the French draft to the present book may be of more than anecdotal interest for it illustrates the fact that it is not easy to publish something new, and, once it has been published, to spread the message to other scholars.

Although there are many publishers in western countries it is not easy to break the barriers of fashion and one-track thinking. Actually, finding a publisher turned out to be easier in China than in France.

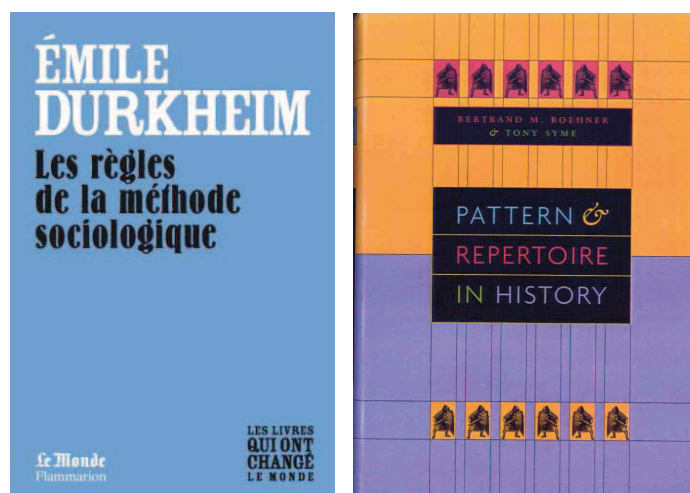
Back in 1993 the French draft was proposed to several publishers. Invariably it was brushed aside, most often on the ground that it is a topic “which does not square with our publication program”. How can a new approach conform to a pre-existing program? In the hope that British or American publishers would be more open, the French draft was translated into English with the help of co-author Tony Syme who was at that time teaching at Oxford University. However, when the English draft was proposed to US and British publishers the same answers started to pour in. Eventually, in the fall of 1998, in an attempt to win support from distinguished American colleagues, one of the co-authors (BR) decided to visit the United States. Thanks to an invitation from Prof. Samuel Williamson he could spend two months at Harvard and from there he also visited several other universities in New York State, Arizona, California, Illinois Michigan and West Virginia. By chance a miracle happened. After being invited to give a talk at the “Harvard Department of Sociology” (on 29 September 1998) by Prof. Stanley Lieberman he had the opportunity to have lunch with Michael Aronson of “Harvard University Press”. This started a sequence of events which would lead four years later to the publication of “Pattern and Repertoire in History”. In this outcome one should also mention the support of Prof. Charles Tilly who was one of the pre-publication reviewers and also suggested the book’s title.

However, after the publication of the book, between 2002 and 2017, all attempts to interest historians in this new methodology misfired. In the following lines we try to understand why.

## **The need of well targeted comparisons**

With the benefit of hindsight the reason appears fairly clearly. The approach advo-

cated in the book relies on making appropriate comparisons. This methodology was introduced by sociologist Emile Durkheim (1858–1917) and it is described in the book shown below.



**Fig. Pref. 2 Two books, one project.** Durkheim’s book was published in 1894. Entitled “Pattern and Repertoire in History” the book on the right was published in 2002. The English translation of Durkheim’s book is: “Rules of sociological method”. Despite being more than a century apart, the two books have basically the same purpose, namely to transform sociology and history into testable sciences. Durkheim’s book as well as his subsequent study of the phenomenon of suicide (1897) explain how, by comparing “natural experiments”, one can implement the methodology of experimental physics in fields in which direct experimentation is impossible. In “Pattern and Repertoire in History” the authors apply Durkheim’s approach to the study of historical events. *Source: The two books are freely available on line.*

However, very few historians have been willing to use the comparative approach advocated by Durkheim. One exception is Marc Bloch (1886–1944). In 1924 he published a study which was later translated into English under the title “The royal touch”. It provides an excellent example of what we mean by “comparison of events which are sharply defined and sufficiently similar”. The royal touch consists in the fact that in France and England the king was (allegedly) able to heal some diseases just by touching sick people. This is certainly a well defined phenomenon. Unfortunately, this kind of comparative research remained fairly unique and isolated. In a somewhat loose form comparative history remained popular in France during the 1950s and 1960s mainly thanks to the “Ecole des Annales” which was founded by Marc Bloch. Then, in the 1970s, both in Europe and in the United States, historical research turned back to the study of single cases: one country, one time interval, one phenomenon. For instance: “A study of unemployment in Germany, 1925-1935”. On such a topic one can tell a story but one cannot do any science; whether or not the study comprises an econometric model, it will remain only a description. Science needs testable predictions and the later require *several instances of a given effect*.

