JULIUS CAESAR'S SYSTEM UNDERSTANDING OF THE GALLIC CRISIS: A PEEK IN THE MIND OF A HISTORY MAKER

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ABSTRACT

When studying history, it usually through the accounts of the achievements of some outstanding leaders, who were capable of grasping the defining elements of the complexity of situations they faced, like Julius Caesar, whose political career was a collection of successes that were the result of his deep understanding of the Roman society and of his sensitivity in appreciating the complex situations in the lands under his control. In this work we will focus on the early stages of Caesar's campaign in the Gallic war. By a Systems Thinking approach, we will retrace Caesar's thought process, thus showing that what Caesars faced in those years is no different from many situations that today's policy makers are required to manage. It is striking to see how many similarities there are between then and now, and how many lessons could be learned (re-learned?) and applied by our policy makers. Caesar's decisions and following actions were, in fact, the consequence of his deep and thorough understanding of the environment, and because of such systemic comprehension, he could achieve Rome's desired end-state: securing the northwestern borders. Rarely, modern day interventions, despite military victories, are able to generate the same kind of long lasting solutions.

Keywords: Simulation in History, Conflict, Insurgency and Counterinsurgency, Social Unrest, Crisis management, Operations Planning, Complex Systems Understanding, Policy Modeling, Systems Thinking, System Dynamics, Computer Simulation.

1. INTRODUCTION

> *[…]Gallia est omnis divisa in partes tres, quarum unam incolunt Belgae, aliam Aquitani, tertiam qui ipsorum lingua Celtae, nostra Galli appellantur. […]*[1]

Could it be possible that modern day decision makers, notwithstanding the vast amount of readily accessible information, and the state of the art competences available to interpret it are, in fact, no better off than their noble ancestors, who had to make decisions based on limited, hard to obtain, and even harder to decipher information?

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[1] For the purpose of this article, we used the version of the Commentaries of the Gallic War by Julius Caesar translated by McDevitte & Bohn (Harper & Brothers, 1869), available online at the following link: http://www.forumromanum.org/literature/caesar/gallic.html.

Let there be no mistakes: things have always been complicated for those with the burden of shaping the course of events. And the paths of history are filled with people who missed their chances of leaving their mark. But someone did stand out. And when we study History, it is usually done through the accounts of the achievements of such individuals. When we analyze more in depth what did these individual do differently from others, a recurring trend seems to emerge. They were capable of grasping the defining elements of the complexity of the situations they faced. They were able to interpret the intertwined relations among such elements. And lastly, they could infer the subtle connections between causes and effects, however separated in time and space. And all of that in spite of the difficulties in obtaining accurate, timely and reliable information.

We could say that their decisions were, most of the time, in harmony with the prevailing dynamics of the systems they were trying to influence. Maybe it was intuitive to them. Maybe it was a matter of genius. Maybe they were just lucky all the times. Whatever the case, when we look at their deeds, and the long lasting effects of the courses of actions the set in motion, we cannot help but noticing that, indeed, they had a deep and thorough system understanding of their environment.

We believe that Julius Caesar was one such individual. His outstanding political career is a collection of successes that were the result of his deep understanding of Roman society and power dynamics. Unfortunately (for him), it was at the peak of his power that some undesired effects of his politics led some aristocrats to resort to murder to change the course of history. But, however controversial Caesar's life and death may be, the aim of this work is to use some of the historical facts that characterized the era in which Caesar lived, to show that, if anything is to be learned from the past, it is that long lasting effects are usually linked to policy intervention carried out with a full system understanding of the problem.

The focus of this work will be on the early stages of Caesar's campaign to secure the Gallic region, from the initial planning phases of the Helvetii migration in 61 B.C. until their defeat in the Aeduans territory in 58 B.C. We will try to retrace Caesar's thinking process, aided in this task by the insights that Caesar himself shared with posterity by means of his personal accounts of the facts. Of course one could (and probably should) argue that Caesar's Commentaries are only partly objective accounts of historical events, biased as they were in emphasizing Caesar's achievements, whilst minimizing any shortcoming. Nevertheless, enough consensus among scholars has developed around how historical facts have indeed unfolded. Reading Caesar's diaries with a clear picture of the facts, allows us to profit even more from the analysis of the thoughts and intentions at the origin of his decisions. Witnessing the thought process of a policy maker is a very rare thing nowadays. Being able to be "in the mind" of one such policy (and history) maker, should be considered a privilege.

We will argue that what Caesars faced in those years is not much different from many situations that current day policy makers are required to manage, on a global scale. Gaul was at the time an incoherent agglomerate of peoples with conflicting goals and motivations: fighting with each other, siding with each other (often shifting sides), conquering or being conquered by aggressive neighbors, depending on foreign aid and protection, yet being thorn by the "subjugation" that ensued, and many more attributes. Ambitious leaders could easily leverage people's sense of frustration (and everyone was frustrated by someone or something[2]) and start subversive movements, or a campaign to

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[2] As an example: the Helvetii were frustrated with their narrow land and aggressive German neighbors; the Belgae by being invaded by the Germans, the Aedui by being threatened by the Helvetii and divided on the issue of Roman help.

conquer new lands, or (what concerned Caesar the most) trigger a southbound invasion into Roman territory.

It is striking to see how many similarities there are between then and now, and how many lessons could (should) be learned (re-learned?) and applied by modern policy makers. What Caesar did and the way he did it shaped the environment with long lasting effects. Ruthless at times, true, but those were the "standards" of the time, and we will not pass any judgment on that. What is also true, though, is that Caesar's military victories were only one of the levers of power and influence at his disposal. And he used it with extreme caution, carefully balancing it with acts of diplomacy, political influence and social foresight. He spared the lives of subversive leaders, in order to preserve his consensus among the Aeduan people; he ordered the Helvetii back to their land, so to contain the German[3] southbound pressure; he forced other populations, already part of the Roman province, to have positive relationships with the defeated Helvetii, so to foster a sense of security and stability in the Helvetian people. In this paper we will argue that all these and other decisions (and the acts that followed) were, in fact, the consequence of a **deep and thorough system understanding of the Gallic environment**, and that because of such refined comprehension, Caesar was able to achieve Rome's desired end state: security of the northwest borders. Rarely, modern day interventions, despite the often recurring military victories of our contingents, are able to generate the same kind of long lasting *steady state* solutions.

To get to our conclusions, we will follow the analytical approach developed in (Armenia & De Angelis, 2013), where a methodology for the assessment of an international crisis was presented. This methodology allows us to gain insight into situations characterized by deteriorated governance, widespread use of violence and precarious human conditions. We deemed the Gallic situation to present traits of unbalance in all three areas and therefore it fits the requirements to be analyzed with such methodology.

With a long stretch (very long, indeed) of imagination, we will pretend that Caesar himself used the same approach to assess the situation that he was trying to change in his favor…

2. CONTEXT

"The northern world beyond the Alps was one of chaos, a lawless land in which countless barbarian peoples lived and fought with one another. Or so the Romans imagined it" (Thorne, 2003). Such common and widespread vision of the areas north of the Alps was mostly based on ignorance and, in some cases, resentment for past offences perpetrated by Gallic peoples. Whether this was the same point of view shared by Caesar, when he set off to "fix" the Gallic problem or not, it is hard to say. What transpires from his Commentaries, though, is a deep and thorough understanding of the complex dynamics that characterized the region.

To properly set the context of our study, in this chapter we will provide the reader with a brief recollection of the historical facts under scrutiny. This will be done in a very synthetic way, whilst still trying to introduce all the relevant elements that, in the next chapters, will be analyzed from a system's perspective.

But before we do any of that, we need to define the boundaries of our examination (which will also be the boundaries of the model we will introduce later), by clearing the

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[3] Throughout this paper the term German(s) will be used to refer to the Germanic tribes and peoples that, in the original Latin text, are called *Germanis.*

field from some historical considerations that, however true, fall outside of the scope of this analysis.

(1) The reasons why Caesars moved war in Gaul.
It is probably true that "*[t]he conquest of Gaul was an aggressive war of expansion led by a general who was seeking to advance his career and standing amongst his peers [...]*" (Gilliver, 2002). However, because the focus of our analysis is on the events that precede Caesar's completion of his ascension to power and, in particular on the long lasting stabilizing effects that his intervention had in the Gallic land, it would not change the nature of our conclusions to consider Caesar's personal motivation for venturing in this campaign. Such an argument would equate to considering modern day leaders' personal motivations behind any policy intervention they undertake, especially in the international crisis domain. It doesn't help and it doesn't change the nature of the analysis and/or validity of the conclusions.

(2) The customs of war of the time.
When studying historical events, one should try to wear the lenses of the time under scrutiny, and refrain, as much as possible, form passing moral judgment based on the sensibilities of today on events that date back more than two thousand years. That being said, we can assess that, however different from today's standards, the acts of war performed by Caesar and his legions were in line with the prevailing ethics of the time and that Caesar "*[...] was acting within the expectations of Roman society and its value systems*". (Gilliver, 2002). Specifically*,* As far as the role of war in Roman culture, it is worth noting that "*The Roman heroic ideal was not aggression for the purposes of conquest but in defense of the state's boundaries and security. According to traditional Roman custom, war was justified [...], at least formally, by the need for self-defense or the protection of its allies*" (Conti, 2003). Both these aspects are very important for the scope of this paper, because, as we will see, most of Caesar's decisions and actions were deeply influenced by the prevailing ethics of the time (the role of the loyal ally in the area, the practice of trading hostages, slaughtering of conquered peoples, revenge for past offenses, etc.).

(3) The general context of the era.
Many themes overlap in the years that precede and follow Caesar's campaign. All equally important, all equally influential at shaping what soon became the Roman Empire. The impending civil war, the social turmoil, the Romanization of most of known territory, the economic dimension, the role of war and victory in Roman politics, and many more. Our analysis will consider most of these aspects only marginally. The focus of this work will rather be on highlighting the systemic nature of Caesar intervention in Gaul, as this was capable of generating long lasting positive effects (from Rome's point of view, of course) and "[...]*brought Gaul into the Roman empire and began a process that had a profound political and cultural impact on western Europe*" (Gilliver, 2002).
Opening the field of analysis to encompass the multiple dimension of Roman expansion would turn this short paper into a History book. And that has already been done by many other, much more qualified, scholars.

And now we can proceed with a brief account of the historical facts.

61-58 B.C. The Helvetii feel constrained by the limited and inhospitable land they inhabit and are under constant pressure from Germans incursions. As a matter of fact, it was due to earlier German migration that the Helvetii were forced into their land, coinciding with modern day Switzerland.

Under the guide of Orgetorix they resolve to migrate to the southwest and conquer a wide portion of Gaul. The preparation phase lasts 3 years. Orgetorix seals a secret pact with Casticus and Dumnorix who were chieftains of some tribes of the Sequani and Aedui peoples, respectively. Under provisions of this pact, after becoming kings of their respective peoples, the three would join forces, support each other and share the conquered land. Orgetorix secret pact is discovered by the Helvetii and it is judged as an act of treason. Orgetorix is therefore sent to trial but he will commit suicide before the final hearing.

58 B.C. – March. The Helvetii preparation continues regardless. On March 28th they burn their villages and strongholds and, disregarding the Romans, they chose to travel through the Narbonese province (also known as Transalpine Gaul). Caesar, whom has just become proconsul of Transalpine Gaul, receiving the news of the impending migration, collects two of his legions and gives start to his expedition to Gaul. He arrives as the Helvetii are about to cross the River Rhone, near the Geneva Lake. He destroys the bridge and orders to block the path chosen by the Helvetii.

58 B.C.-April. The Helvetii send a delegation to negotiate a peaceful passage through the Roman province. Caesar buys some time to create a defense apparatus and on April 13th he negates the Helvetians' requests and warns them not to disobey, or he'll move war on them. The Helvetii try repetitively to force the Roman fortification, without success.

58 B.C. – April-May. Unable to proceed along the desired route, the Helvetii, resorting to the help of Dumnorix and Casticus, arrange a passage through the Sequani territory directed southwest towards Toulouse. That is too near to a Roman city and this gives Caesar the pretext to take measures and cross the border in pursuit of the threatening Helvetii. He gathers two more Divisions from Cisalpine Gaul and proceeds to intercept the Helvetii. He catches up with them in the Aedui land. The Aedui, in the meantime, unable to stand the impact of the invasion, ask again for Caesar's help (a delegation of Aeduan chiefs had previously travelled to Rome to put forward their requests for help to the Senate). Caesar accepts, provided they support his troops with logistic supply.

58 B.C. – May. The first battle takes place while the Helvetii are crossing the river Saone. The Romans destroy the rearguard of the Helvetian contingent, namely the Tigurini tribe. Incidentally this is the same tribe that defeated the Roman army in the year 107 B.C. and Caesar make a clear point in highlighting this fateful coincidence, mostly to corroborate the justness of the campaign. After the defeat of the Tigurini, the Romans, in just one day, build a bridge on the River Saone that had taken the Helvetii almost three weeks to cross, and set off to chase the other Helvetian divisions. The Helvetii decide to stop and negotiate a peace accord.

Caesar refuses to grant peace, unless the Helvetii are willing to leave hostages and repay damages done to the invaded people (mostly to the Allobroges and Aedui). They say they will not leave hostages, and decide to continue along their route.

They are chased by Roman cavalry that gets too close to the rearguard of the Helvetii. They become engaged with a small unit of the Helvetian cavalry and 4000 Roman cavalry are defeated by no more than 500 Helvetii cavalrymen. This victory re-invigorates the Helvetii and their resolve to conquer new lands, even if they have to confront the Roman army in the process.

58 B.C. – May-June. During this phase, the Aedui fail to deliver the promised food and supply, and Caesar enquires the Aeduan leaders (Diviciacus and Liscus). They confess to Caesar that there is an insurgency campaign led by Dumnorix, brother of Diviciacus, who is turning large parts of the Aeduan people against the Romans and is deliberately

sabotaging the collection and distribution of goods for the Roman troops. Caesar needs to stop this interference and demands that the matter is dealt severely by the Aeduan chiefs or else by him personally. Dumnorix begs Caesar to spare his brother, for fear that any action against Dumnorix would be interpreted by the Aeduan people as proof of total subjugation of the Aedui to the will of Rome (which was the same message used by Dumnorix to instigate the Aeduans to oppose Rome's army). This would, in turn, further undermine the Aeduan chiefs (Diviciacus and Liscus) leadership among their people, with the risk of losing control of the majority of Aedui. Caesar appreciates their advice and the negative impact that a public punishment to Dumnorix would elicit on his objectives, and, valuing their loyalty and friendship, forgives Dumnorix and places him under special monitor.

58 B.C. – June. In the meantime the Roman army catches up with the Helvetian near the town of Bibracte, and the main battle takes place in the following days. Saving the details of the fight (which Caesar describes with plenty of Roman-virtue-celebrating accuracy), suffice to say that the outcome eventually favors the Romans, who are then ready to dictate the conditions for peace:

1) The Helvetii are to return to their villages.
2) The villages have to be re-built and the cultivations restored.
3) The Allobroges (invaded by the Helvetii) will give the retreating Helvetii food and supply.

3. LITERATURE REVIEW

Most of what we know of the period comes from Caesar's Commentaries, both of the Gallic and the Civil War. Much of the historiographical production in the centuries (millennia!) that followed revolves around supporting, confuting and compensating the thesis and themes reported by Caesar himself.

In preparing this paper we have tapped into this pool of "comments to the Commentaries" in order to reconstruct a commonly agreed version of how the events, most likely, have really occurred. And what we presented in the previous chapter was a synthesis of our study. But, as we said in the premise, our knowledge of historical facts was just means to an end: that of highlighting the systemic nature of Caesar intervention in Gaul. To this end, the main source of knowledge has been Caesar himself! For the purposes of this work, we have used one of the many translations available, namely the Commentaries of the Gallic War by Julius Caesar, translated by McDevitte & Bohn, edited by Harper & Brothers, 1869 (McDevitte & Bohn, 1869).

That being said, it would be arrogant on our part to disregard the contributions to the interpretations of Caesar thoughts that came from reading other analysis on the same themes.

The volume "Essential Histories 43: Caesar's Gallic Wars, 58-52 B.C.", by Kate Gilliver, has helped in placing Caesar acts within the larger scheme of his political ambition and the decline of the Roman Republic, other than being one of the most historically accurate reconstruction of the events (Gilliver, 2002).

Some older Italian scholars' comments to Caesar Commentaries provided deep insights into Caesar's role in the greatness of Rome (Giannelli, 1947) and, partly responsible for the main intuition of this paper, into the systemic approach that permeates all of Caesar's decisions and actions (Gerunzi, 1898).

One important part of our analysis rested on accurate descriptions of the main social and ethic themes of the times, as well as a description of the main dynamics in the politics of the later Republican years. All of these themes we found in the volume "A Profile of

Ancient Rome" by Flavio Conti (Conti, 2003) and also in the analysis of Caesar persona carried out by Nic Fields in his "Julius Caesar" (Fields, 2010), and by James Thorne, in the volume "Julius Caesar: Conqueror and Dictator" (Thorne, 2003).

In this work, as mentioned in the introduction, we try to retrace Caesar thought process in assessing a complex situation that he wanted to change. In our mind and ideas, modeling a series of historical events fulfilled a need to develop a sound understanding of what we believe to be some recurrent traits of history. To a certain degree, we share the view of the Italian philosopher Gianbattista Vico (an early hour system thinker!). His theory of historical reflux (Croce, 1913), in our opinion, provides the intellectual backbone upon which any attempt to learn from history is built.

In this endeavor, our choice to resort to the tools and instrument of Systems Thinking and Systems Dynamics, although quite unconventional, has had some illustrious precursors that we will cite in a moment.

Moreover, the more general issue of using modeling and simulation techniques in assessing the outcomes of history has been long debated over the years.

Traditional and typical tools of historians are archival, paleontography, diplomacy, heraldry, numismatics, exegesis of sources, chronology, metrology and sphragistics, but also, technologically speaking, remote sensing, radiocarbon C14 method, IT, etc., as well as methodologies like statistics and econometrics. But what about modeling and simulation?

The only "true" historian to promote a modeling and simulation approach has been the Spanish economist Pedro Voltes Bou, in his "*La Teoria General de Sistemas y la Historia*" (Voltes Bou, 1980) and "*Nuevos criterios auxiliares para el analisis historico*" (Voltes Bou, 1983). Other attempts to quantitatively model history have been tried by means of a demographic approach (Bloch et al., in the famous "Annales ESC" 1968, Emmanuel Todd 1976, Luigi Bulferetti 1953, Carlo M. Cipolla 1962), but the main criticism for which quantitative history seems not to have brought so far to the expected results is that often quantitative analysis in history has been merely reduced to an elementary descriptive statistics, which of course (at least in our perspective of modelers of complex systems) cannot be satisfying.

As Itzcovich stated in his "the use of computers in historiography" (Itzcovich, 1993), quantitative analysis in history should recur to different and "richer" techniques (other than the classical ones), like modeling and simulation, due to their more penetrating procedures in capturing the development of quantitative history. But why do historians (that nonetheless are capable of dealing with source-rich ages) do not take advantage of modeling and simulation? As Bianchi & Marcialis (Bianchi & Marcialis, 2013) state in one of their recent work on this theme, "a simplistic interpretation could be that historians do not feel the need of it since they consider the mass of available data and its statistical elaboration sufficient to formulate their interpretations." They consider historical events as unique and non-repeatable ones (Joynt & Rescher, 1961) holding the view (partly shareable under certain assumptions, (Sterman, 2002)) that a model is a simplification of reality. Surely, some fears of Scientism and Historicism may also hold, as well as some fears of not being able to validate certain theories. Additionally, for non-modelers, formalization of models may turn out to be a heavy investment without any guarantee of success and/or return.

Last but not least, while quantitative history is generally tolerated, the modeling & simulation approach is on the other hand very much opposed by "orthodox" historians, as they tend to see it as a branch of the hated philosophy of history or, worse, of alternative history (what-if…). All the same, as we know in our culture of modelers of

complex systems, we have evidence of the fact that a virtual laboratory is helpful in verifying and validating hypotheses, helping also in making some order in the abundance of data, determining operational priorities (i.e.: sensitive analysis) and orient future developments in the investigations. Additionally, as the process of building a model represents, per se, a sort of storytelling, it turns out to become also a less ambiguous way to communicating certain hypotheses as well as results. And from all this, stems our decision to resort to modeling and simulation to draw some valuable lessons from historical events. We found that a model of Caesar's understanding of the area of interest was a powerful instrument in our attempt to validate the hypothesis of a recurrent pattern in the escalation of an international crisis. And, along with that, we were attracted by the idea of a historically-proven effective approach to deal with such crises.

However, Bianchi and Marcialis (Bianchi & Marcialis, 2013) also state that "a suspicion may arise: Do historians and social scientists still suffer the late nineteenth-century dichotomy between "spiritual" and "natural" sciences pointed out by Dilthey (Dilthey, 2002), or the dualism between nomothetic and idiographic sciences introduced by Windelband (Windelband, 1884)(pp. 160-167), and the bridge between the two cultures (Snow, 1959) has not yet been completed?" A deep treatment of these motivations goes beyond the extent also of this contribution, which, however, by obviously claiming to be non-resolutive, can offer an additional contribution to the debate on the adoption of formalized approaches for historiographical research.

In order to provide in this paper at least an idea of what has been done by using modelling and simulation techniques and, specifically, also by using the system dynamics methodology, we like to report in the following a brief résumé of some interesting works.

Previous reference and notable work has been carried out (to name but a few) with reference to:

(a) **theory validation**, by (1) Domingo & Varsavski (1964), who have performed an attempt to model the Utopia of Tommaso Moro, (2) Lepschy and Toynbee (1976), trying to identify archetypes in civilizations, (3) Wegman (Wegman, 1977), trying to validate the *counterwill* theory of Sigmund Freud, (4) Itzcovich (1978), attempting to validate the feudal systems theories by W. Kula, (5) Sterman (Sterman, 1985), describing the theories of T. S. Kuhn on scientific revolutions, (6) Torrealdea & Grana (Torrealdea & Grana, 1984) on the historical dynamics of Ortega y Gasset.