### **An example of a failed attempt**

The same year as Durkheim's book, appeared a study (Lacombe 1894) whose purpose was to make history into a science. However, instead of following Durkheim's rule stating that social phenomena should be studied like "things", that is to say as if they were natural phenomena, the author uses an anthropocentric approach entirely based on the psychology of the individual man. In other words, he was trying to explain our societies by relying on the human brain, a system of much greater complexity.

### **The method of experimental physics and observational astrophysics**

The methodology of experimental physics is based on comparative analysis. For instance, as a first step one measures the period of a pendulum. As a second step one repeats the observation to check if the phenomenon is reproducible. Clearly this is unnecessary for a pendulum but may be important for a system that is more chaotic. Then, one changes one parameter, say the length of the pendulum, to see how the period will be affected. These are exactly the steps that we wish to implement in studying social phenomena and historical events.

Let us give an example. As a first step one observes the suicide rate of unmarried young adults in France in the year 2000. Secondly, by comparing the rates in 2000 with those in 1999 and 2001 one can check whether the phenomenon is reproducible. Indeed, in successive years the rates are the same within a margin of  $\pm 5\%$ . Then, one changes a parameter, say the number of family links. This leads to the observation that married persons (without children) have suicide rates which are 2 or 3 times lower than those of unmarried persons of same age. Moreover, married persons *with young children* have suicide rates which are even lower than those of childless married couples. In other words, the suicide rate decreases with the number of family links. This is true not only in France but in fact in all countries, including China, for which reliable data are available (Richmond et al. 2016).

Admittedly, this was an example in sociology rather than in history, although in our opinion the two fields should be seen in a unified way. A more historical illustration is provided by separatist disturbances. The analysis of a broad set of cases conducted in Roehner (1997, 2002) shows that the level of separatist violence in a region  $\alpha$  of a country  $A$  is mainly determined by two parameters: (i) the degree of isolation of  $\alpha$  with respect to  $A$ . For instance, usually  $\alpha$  is in a remote corner of  $A$ . (ii) the degree of autonomy enjoyed by  $\alpha$  before it became part of  $A$  and how well this situation was accepted in past centuries. The first parameter is geographical whereas the second is historical. In other words, one is here in the same situation as in the case of the pendulum. In Roehner (1997) about 40 cases were analyzed in terms of these parameters. Almost all cases were from the 20th century. By including cases belonging to more distant past centuries (provided one can find data



sources) it should be possible to double or triple the number of cases. This is also what astrophysicists are doing when a more powerful telescope allows them to watch more distant stars; as one knows, farther away means that the stars will be seen as they were earlier in the past.

For the two phenomena that we have just mentioned the variability was small and the sample of documented events was large. These are favorable circumstances which may be fairly rare. In a general way data availability will be the main limiting factor. However, such practical obstacles do not call into question the methodology itself. Even when less cases are available, the categorization method provides a good way to introduce order and patterns where there had been none. Then, in the course of time this classification can be made sharper. Similarly, ever since its introduction at the beginning of the 20th century the “International Classification of Diseases” has undergone a great development.

### **Manifesto for viewing the world in comparative perspective**

The following example about managing big cities suggests that in human affairs making comparisons does not come naturally. It is easier to remain focused on the little world in which one lives than to look outside. However, this may be less true in China. For instance, in Chinese academia there is a time-honored tradition of taking inspiration from western countries. Although interrupted from 1949 to 1975, this tradition was quickly resumed in subsequent years and it remains well alive up to present time (2017) even though, in a number of fields, China was able to take the lead.

#### *How to manage big cities*

All large cities are confronted to similar problems: cars versus public transportation, pollution, homeless people sleeping in the streets, selective waste sorting, and many others. Some cities are able to solve these problems fairly well whereas others are overwhelmed by them.

However, for a city which wishes to learn how to do the solution seems easy. It should send a delegation to study the management of successful cities and then implement these methods in their own city. To our best knowledge this is *not* often done. This suggests that to adopt a comparative standpoint is not something natural. Actually, a close examination of the solutions that worked elsewhere should be mandatory. At least such a comparative study would give a clear understanding of the means that do work even if putting them into effect may, for a variety of reasons, not be easy.