(b) **Urban Dynamics** (based on the work from Forrester, 1969), we can cite the work from: Schroeder (1974) on the manufacturing town, Zubrow (1978) on Imperial Rome, Costa (1973) on contemporary Venice;

(c) the **theory of catastrophes**: Mees (1975) on the rebirth of medieval towns, Van Parijs (1978) on historical materialism.

(d) **the collapse of the Maya civilization**: Hosler, Sabloff & Runge (1976), Aracil & Toro (1984), Lowe (1985), Coyle (1996), Szulanski (1999), Lum Forest (2007)

(e) **the Anasazi civilization disappearing from the Colorado Plateau**: Low (1979, a conceptual SD model), Kohler (1992, ABM), Gumerman (1991, ABM), Axtell & Epstein (1998, ABM), Cordell (1978)

(f) **the birth of Etruscan proto-cities**: Parisi (1999), Piattelli & Bianchi (1998)

(g) **contemporary and modern ages**: Rastogi (1973), Homer (1982), Moffatt (1983)

(h) **empires & civilizations**: Cooke (1974), Gil et al. (1986), Richards (1989), Piattelli & Bianchi (1994), Lum Forest (1995, 1997, 1998), Parisi (1998), Sverdrup (2002), Gallo (2007), Turkgulu (2008)

(i) **developments of the Kuhn model** (with System Dynamics): Sterman (1981), Wittenberg (1990), Wittenberg (1992, and comments from Sterman, Barlas and Radzicki), Wittenberg and Sterman (1992, 1993, 1996, 1999)

(l) **conflicts dynamics**: Coyle & Piattelli (1995), Gallo (2012)

4. BUILDING A "GOLDILOCKS" MODEL OF THE GALLIC CRISIS

For the analysis of Caesar campaign in Gaul, and the considerations that will follow in the next chapters, we will build on some previous work (Armenia & De Angelis, 2013) where a methodology for the assessment of an international crisis was presented. That study describes a simplified process to come to a system understanding of a complex crisis. And from what has been discussed so far, it should be clear by now that the situation Caesar faced in 58 B.C. was, indeed, a complex crisis! We therefore believe that the process introduced in that paper is capable of helping us interpret, with a systems perspective, some of the events that shaped the course of history and determined much of what Europe is today.

Step 0 – Analyze the context
With the term Gaul we refer to the geographical portion of land that is today occupied by France, Belgium, the Netherlands, part of Germany (west of the River Rhine) and Switzerland and other portions of the territories in central Europe. No Gallic nation ever existed. In those lands three main peoples lived: the Belgae in the northeast, the Aquitani in southwest, and the Gauls in the center and southeast. All of these peoples were further divided into tribes. One of these were the Helvetii, belonging to the Gaul people and constantly engaged in battle with the Germans in the north. Another important tribe (for the aim of this work) was the Aedui one, a powerful people in the middle of Gaul who were the main ally of Rome in the area. To the east of Gaul there were the Germans, a warring people with an ambition to expand westbound, into Gallic territory, and southbound, through the Helvetii and into Roman territory.

Figure 1 depicts the territory Gaul and the distribution of peoples that inhabited it.

After this brief overview, we shall delve into the main aspects of the situation in Gaul, by analyzing the main system domains in which most of the interactions that we will later explore took place.

Figure 1: Map of Gaul

These domains are (a) the political, (b) the military, (c) the economical, (d) the social, (e) the infrastructural, and (f) the informational one (usually grouped together and referred to with the acronym PMESII).

(a) Political systems

The events of the Gallic War took place in a time of decline of the Roman Republic and transition toward the Empire. All of the republican institutions were still active, although void of much of the power previously detained. As a consequence, many informal ways to wield power were carried out by influential persons. As it is well known Caesar was one of these figures of power. He had held several public offices in the years preceding the Gallic campaign. He had in fact pursued all the required steps of the *cursus honorum* (*Quaestor* in 68 B.C., *Curule Aedile* in 65 B.C., *pontifex maximus*, *Praetor* in 62 B.C.) all the way to the highest electoral office, when he was made *Consul* for the first time in 59 B.C. Parallel to his political career he cultivated an ambition to secure a more permanent form of power in Rome. To this aim, he sealed a pact with Pompey and Crassus prior to becoming consul. Under provision of this pact, known as triumvirate, the three would have supported each other in specific ways: Pompey and Crassus would have favored Caesar's ascent to consulship; Caesar, in return would have granted territories and other political and economic favors to both. But the pivotal event of the pact was the guarantee that after his term as consul, in 58 B.C., Caesar would be sent to Gaul as the proconsul (a figure which can be considered equal to that of governor). Ruling over a province, at the time, was a very effective way to increase one's power, influence and, not least importantly, wealth.

This short overview of Rome's political system and, most importantly, Caesar's role in it, is to gain insight into Caesar's mindset when he started the campaign: to him the "Gallic problem" was a political one, not just a military adventure. The decisions he made during the nine years of the Gallic war were greatly influenced by the need to stabilize a situation of which he had taken full ownership and responsibility. He received a mandate by the Senate, but after leaving Rome for the

Roman province, he was pretty much a political authority of and on his own, with all instruments of power at his disposal: an army of six legions, the loyalty of his military men, the riches from the lands he administered and the strong influence of his political and diplomatic power.

On the other side, the peoples of Gaul were tribal realities with varying degree of civilization. Each tribe had a council of elders, and initially a king. Later, the executive was an annually-elected magistrate. Within each tribe, usually, there were two parties active: an aristocratic and conservatory party, representing the interests of the ancient families; and a "democratic" party, especially active in those tribes with an "urban" dimension, representing the interests of the general populace, seeking the establishment of electoral systems, strongly supported by the religious class of the Druids. Despite this dialectic, the tribes were moderately stable political entities. However, Gaul as a whole tended to be politically divided, there being virtually no unity among the various tribes.

As the Roman influence in the area grew bigger, even within a same tribe, in additional to the existing political tension, there would be divisions and diverging interests between those who sided with the Romans and those who countered (and often fought) their presence.

With regard to the main peoples and tribes that have an active role in the events we are about to analyze, among the Aedui tribe the executive held the title of "Vergobret", a position much like a king, but its powers were held in check by rules laid down by the council. Diviciacus and Liscus were Vergobret at the time of Caesar campaign against the Helvetii. Dumnorix, brother of Diviciacus, was a powerful and influential chieftain of one of the Aeduan tribes: he was a stern opponent (and, as we will see, a subversive fighter) of Rome's presence in the area. The other people we are concerned with are the Helvetii, whose political system was not much different from the other Gallic tribes. Leadership was granted to distinguished men (mostly through military valor) who were, ultimately, "checked and balanced" by magistrates representing popular favor.

Military prowess and, more than anything, valor in battle, were the traits that granted the highest regards. Orgetorix was the leader under whose rule the plan to migrate from the Helvetian region (coinciding with modern Switzerland) took on. Such was his influence that he conceived and directed a meticulous three-year plan to prepare for the migration, including sowing and reaping large stocks of grains, gathering supplies, training to fight and so forth. But his ambition went beyond just moving his people away from the German incursions and the limited land they inhabited. Secretly he sealed a pact with neighboring tribe leaders to join forces and conquer the territory of west Gaul. Among these leaders was Dumnorix of the Aedui, brother of Diviciacus the Vergobret. The plot to join forces with other tribes cost Orgetorix his life as his people put him on trial for treason.

(b) **Military systems**

The Roman army at the time of the Gallic campaign was a professional one, pretty much in the modern sense of the term, with many soldiers in the legions regarding their military service as a career. The soldiers were equipped, trained and paid by the state, often serving for many years at a stretch.

Fighting a war in a faraway region meant that the Romans had to rely on external logistic support. This was provided by regional allies that in return benefited from Roman protection and a more complete participation in Roman life. The Aedui had this role in the area.

The Roman forces at Caesar's disposal consisted of six legions numbering c. 24.000–30.000 men, as well as unknown numbers of auxiliary infantry and cavalry. Whilst four legions were formed by veterans, two of these were newly recruited among the provinces and many of the auxiliaries were Gauls. Their fighting capabilities must have been suspect. As was so often the case, the weakest part of the Roman army was the cavalry. Caesar, in fact, had to rely on 4.000 cavalry raised from the province, the Aedui and their allies. This force was commanded by Dumnorix of the Aedui.

The Gallic armies were completely different. Gallic warfare was based on the values of a warrior society; while the elite warriors may have been able to spend time raiding neighboring tribes and may have possessed high quality arms and armor, tribes were unable to maintain armies for long because of the lack of any organized supply system and the need for many of those fighting to return to their fields (Gilliver, 2002).

The Roman conquest of Gaul was a clash between two cultures employing very different methods of waging war.

With reference to the forces on the field on the party that opposed Roman presence, there are no figures for the size of the Helvetian army; their allies, the Boii and Tulingi, numbered c.ca 15.000, and it is unlikely that the total Gallic army was more than c. 50.000 men, even though Caesar claims them to be 92.000.

(c) Economic systems

Though Gallic tribes and Rome regularly fought each other, commercial links and trade were very well established between Rome and the peoples of Gaul. Roman traders were very active in Gaul, well before the conquest under Caesar, particularly in the southern and central areas. They too helped to spread their own culture, exchanging 'luxury' goods such as wine, in return for grain, iron, hides and slaves. Wine grew particularly important among the Gauls (or at least the Gallic elite), to the point that it became a key symbol of wealth, status and 'civilization'. Quite significant for the impact on the dynamics within the Aeduan people, Dumnorix, one of the main opponents of Roman presence, held a monopoly over the wine trade on the Saone, a tributary of the Rhône, and probably resisted the growing Roman influence for economic as well as political reasons.

(d) Social systems

The social structure of the Gauls, with various grades of development, was preeminently that of a tribal system. The conquest of Gaul took place amid cultural change in both Gaul and Rome. By the mid-1st century B.C., parts of Gaul were starting to become urbanized and Romanized as they adopted some of the customs of the inhabitants of the neighboring Roman province of Transalpine Gaul in southern France, mostly due to the very active trading lanes.

Such tendency is often described by Caesar himself when he depicts (often with a vein of contempt) some of the more "civilized" people as *influenced by those things which tend to effeminate the mind* (McDevitte & Bohn, 1869).

Despite Caesar's judgment on the customs of the Gallic people, what transpires is that Gaul was progressively adopting elements of the Roman society and that this fact was, at the time, an advantage for Caesar. The spreading centralization and tendency towards urbanization made such tribes easier targets for Rome, and internal factions within them helped the Romans too.

(e) Infrastructure systems

With Rome's net of infrastructure being the benchmark of the time, the Gallic area fell way short of this standard. What is worth mentioning, though, is that Caesar ability, and that of his experienced engineers, allowed him to overcome the

absolute lack of structures and infrastructures in the region. They actually built things that they needed in order to proceed (bridges, fortifications, camps, roads, etc.) that long outlasted the Roman presence in the area. This remarkable ability (often celebrated by Caesar himself) gave the Romans a huge advantage over the valiant Gauls, despite the fact that they were fighting in their own territory.

(f) Information systems

Regular, ordinary information in those days traveled by horse! Important field messages, though, were delivered by Caesar in person, after summoning tribe leaders. Communication between people from different languages, took place using interpreters, whose role was so delicate and crucial, that only those held in the highest esteem by Caesar would be allowed to translate his private conversation with the Gallic leaders.

Step 1 – Define the main actors and their interests, motivations, capabilities and objectives.

In this phase we will analyze the main actors that are involved in the situation faced by Caesar at the beginning of the campaign against the Helvetii. These are:

1) The Helvetii.
2) The Germans.
3) The Aedui people and their leaders.
4) Dumnorix and the Aeduan insurgents.
5) Rome (and Caesar!).

Each of these actors will be investigated in their motivations, interests, capabilities and, lastly, objectives, in an attempt to build a mental picture like the one in Figure 2.
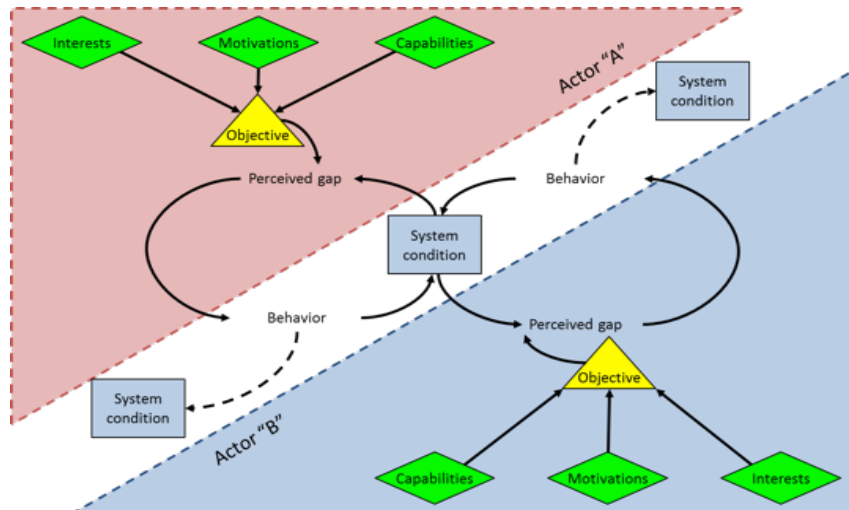

Figure 2: Actors overview

1) The Helvetii
   a) Motivations
      The Helvetii are depicted as a people under pressure: by the invasive German neighbors and by the limited and inhospitable land they inhabited. The first factor deeply affected their sense of security. The Helvetii were always engaged in battle with the exuberant German warriors and the outcome of the battles, although they were able to fence off most of the German incursions, could not be guaranteed any longer. **Security** was, therefore, one of the main elements of motivation upon which some of the decisions that we have discussed and will discuss were taken.

The second aspect that motivated the Helvetii to migrate was the **perceived narrowness of their natural borders**. Coupled with a growing population, this created a major state of need: the land they occupied was no longer sufficient to provide for the wellbeing of the population, and occupation of new territory was unavoidable.

Military ambition was also a contributing factor in their resolve to migrate and conquer other territories. A charismatic leader would be needed in order to catalyze people energies toward a common goal: and such was, initially, the role of Orgetorix.

b) Interests

The main interests of the Helvetii were those related to providing for their own sustainment and to increasing the probability of success of their endeavor. **Trades with neighboring tribes** and **alliances with other ambitious leaders** were two of the most relevant aspects. The availability of allies in the area, in particular, was a main catalyst for the decision not only to migrate, but also to defeat other tribes and occupy their land. It is thanks to the intervention of Dumnorix (with whom a pact had been sealed), for example, that the Helvetii were granted passage through the land of the Sequani, toward whom Dumnorix had a strong influence (mostly due to his prominent role in the trade of wine in the area).

c) Capabilities

Large-scale armies were not common. There are no figures for the size of the Helvetian army and no details of how they were armed and equipped. Their allies numbered c.ca 15.000, and it is unlikely that the total Helvetian army was more than c.ca 50.000 men (Caesar reports the number to be 92.000), and it probably included tribesmen of all status, including peasants and farmers who would not normally have been involved in regular warfare (Gilliver, 2002).

The cavalry, manned by the wealthiest warriors, was particularly effective and scored significant victories against Caesar's more numerous auxiliary cavalry in the first part of the campaign.

Very little is known about the organisation of Gallic armies and their workings in pitched battle, although they seem to have relied heavily on the effectiveness of infantry and cavalry charges at the start of battle to break the enemy lines. Pitched battle, even at a small scale, provided one of the best opportunities to display military prowess and so was an important way of making war, but not all Gallic tribes were so keen on meeting the enemy in the open, especially when that enemy was as powerful as Rome.

Later in the Gallic war (outside the time frame under scrutiny in this paper) we will observe hit-and-run tactics and attacking the invaders' supply lines as Vercingetorix planned to do during the revolt of 52 B.C. (Gilliver, 2002).

d) Objectives

The plan of the Helvetii was the result of them trying to change their unfavorable conditions at home; we assessed their objectives to be:

1) Remove the threat of German influence by fleeing their original homeland.
2) Occupy the lands of other Gallic tribes in western Gaul.

2) The Germans

We will not delve too deep in analyzing the German involvement in the situation. Even if it is their **southbound pressure** that triggers the Helvetii migration, and they represent the **main source of concern for Rome**, whose border security was dependent upon the German closeness to it, the Germans do not take an active role in the first phase of Caesar's campaign against the Helvetii. It will be in a second phase that Caesar will devote his attention to securing the land east of the Rhine.

Suffice to say for now that the Germans were motivated partly by their warrior nature and, mostly, by the need to **occupy warmer and more fertile lands** than those in which they lived, as reported by Caesar himself: *"Ariovistus the king of the Germans, had settled in their territories [the Belgae], and had seized upon a third of their land, which was the best in the whole of Gaul"* (McDevitte & Bohn, 1869).

3) The Aedui people and their leaders
   a) Motivations
   The Aedui were the oldest Roman allies in the region (122 B.C.). They occupied a relatively mild and quite fertile area in the center of Gaul. They aimed to assume a role of predominance over the neighboring peoples (Giannelli, 1947), supported in their ambition by the privileged relationship with Rome. To do so, though, they had to withstand and survive the German pressure from the northeast and, at the time of the events under exam, the Helvetians migration from the southeast. The main motivation for their behavior, which was pretty much limited to asking for Rome's help and provide the support that Caesar demanded, was therefore **protection from the German and the Helvetii**.
   As far as the Aeduan leaders are concerned, Diviciacus and Liscus had to struggle to maintain control over their tribe, pulled apart in two directions: a pro-Roman faction under their direct control and influence, and those who opposed the Romans, led by Diviciacus' brother Dumnorix.
   Fear of losing control of their people (reduced governance), along with the prospects of the instability that would inevitably ensue, pushed the two leaders even further in favor of Roman help and towards unveiling their own tribal feud to Caesar.
   b) Interests
   The main interest of the Aedui was to increase their influence in the area (mostly economic) and progress along a path of civilization. The alliance with Rome, as said above, was instrumental to this project and the loyalty of Aeduan leaders to Rome in general and Caesar in particular was rewarded in several ways. Such is the case, for example, of Caesar's promises *"[...] to let them expand their influence over defeated Gallic tribes"* (Gilliver, 2002), or when Caesar forced the Helvetii to repay the Aedui for the damages inflicted during their migration. As a final example of how well their alliance with Rome served their purpose, their favored status and the willingness with which they embraced Roman culture resulted in the Aedui producing the first Gallic senator after the emperor Claudius admitted Gauls to that institution.
   c) Capabilities
   Not much is said about their capabilities (mostly military). We know from Caesar's accounts that the Roman legions were reinforced by Aeduan units, both infantry and cavalry. It was, for example, an Aeduan cavalry unit led by Dumnorix, before his sabotaging plot was known to Caesar, that after coming too close to the progressing Helvetii, started the retreat that was soon followed by the 4.000 Roman cavalrymen that were, in the end, chased away by no more than 500 Helvetii cavalrymen.
   d) Objectives
   The objectives of the Aedui, as a people, were the result of them trying to change the conditions that saw them suffering both from the German pressure and the Helvetii's migration, preventing them from exercising and expanding their influence in the area. These were:
   1) Repel the advance of the Helvetii.
   2) Contain the vehemence of the Germans.
   3) Reinforce their role of predominance among the Gallic people.

As for the Aeduan leadership, the main objectives, in addition to those above, were:
1) Maintain control of the Aeduan people.
2) Deny the influence of the subversive faction led by Dumnorix.

4) Dumnorix and the Aeduan insurgents
   a) Motivations
      Dumnorix influence came from his wealth and his position as a druid: druids held high social status in Celtic society which could bring them political influence. According to the account by Caesar, Dumnorix was attempting to increase his power-base within the Aedui not just because he was opposed to the tribe's pro-Roman stance, but because he was keen to seize power and make himself king. So if we agree with Caesar (and we do, at least in this instance) we can ascribe **Dumnorix ambition for power** as the main motivating factor for his actions.
   b) Interests
      As mentioned before, Dumnorix main interests were of an economic nature. Dumnorix held a monopoly over the wine trade on the Saone, a tributary of the Rhône, and probably resisted the growing Roman influence for economic as well as political reasons.
   c) Capabilities
      Dumnorix was a valiant fighter and he fought as a cavalryman to display his elite warrior status, but his main resources were his own wealth and political influence. Caesar's reports Liscus speech, describing Dumnorix as a man whose *"[...]influences with the people is very great, who, though private [man], have more power than the magistrates themselves: that [he] by seditions and violent language [is] deterring the populace from contributing the corn which they ought to supply"* (McDevitte & Bohn, 1869). To complete the picture of Dumnorix capabilities, we should also consider the alliance with the Helvetii, whose military action, as just mentioned, is functional to the weakening of the Roman army.
   d) Objectives
      Rome's influence in the area is the main source of concern for Dumnorix and the main obstacle on his path to kingship. The objectives he seeks to achieve, which are quite realistically supported by his capabilities, are therefore:
      1) Disrupt/delay/defeat the Roman army through direct military engagement with the Helvetii and subversive actions among the Aedui.
      2) Consolidate his role of leadership among the Aedui.

5) Rome (and Caesar!)
   a) Motivations
      The main source of concern for Rome, and the (official) reason for Caesar expedition was the risk that an unstable area would pose for Rome. We have already discussed about Caesar own motivation for waging war to Gaul and how the need for a military success drove some of his decisions (the first of which was, of course, to intervene). We will not pursue any more this line of reasoning, mostly because, as already argued, it doesn't change the nature of the conclusions we are trying to highlight, that is: Caesar's system understanding of the situation. So, for sake of our thought process, we will consider the **security of the northwest border** as the main source of motivation for Rome's and Caesar's actions.
   b) Interests

Rome's interests in the situations are many and variegated. Trade routes were a main interest and an unstable Gaul would have had a serious impact on the availability of accessible routes within, to and from the Roman province.

Romanization of the Gallic society was another aspect that drove some of the policy toward Gaul adopted by Rome and Caesar. An urbanized and structurally alike social reality was a great advantage, both in terms of expansion at a lesser cost than war, and in terms of availability of loyal allies in the area in case of war. Such was the case and the role of the Aedui.

c) Capabilities

Rather than listing the overwhelming advantages that Rome possessed in the opposition with the Gallic peoples, it would be more useful to highlight some requirements that needed fulfilling to fully exploit their capabilities. Two requirements, in particular, were necessary:

- Firstly Caesar needed an ally to whose rescue he could venture, thus bringing his legions to a land that would otherwise be off-limits, according to Roman law.
- Secondly, he needed logistic support near the battlefield, so that his legions could travel faster, not having to carry large amounts of supply.