### **Banking on the time-honored Chinese tradition of careful observation**

Our experience of the past 25 years convinced us that the approach proposed in

this book will appeal foremost to persons who take pleasure in making detailed and well focused observations. This is more a question of turn of mind than one of professional education.

The effective cures developed by traditional Chinese medicine show that there is in China a custom of skillful and careful observation. Why do we put an emphasis on observation? For the obvious reason that without Brahe's careful observations there would have been no Kepler's laws and therefore no break-through by Newton. With respect to traditional medicine one can observe that the first scientific Nobel prize<sup>2</sup> attributed to research done in China relied partly on the traditional descriptions of the health effects of various compounds. Conducted in the early 1970s, this research relied on a symbiosis of modern experimental observation and extensive knowledge accumulated by traditional medicine.

It is true that traditional medicine is still promoted and practiced nowadays but in academic circles the mood is more to follow the trends set by highly regarded American universities and western journals. It might seem that this is in line with the spirit of the "New Culture Movement" of the 1910s and 1920s. However, this movement was fairly selective in what it wanted to borrow from abroad. From introducing "Vernacular Written Chinese" (also called "Modern Written Chinese") in replacement of "Classical Chinese" which had become outdated and too rigid, to greater emphasis on science, to women's liberation the efforts and achievements of this movement are impressive; at the same time its association with the "May 4, 1919" and "May 30, 1925" movements which had an anti-imperialist perspective made it suspicious of the real intentions of western countries toward China. The "New Culture Movement" is illustrated in the figure below by two persons who took an active part in it while in their 20s.

Coming back to our question, developing analytical history will require the careful and rigorous handling of a vast amount of historical data and it seems that in China there is a time-honored tradition for doing that. Like "Sleeping beauty" it may just be waiting for a revival.

That is why we are convinced that, in contrast with western countries but faithful to its own tradition, China will provide a fertile soil where the present approach will thrive and bear fruits.

### **The present book and beyond**

In this book we will use the comparative methodology in a fairly loose way in the sense that we will not try to set up exhaustive lists of similar events. Often we will

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<sup>2</sup>The physicists Tsung Dao Lee and Chen Ning Franklin Yang were still Chinese citizens when they were awarded the Nobel prize in 1957, but although they had been educated in China their research work (including their doctoral research) had been done in the US.



**Fig. Pref.3** Toward a revival of the “New Culture Movement” ? Ms. Xiang Jingyu (1895 - 1 May 1928, executed by KMT), left, and Ms. Cai Chang (1900–1990), center, were early members of the “New People’s Study Society”, founded by Mao Zedong in Hunan in April 1918. This society was itself one of the components in the “New Culture Movement” which promoted a selective adoption of some western cultural ways. Their lives attest that getting wealthier which is a key objective in the west was definitely not one of their goals. Instead, they put themselves at the service of the people. Will this spirit of the “New Culture Movement” experience a revival as suggested by the panel on the right which is the cover of the “Sleeping beauty” story? Sources: Various Internet websites

limit ourselves to only two or three cases; nevertheless this will give the “flavor” of the phenomenon under consideration.

Our main objective is to make the book interesting and easy to read. We would like to convey to readers the satisfaction and exhilaration experienced when one realizes that an episode which has just made headlines in the news is in fact modeled on a well-known pattern defined by prior forerunners. This awareness is important because it is the first step in predicting how the episode will likely unfold.

Readers who would like more systematic investigations in which one tries to set up fairly large samples of cases can find such studies in Roehner (1997a,b).

### Comparative history in China

We have emphasized that in the west, apart from isolated historians like Marc Bloch, very few historians have tried the comparative approach. Before closing this preface one must of course ask “What about comparative history in China?” In a sense, Karl Marx’s philosophy should have been a catalyst. Through his books he appears mostly as a philosopher and economist, but in many of the 400 articles that he wrote for the “New York Daily Tribune” he draws parallels between similar events which had occurred in different places. In short, he had certainly the turn of mind of a comparativist. His book on the coup of the 18th Brumaire (Marx 1852) goes in the same direction. Did this aspect of his work have an imprint on some Chinese historians? We do not know.