Both requirements were provided by the Aedui. The reciprocal dependence with and from Caesar will have a deep impact on the dynamics of the early stages of the Gallic war, as we will shortly see.

Furthermore, in order to secure and maintain the influence in the area and to preserve their momentum, it was important for Rome that the Aedui remained a united and powerful ally among the Celtic tribes of Gaul. For this reason the squabbling between the two Aeduan brothers (Diviciacus and Dumnorix) must have given Caesar cause for concern.

d) Objectives

The condition with which Rome could not live, and that Caesar made into his own *casus belli*, was the threat to the northwest border that came from 1) mass migration; 2) southbound movements of Germans; 3) general instability of Gaul. With reference to the condition that Caesar found upon becoming proconsul of Transalpine Gaul, we can comfortably assess that his objectives, in the initial phase of the campaign were:

1) Contain the German pressure.
2) Protect the allied peoples.
3) Stop the Helvetii.

Step 2 – Analyze the history of a crisis

In chapter 2 we provided a brief historical timeline of events. We will now explore the underlying and emerging behaviors that characterized two of those events:

• the Helvetii mass migration;
• the Roman support to the Aedui.

The reason for isolating these two events out of the whole period lays in the fact that both are pivotal moments in the development of the situation. The first one (the migration) is a starting point that, when analyzed, revealed a long sequence of precursory events and behaviors. We could say that, like is often the case in modern day crises, this represents the moment when the threshold of attention has been crossed: there wasn't enough perception of a problem before that. The second one (Roman support) is interesting because, as we will further explore, it triggers a series of reactions that could have, if not managed properly by Caesar, backfired in terms of losing the powerful Aeduan ally.

1) The Helvetii mass migration.

Earlier in this paper we have already offered some insights into the reason for this event, not uncommon for the time. The Helvetii had already suffered the effects of migratory pressure when they were pushed into the land they currently inhabited by earlier Germans' migrations. From then onward, sharing a border with such an aggressive neighbor had been a constant source of threat and frustration, which generated two different but compounding effects. First, the frequent incursions contributed to increasing the Helvetian resolve to migrate away from the threat; second, the continuous engagement in battle with the powerful German fighters, and the gratifying results that the Helvetian warriors were often capable of obtaining, gave the Helvetian the conviction that they did not just have to migrate, but that "[…] it would be very easy, since they excelled all in valor, to acquire the supremacy of the whole of Gaul" (McDevitte & Bohn, 1869).

2) The Roman support to the Aedui.

With regard to this aspect of the situation, we deemed interesting to note that the Roman presence in the area was likely to generate diverging effects of which, as we argued, Caesar was always aware. And so, being already divided on the issue of the alliance with Rome, the Aeduan chiefs had to share their concerns with Caesar that an Aeduan-led insurgency movement was actually gaining momentum due to the Roman direct involvement in the situation. So, if on one side Cesar's support would increase the number of Aeduan people loyal to Rome and, therefore, the amount and quality of the logistic support he would receive, on the other side there would be conflicting effects, feeding right into an anti-Roman insurgency movement.

This particular dynamic behavior seems way too similar to some of the modern crises (and the juxtaposition with the Afghanistan campaign comes almost naturally) in which the presence of a foreign contingent has to deal with the undesired effect of fueling (or reinforcing) an armed opposition.

Step 3 – Explore conditions of perceived threat.

During the previous analysis, we have already unveiled some of the powerful drivers for various actors' behaviors. In this step of the process we will put order into our deductions and start making some clearer connections between causes and effects. We will orient our analysis following the hierarchy of conditions depicted in Figure 3.

Figure 3: Hierarchy of threat conditions

1) Elemental conditions

Helvetii are in grave danger from the Germans. Their own survival as a people is threatened by the advance of the German tribes through their land. Their decision to migrate is therefore a direct consequence of the **fear for their survival**.
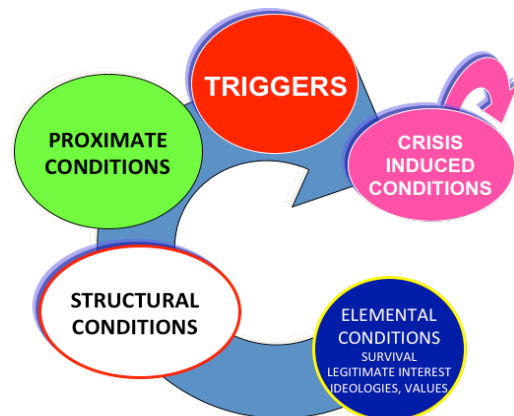
In turns, the Aedui are under threat by the Helvetian migration. Far from being a peaceful passage, these migrations were usually characterized by ransacking, pillaging, destruction of villages, slaughtering of the people, raping of the women and collection of slaves. This was more than enough for the Helvetii to **fear for their survival** as well.

2) Structural conditions

As mentioned earlier, Gaul at the time was an incoherent agglomerate of peoples with conflicting goals and motivations. This reflected in the **absence of clearly**

defined borders, and this aspect contributed to feed recurrent disputes (and fights) along lines of perceived land ownership. Another important effect of this situation was the **extreme weakness of the political structures** of the various peoples that inhabited Gaul. In lack of a consolidated (and homogeneous among the several tribes) distribution of the state powers, it was very hard, for the local leaders, to keep control of their own people. This aspect became even more influent as challenges to the present leaders would often come from ambitious warriors and chieftains who saw in military prowess the primary way to access power. And a new leader often meant a new (and sometimes opposite) attitude toward Rome, like was the case of the Aeduan leader Diviciacus and his brother Dumnorix.

3) *Immediate (proximate) conditions*
Proximate conditions may contribute directly to a crisis, or provide the bedrock for more deep-seated, but less immediate concern. From Rome's point of view the general instability that would be triggered by a chain reaction of migrating peoples was enough to raise serious concern. All the phenomena that accompany a migration described above would have a direct impact not only on the involved villages, but mostly on the ease of access to trade routes and the availability of markets in general. This was the year 58 B.C. and sensibilities were different from today's, but we can rest assured that those behaviors that we classify today as **human rights abuses**, certainly were also perceived as abuses in that time. Inhumane methods used to resolve a border controversy and/or to counter an invasion could result in the gradual alienation of an entire population (or of discrete groups within it). Neighboring countries could attempt to influence the outcome of a crisis by supporting specific groups within an unstable or potentially unstable state. Quite interestingly this was a case of reverse perspective, in the sense that it was often Caesar, selectively choosing to spare the defeated who surrendered and avoiding inflicting unnecessary pain upon the conquered people, who was able to orient the behavior of the Gallic peoples.

4) *Trigger conditions*
Triggers are actions or events (or their anticipation), that, in an accessory role and in conjunction with pre-existing conditions, may set-off or escalate violence, and/or accelerate the degeneration of governance. Usually these are related to one or more of the following events:
– elections;
– arrest-assassination of key figures;
– environmental disasters;
– military *coups*;
– increased prices or scarcity of basic commodities;
– economic crisis, rapid increase in unemployment or collapse of a local currency.

What is worth mentioning, in the situation that Caesar faced when he found out about the insurgency led by Dumnorix, is that he probably recognized that a severe punishment (or, most likely, an execution) could have been a powerful trigger in shifting more Aeduans toward the anti-Roman stance and drastically reduce Diviciacus and Liscus leadership.

5) *Crisis-induced conditions*

This aspect has already been, partially, covered. Every migration that often turned into an invasion and - almost inevitably - into a conquest, would leave a stream of frustration. If large enough portions of the defeated people would survive, it could happen that a circle of violence would ensue. Feuds were recurrent at the time, especially in scarcely urbanized societies without a written code of law. These local

disputes, fueled by ancient grievances from past offenses, would influence the general stability of the area in ways that would, again, impact on Rome's interests, hence, once more, the need to address the situation.

Step 4 – Identify and select the "problem-defining" stock variables.

At this point of our analysis we have developed a deep knowledge of the area of interests, and, if we were in Caesar's mind, we would probably see a clear picture of those that were the main variables of the problem. Everything we concluded from our work so far contributed to the identification of the following stock variables having to do with governance of the area, the diffusion of violent behaviors, and the precarious living conditions of the inhabitants of the affected regions:

1) Land occupied by German peoples;
2) Helvetii's resolve to migrate;
3) Number of Anti-Roman tribes;
4) The available stocks of food and safe trade routes;
5) The amount of Aedui territory threatened by the Helvetian invasion.

These variables, for the reasons that will be clear shortly, are the driving factors upon which the main decisions by all actors were based. Here is a sample of some of these connections:

– The Helvetii decided to migrate when they could no longer stand the pressure of German tribes pushing southbound on the north border.
– The Aedui resorted to asking the help of Rome when they could no longer stand the impact of the Helvetii motion through their land.
– Caesar considered the effect on the Aeduan attitude toward Rome before deciding on Dumnorix's fate.

Many more connections among these variables will be explored, and other variables will be introduced, in the next paragraph.
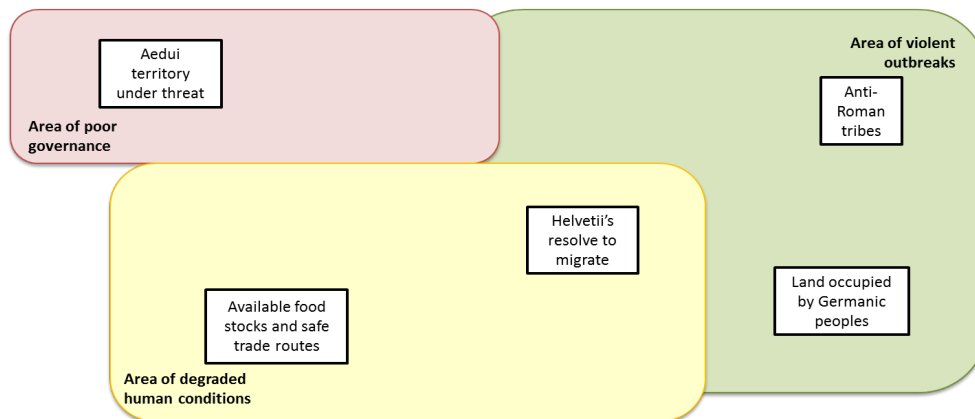

Figure 4: Main system stocks in the three areas defining a crisis

Step 5 – Build-up a causal loop diagram

At this stage in an analysis, we have put together everything we need to build a causal loop diagram.

From the identified variables, and bearing in mind the basic dynamics already identified in step 2 and 3, as well as linking actor's behaviors to the influenced/influencing conditions as assessed in step 1 of this process, it is now possible, *sit venia verbo*,[4] to **recreate Caesar's systemic view of the area of interest**.

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[4] Latin expression aimed at asking forgiveness for the irreverence of what one is about to say/write.