There is a well known Chinese historian, Ray Huang, whose approach is said to be bordering on comparatism. One can be sure that Huang was not influenced by Marx for he was in fact on the Nationalist side before emigrating to the United States in the wake of the Communist victory. One is tempted to draw a parallel between

Huang and the French historian Fernand Braudel for both try to look at historical events from a distance and to focus on the main processes. In other words, they both *assume* that there are mechanisms which have a broad validity. Huang shows how such mechanisms have worked out in China but he does not attempt to show that they were also at work in other places. In short, Braudel (1967) and Huang (1988) proposed a conceptual framework that needs to be substantiated and tested through upcoming comparative studies.

Needless to say, if there are currently comparative historians in mainland China we would be happy to know them and also possibly to meet them. Any information which would help us to get in touch would be greatly valued. Many thanks in advance.

Finally, before closing this Preface, it may be appropriate to discuss the distinction between normative and factual history.

## Official and normative history versus factual history

### Positive versus normative economics

Economists commonly distinguish positive (also sometimes called factual) economics which describes “what is” that is to say bare facts from normative economics which explains “what ought to be”.

- An example of a positive statement is as follows. “In 2010 income inequality was higher in the United States than in France”.
- An example of a normative economic statement is as follows: “The price of milk should be three euro a liter to give dairy farmers a higher living standard”.

However the distinction between positive and normative statements is not always straightforward. The main reason is because, apart from openly acknowledged preferences, there are also inclinations that are accepted implicitly. For instance, it is a commonly accepted belief (except possibly by some ultra neoliberal economists) that high income inequality is less desirable than moderate inequality. This would make our previous example of a factual statement also partly normative. The question becomes even more involved when one observes that inequality can be measured in various ways (e.g. by the share of total income received by the top 1% or by the Gini coefficient). In other words, the same situation may be viewed differently when assessed through different metrics.

However, it seems clear that no matter how difficult it may be, one should always try to separate factual from normative facets. Not to do that can only lead to confusion and bias.

### **Official and normative history versus factual history**

While important in economics, this distinction is even more crucial in history. A simple reason is that most historians write the history of their own country which leads them to adopt a particular national perspective. For instance, in the account of an anti-colonial conflict, the same warriors will be called terrorists by one side and freedom fighters by the other. As another example, there is a French king who is called “John the Good” (1350-1364) but whose reign actually was a complete disaster for the country. His army was defeated, he was taken to England as a prisoner and his kingdom sank into chaos. Why he should be called “the Good” remains a total mystery.

### **Comparative history and factual history go hand in hand**

In his book “Rules of Sociological Method” mentioned earlier, Emile Durkheim says that social phenomena should be studied “from outside”, exactly in the same way as physicists study natural phenomena. In a similar vein the French historian Marc Bloch was telling his students that no chemist would ever say that oxygen is “good” whereas chlorine gas is “bad”. Nevertheless, in reading their dissertations, he found out that it was very difficult to prevent them from blaming or praising. Accounts in which one uses the words “mistake”, “wrong”, “crime”, “rehabilitation”, “reparation” clearly belong to normative history.

In this respect the best antidote is certainly to adopt a comparative perspective. One may deplore the great number of lives lost in the American Civil war, but a comparative study of civil wars quickly leads to the conclusion that all civil wars are ruthless and brutal conflicts which bring about much misery for the population. The American Civil War is no exception.

We are told that in China it took almost two decades to write an official history of the Communist Party because it had to be approved by the leadership. Similarly, in the United States after each war or occupation of a foreign country professional historians working for the Department of Defense produce an official historical account. For instance the history of the American occupation of Japan comprises no less than 45 volumes. Despite this large size there are many facets of the occupation which are purposefully omitted because they are at variance with the representation of the occupation that the State Department wants to give.

These are clear examples of normative historical accounts. On the contrary, throughout the present book, we try to restrict ourselves to factual history. Remaining focused on a comparative perspective greatly helps to achieve this objective.

### *Reading advice*



*In comparative analysis one difficulty is that one is led to analyze many cases which may have occurred in various countries and with which readers may not be familiar. It is of course impossible to explain all cases in detail for it would require a book of 2,000 pages. So, what is the solution?*

*A possible solution is Wikipedia.*

*It may be true that some Wikipedia articles are biased or not well informed, however by and large it is a very helpful tool. So, we would suggest to our readers that every time they are not familiar with a question mentioned too briefly in the book, they can get a closer view by reading the corresponding Wikipedia article(s).*