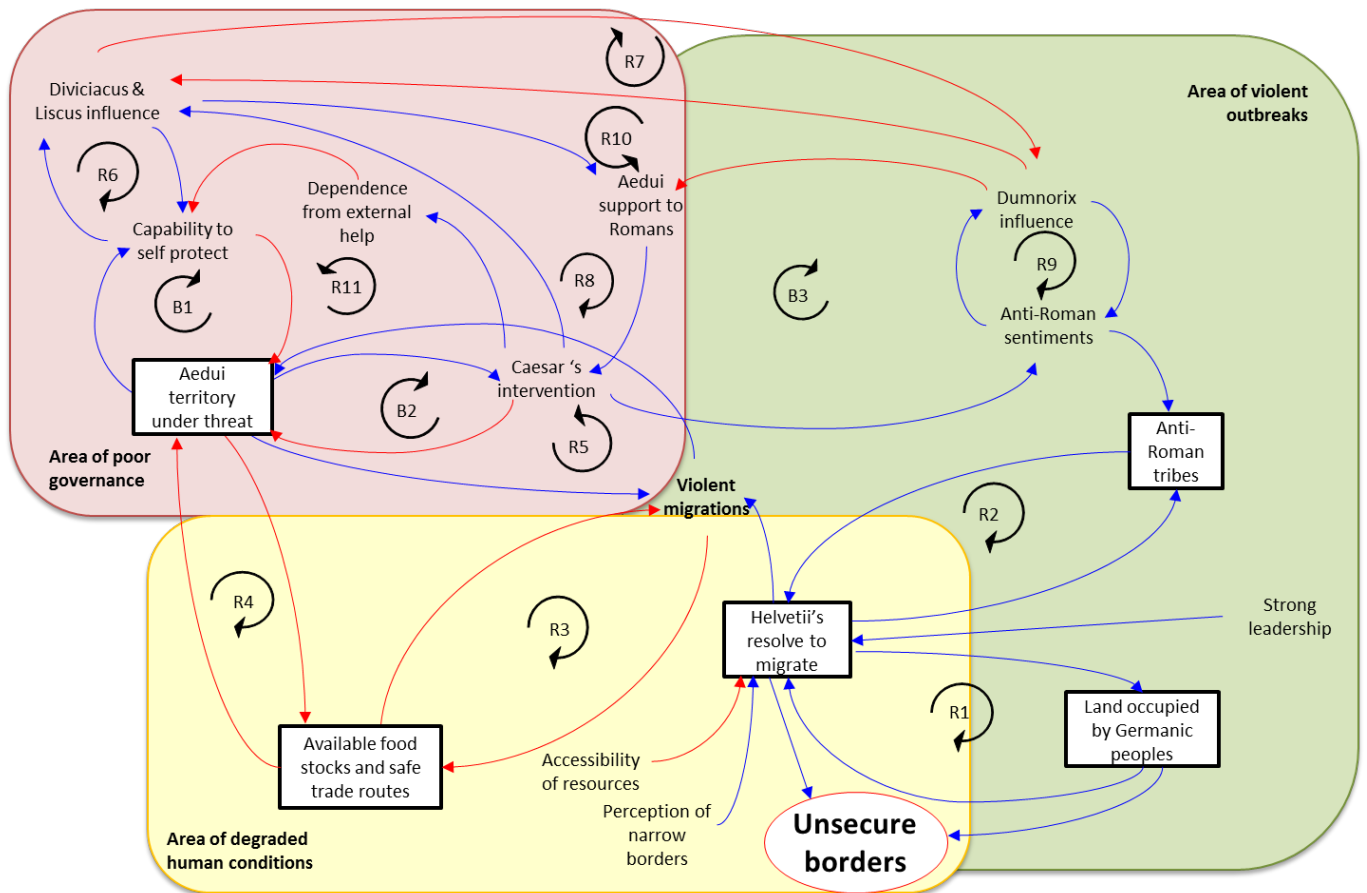The overall Causal Loop Diagram (CLD) is presented in Figure 5 below:

Figure 5: The situation in Gaul – Overall Causal Loop Diagram (CLD)

We are now going to proceed with the description of the main blocks of influences that represent the dominating dynamics globally depicted in Figure 5.

(1) The destabilizing effects of German expansionism.

As argued many times so far, the main problem, from Rome's point of view, was the **threat to the northwest border** posed by the German expansionism and the subsequent migration of the

Figure 6: Direct effects of German expansionism

neighboring peoples (in our case, the Helvetii). This is represented in Figure 6, where the variable "Unsecure borders" is affected by the combined influence of two of the main system stocks: the amount of Land occupied by the German tribes and the Helvetii's resolve to migrate.

As is easily understood from the picture, we assessed that the two stocks are part of a reinforcing loop (R1) in which the pressure from the expansionism of the German tribes pushes the Helvetii along on their conviction to migrate, which, in turn, creates the premises for the German tribes to occupy more land.

This very dynamics had already been observed in the north of the region, were the German expansionism was pushing towards the lands occupied by the Belgae.
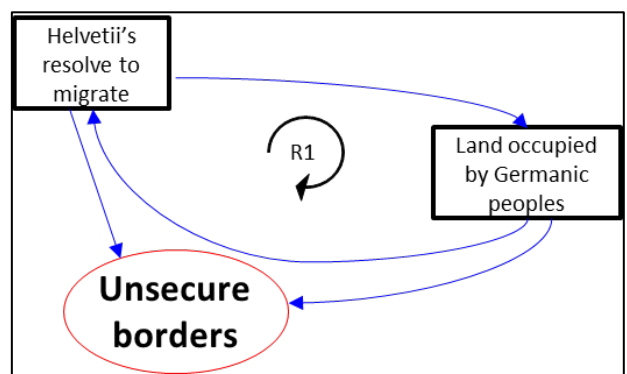
Furthermore, the Helvetii themselves had, indeed, reached the land the currently occupied (modern day Switzerland) after fleeing from German expansionistic waves in previous years.

(2) The factors influencing the Helvetian plan to migrate.

The Helvetii's decision to migrate (and conquer new land) was deeply influenced, in addition to the pressure from the advancing Germans, also by a series of factors as depicted in Figure 7.
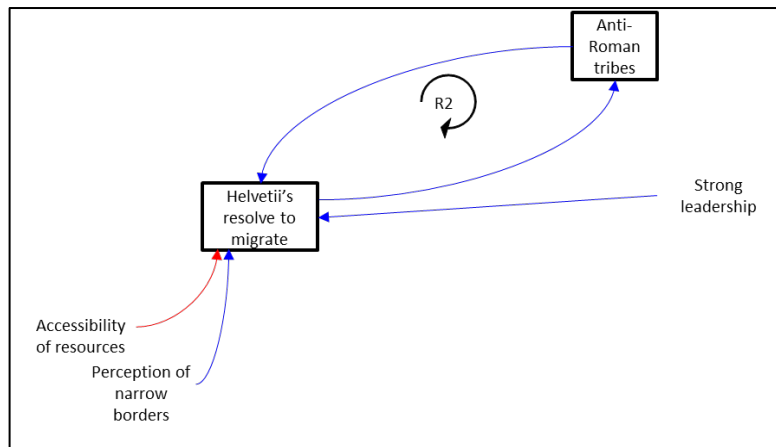

Figure 7: Indirect effects of German expansionism

- The perception of narrow borders was the result of the limited dimension of the land, which was enchased between narrow valleys in the Alps, and a growing population.
- The growing population and the limited land available also had an impact on the availability of resources for the Helvetian population, which, in turn, was a contributing factor in the decision to migrate.
- Because of the prevailing social dynamics within the Gallic tribes, a strong leadership was needed as a catalyst for all the mixed motivations that were pushing the Helvetii population toward the mass migration. Had there not been such a charismatic figure, capable of conceiving and supervising an accurate plan for the "re-deployment" of the Helvetii, they would have probably succumbed under the pressure of the Germans.
- Alliances among Gallic tribes were quite common, as Caesar himself often quotes. An endeavor like the one embarked on by Orgetorix and the Helvetii was heavily reliant on like-minded allies. Food supplies, rights of passage, military support were all critical requirements that only a strong system of pacts and alliances could guarantee. This was the meaning of the secret pact among Orgetorix, Casticus of the Sequani tribe and Dumnorix the Aeduan. It is to be believed that the reason why the Helvetii put Orgetorix under trial was not the alliance per se (to which the Helvetii resorted themselves, when they arranged the right of passage through the land of the Sequani, thank to Dumnorix mediation), but the fact that he was scheming in secret, to seize power among the Helvetii. So, going back to our analysis, we notice that another reinforcing loop has formed (R2), between the Helvetii's resolve to migrate and the availability of like-minded anti-Roman tribes, potentially allies, meaning that as their motivation to migrate grew stronger, the Helvetii felt compelled to seek allies and seal pacts with neighboring tribes, which, in turn gave more chances to carry out their plan successfully, thus further motivating the Helvetii.

(3) The impact of Helvetii's mass migration on other Gallic peoples.

When the conditions were mature and the plan devised by the Helvetii became active, the mass migration of the entire Helvetian people started. Much of the territory that laid in their way was under direct threat, both from the slaughtering that accompanied the migration and from the damage to the productive capability of the affected society, namely the crops and the ability to move goods across the land.

The violent character of this phenomenon had a potentially devastating effect on the involved peoples. Borrowing the words of the Aeduan leaders, when they were begging for Caesar help, "[they were at risk of] their fields […] to have been laid waste, their children carried off into slavery, their towns stormed, almost within sight of our army". Likewise the Ambarri, friends and kinsmen of the Aedui, inform Caesar that it was not easy for them, now that their fields had been devastated, to ward off the violence of the enemy from their towns. Finally the Allobroges, invaded in the early stages of the Helvetian migration, report that they had nothing remaining, except the soil of their land (McDevitte & Bohn, 1869).

What is depicted here can be interpreted in terms of the reinforcing loops highlighted in Figure 8. As the living conditions deteriorate the surviving population will be more vulnerable to acts of violence and, in turns, might resort to abandoning their scorched land in search of

Figure 8: Effects of Helvetii's mass migration

better living conditions (loop R3). At the same time, as trade routes become less safe and the arable land less accessible, the perceived threat on the whole territory increases, causing people to avoid open field activities such as agriculture and trading goods (loop R4). Lastly, quite intuitively, news of a mass migration through the land of the Aedui would be enough to make the threat perception soar and, in lack of a suitable defense apparatus, as we will argue shortly, portion of the population might resort to migration as a self-defense measure (loop R5).
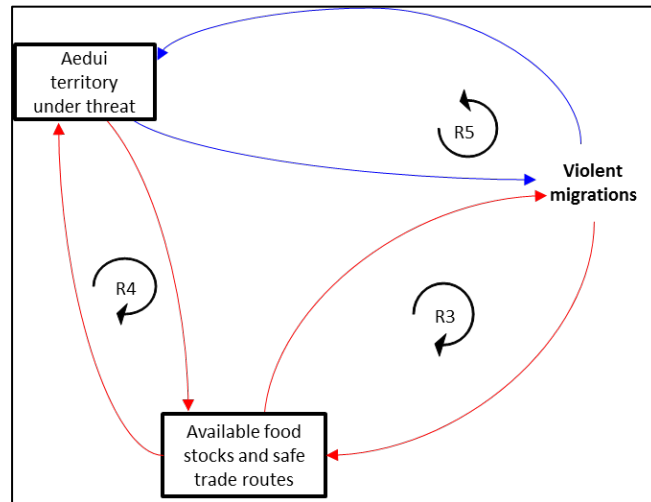
(4) The effect of the Helvetian threat on the governance in the region.

As the migration of the Helvetii takes place, the leaders of the affected regions find themselves under multiple sources of pressure:

– From the invasion itself, as they try to resist and preserve their territorial integrity;

– From their own population, as they try to maintain control and influence;

– From internal opposing actors, fueled by hatred for the Romans and willing to support or even join the Helvetian plan to conquer their land.

The main dynamics that contribute to exacerbating this situation are those depicted in Figure 9. As we can see, the influence of the elected leaders of the Aedui (Diviciacus and Liscus) is greatly affected by their capability to provide for the protection of the Aeduan people which in turn, is affected by the influence and credibility of the elected leaders (loop R6). Furthermore, as the Aedui territory becomes threatened by the impending migration, if the political influence was adequate, we should observe an increase in the capability to protect aimed at regaining control of their territory and thus reducing the threat level (loop B1).
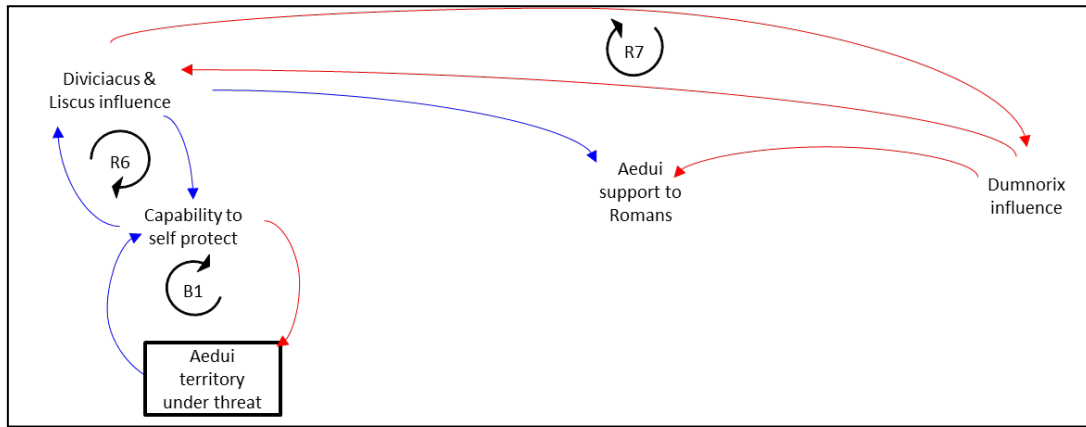
Figure 9: Dynamics due to conflicting Leaderships

However, as we know from the analysis we performed earlier, the Aedui were in no condition to withstand the impact of the mass migration of the Helvetii, leaving their territory exposed to all sort of consequences. The effect of this is that the inability to provide for their own protection, exposes even more the territory to the threat of the Helvetian migration, thus further undermining the Aedui capability to protect themselves. The combined influence of the two loops (B1 and R6) will, ultimately, diminish the power of the elected leaders on their own population, exposing them to the negative influence of the subversive leader Dumnorix. As mentioned at the beginning of this paragraph, and many times during the previous analysis, there were strong centrifugal trends within the Aeduan people. Dumnorix was the undisputed leader of a subversive movement whom, by leveraging on the hate for the Roman presence, shared by many Aeduans (and neighboring tribes), was able to directly challenge the authority of the elected leaders, effectively eroding their influence on the Aedui (loop R7). The general attitude of the Aedui towards the Romans was, therefore, a direct result of this two competing leaderships: whoever prevailed would have shifted large amounts of the population toward or away from the Romans. And this would directly affect, as we will shortly see, the amount and quality of support upon which Caesar could rely to conduct his campaign.

(5) Caesar intervention.

As the Helvetii were completing the preparation phase for their migration, the Aedui grew more and more concerned. Caesar's decision to help came after a long period of indecisiveness, during which the Senate, ignoring numerous pleas for help put forward by the Aedui, had not yet resolved to follow up the many declarations of renewed friendship and support to the Aeduan ally.

In the end it was only when Caesar became proconsul of Transalpine Gaul that the matter of Gaul stability, being functional to his own design for personal political power, was directly confronted.

As Caesar soon realized, due to the unresponsiveness of the Senate to the previous Aeduan request of help, the reputation of Rome among the Aedui had been decreasing. He realized that keeping the Aedui united and well disposed toward the presence of Rome in the area was critical to preserve his
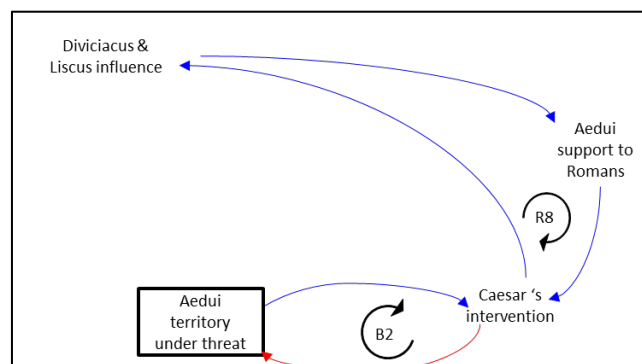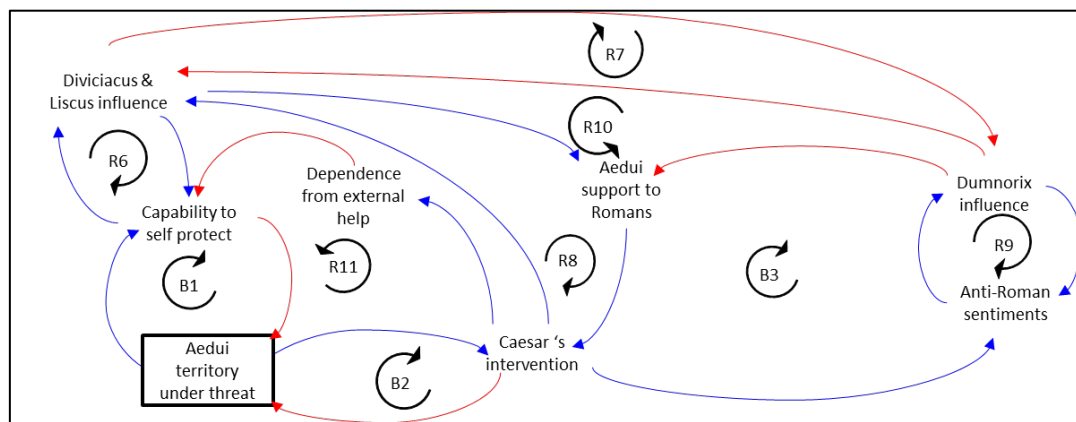

Figure 10: Direct effects of Caesar's intervention

chances of receiving the support he so much needed to defeat the Helvetii. What ensued, from a systems perspective, as we can infer from Figure 10, was yet another reinforcing loop (R8), in which Caesar intervention, boosting the influence of Diviciacus and Liscus, rekindled the good predisposition of the Aedui toward Rome; thus they contributed more willingly to the collection and distribution to supply to the Roman army, which, in turn, became more and more effective at granting the much needed territorial protection to their loyal ally (loop B2).

(6) The effect of Roman presence in the area.

Alas, from Caesar's point of view, the Roman intervention had also several side effects which, as it is often the case, worked to counter the favorable influence on Caesar's objectives (Figure 11). Firstly, the external help provided by the Romans, created a "dependence effect" which partly contributed to further degrade the Aedui capability to self-protect (loop R11). In addition to this, as it was well known to Caesar, his presence (and that of his six legions), also triggered a flare-up of anti-Roman sentiment in the area.

Figure 11: Side effects of Caesar's intervention

As just argued above, Dumnorix was ready to exploit this effect in order increase his influence and to pursue his own ascension to power, which in turn, allowed him to convince more and more people to take a more pro-active anti Roman stance (loop R9). As Caesar discovered, when the promised food failed to be delivered by the Aedui, Dumnorix was in fact leading a subversive movement to boycott and sabotage the flow of supply to the Romans. Dumnorix was using the bleak prediction of the impending subjugation to Rome as an argument to win over more and more Aeduans to the insurgency cause, and, also leveraging his own power and influence, he was able to stop the Aeduans from delivering supply to the Romans, hence impacting on Caesar's intervention's effectiveness (loop B3). Lastly, Dumnorix, by also affecting the influence of the elected Aeduan leaders, was contributing to the condition that required an even stronger presence of the powerful Roman ally, which, in turn, served his purpose of fueling the anti-Roman sentiment and increased his own influence among the Aedui and neighboring tribes (loop R10). The overall effects of Dumnorix's stance on the situation, in the end, added up to the increase in the number of tribes potentially and/or effectively hostile to Rome.

One of the declared aims of this work was to validate the hypothesis that the situation in Gaul was, to a large extent, ascribable to a well recognizable path of crisis escalation: that in which variables belonging to the three macro-areas of governance, violence and human condition act together in a series of reinforcing loops that link them in pairs and globally. Many of the direct influences between pairs of variables have been described in the paragraphs above.

Figure 12 and 13 complete this analysis by highlighting the main general loops connecting all three macro-areas in both directions.

In the next chapter we will use the insights from our CLD to interpret some of the decisions that were made during the campaign against the Helvetii.
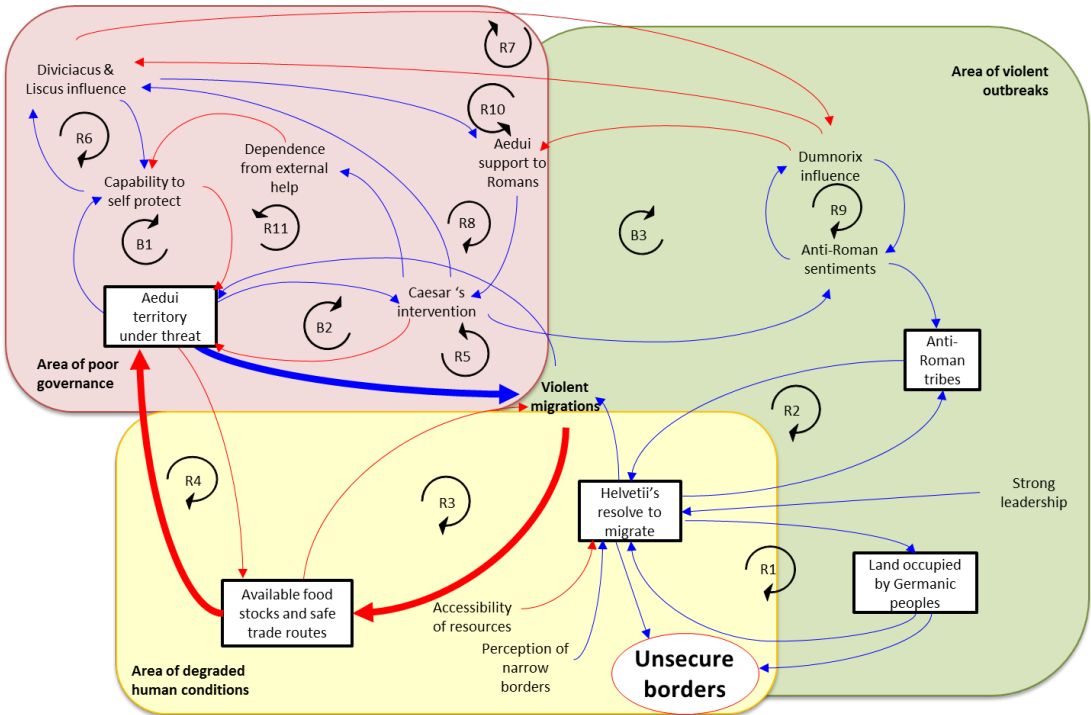

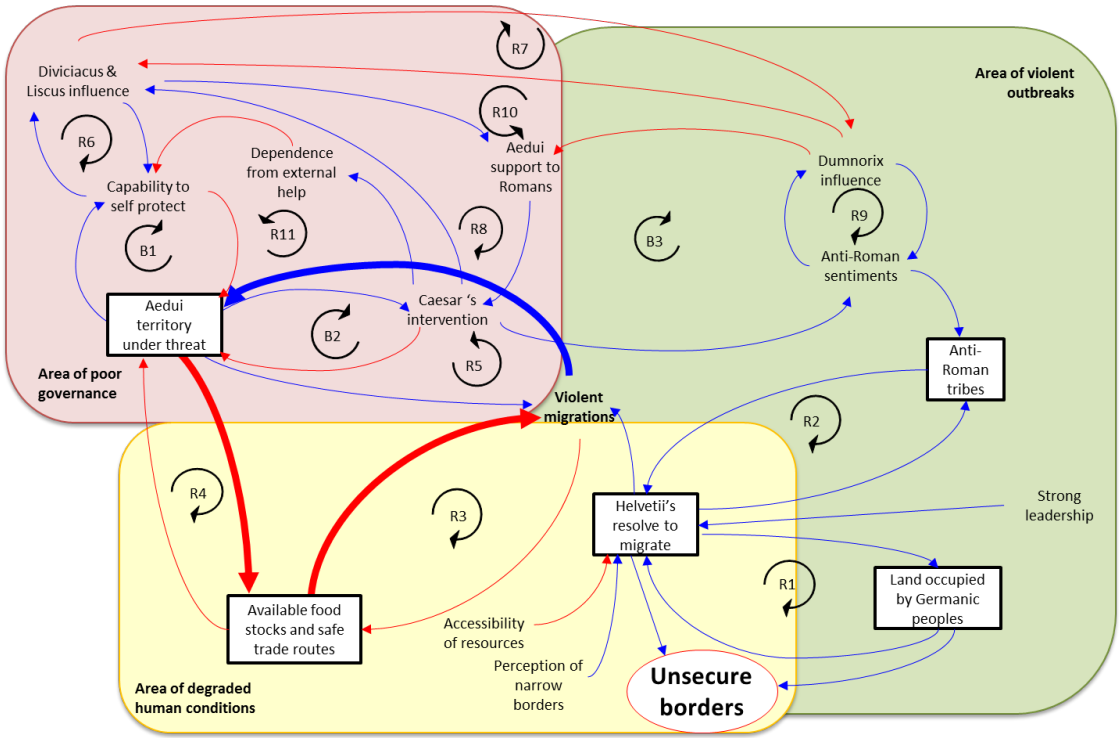**Figure 12: "Crisis" Archetype – Reinforcing Loop clockwise**

Figure 13: "Crisis" Archetype – Reinforcing Loop counter-clockwise

5. INSIGHTS & CONSIDERATIONS: A PEEK IN THE MIND OF A HISTORY MAKER

What we did in the previous chapter was to replicate Caesar's system understanding of the Gallic crisis. He made several decisions based on this comprehension and chose courses of actions that were capable of shaping the environment in ways that granted him not only short term success, but also long lasting effects. What we will do now is to use the model we just built to interpret some of those decisions (and actions) as if Caesar himself would have done, if he had access to a modeling tool!

1) The decision to intervene

Looking at the model, we see several reinforcing loops that, if left to their own devices, would push the system toward a generalized instability. Two were the concerns: the risk of invasion and the loss of trade routes. Intervention was no longer deferrable. Any further delay, once the Helvetii had set in motion, would have allowed all the loops to activate, compounding their effects and making the system escalate out of control. The warning variable "Unsecure Borders" was blinking quite alarmingly! We believe that it was fortunate (if we are happy with the way that History went after those events) that someone was at right time, at the right place, with the right system perception to act on this warning.

2) The decision to spare Dumnorix life

It is enlightening to follow Caesar's line of reasoning, when he reports both Liscus and Diviciacus accounts on Dumnorix activities. He appreciates the impact that an exemplar punishment could have on the influence (and control) over the Aedui exerted by Diviciacus and Liscus. Recognizing a potential "fix that backfire" system archetype, he took extreme care in controlling the side effects of his policy intervention. We could argue that, despite his initial impulse to punish Dumnorix, he went for the counter-intuitive solution which yielded, in the long run, the desired effect. His focus was, in fact, both on granting his army enough support, in order to be able to engage the Helvetii in the impending battle, and to reinforce the unity and attitude of the Aedui, for the future role as Rome's main ally in Gaul. It is no coincidence that the Aedui produced the first Gallic senator after the emperor Claudius admitted Gauls to that institution (Gilliver, 2002).

3) The condition for peace imposed to the Helvetii

After defeating the Helvetii, Caesar decided to order them back to their land and instruct them to rebuild their towns. He was aware of two facts.

First the area left vacant by their migration would soon be filled by the far more menacing German tribes, as he tells us quite explicitly, when he shares his fears *"[...]that the country, from which the Helvetii had departed, should be untenanted, lest the Germans, who dwell on the other side of the Rhine, should, on account of the excellence of the lands, cross over from their own territories into those of the Helvetii, and become borderers upon the province of Gaul and the Allobroges"* (McDevitte & Bohn, 1869).

Second, he was aware that not only the Helvetii had to be re-instated in their land, but their motivations to migrate had to be brought down to an acceptable level (one that will not trigger any further migration). To this aim, in his peace conditions, he implemented an additional element: that the Allobroges (who were under Caesar control, since they belonged to the Roman province) give the retreating Helvetii food and supply. We believe that Caesar was conscious of the reasons that had contributed to the Helvetii initial plan to migrate: the perception of the narrowness

of their land and the associated scarcity of resources. Forcing them to have positive trade relations with neighboring pro-Roman tribes, would surely contain those factors that contributed earlier to develop an ambition to migrate and conquer most of Gaul.

4) Shifting the burden to the intervener (Caesar)

We have argued about the inability of the Aeduan and the neighboring tribes to withstand the impact of the Helvetii's mass migration. As it happens even today the ability of the ruling elite to provide for the security of its own people is the main building block toward consensus.

The problem posed by the violent migration of the Helvetii created the hurtful symptom (for the Aedui) of perceiving the great danger and threat to their territorial integrity. The normal course of action, if things were normal and all state functions would be represented, as the threat increase so should one's capability of self-defend.

As it turn out, the reliance on the Romans' help (the intervener), although quite effective at reducing the threat to the territorial integrity (the problem symptom), further undermined the Aeduan capability to develop a suitable defense apparatus and protect themselves (the problem).

This dependency was, actually, an effect that Caesar himself was very careful to foster, as it was quite functional to justifying his presence in the area. And, as long he was capable of controlling the side effects due to anti-Roman sentiments, he could carefully balance and dose his help to maintain the loyalty and support he needed.
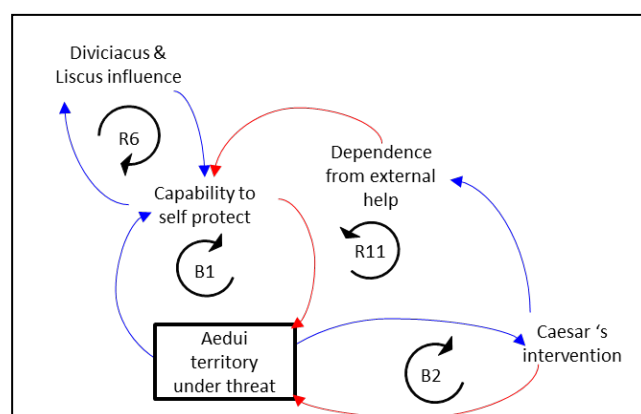

Figure 14: Shifting the burden unveiled

As argued by many, despite Rome's extraordinary military power, it was their ability to export a desirable model of life that granted them the highest returns. A Gallic region full of peoples "happy" to be Romanized, was by far preferable to a region of widespread anti-Roman sentiments. As it stands, knowing the bits of history that followed this initial campaign, it took nine years to achieve such condition. But, in the end, the Romanization of Gaul was Caesar greatest achievement.

6. CONCLUSIONS & FUTURE WORK

The trait of complexity does not pertain exclusively to the contemporary age. Things have always been complex, especially for those with the burden of shaping the course of events. Policy makers across the centuries have collected a long series of successes and an equally long (or even longer) series of failures in creating conditions of good governance for the societies they administered. Many missed their chances of leaving their mark, but some others definitely stood out. Studying the thoughts and deeds of one of the greatest historical figures, and analyzing the course of events that he set in motion, has been an enlightening experience: as we retraced Caesar's decisions and actions, it was striking to notice how many similarities there are between then and now, and how many lessons could be learned (re-learned?) and applied by modern policy makers. The situation faced by Caesar was, indeed, an international complex crisis, even by today's standards (widespread use of violence, displacement of large portions of population,

weak and degraded governance). Ironically, though, the way he dealt with it seemed to adhere to the tenets of modern day intervention approaches and theories way more than the interventions performed today in line with such theories and approaches… something to ponder about!

With regard to our choice to resort to the tools of System Dynamics to come to these conclusions, we share the view that, using the very same words from Bianchi & Marcialis (2013), modeling and simulation are a sort of virtual laboratory in which historians − and social scientists − may carry out their own experiments, as it is the case with hard sciences: experiments that are practically impossible to be performed in the field − and at present time. Moreover, the cost of such experiments is relatively low and they produce no sort of consequences on the real world.

The potential of the System Dynamics (SD) methodology for humanities and social sciences (including History) was pointed out since its early days (Shantzis e Behrens, 1973; Low, 1981) and may be summarized as follows:

- The model building process − identifying the relationships between elements that form the event or problem under investigation − can help getting soft-scientists' ideas straight and orienting − or re-orienting − the research path;
- a formalized model can point out the consistency between premises, inference rules, and conclusions of conceptual reasoning and interpretations;
- simulation runs of a formalized model provide numerical values, describing the system under investigation for every considered time instant, that can be visualized in several user-friendly forms: A sort of filmed sequence or numerical story by which soft-scientists can compare the adequacy of their suppositions with available data and established facts;
- the two previous points are a suitable tool to validate a historical interpretation according to the Cover Law − the so-called Popper-Hempel (Hempel, 1965, § 4);
- the above mentioned numerical experimentation − by conveniently modifying model assumptions − could make possible to carry out exploratory trials for assessing other hypotheses aimed at finding new or unexpected circumstances, and *counterfactual conditionals*;
- by means of the sensitivity test − a specific tool of numerical experimentation − critical model parameters could be singled out. Historians − as well as soft-scientists − would thus identify the elements to be handled with greater accuracy, orient research toward significant documents and sources, decide on archaeological excavation campaigns, saving time (and money);
- a formalized model, expressing concepts and theories straight and unambiguously, is a fertile ground in which dialogue, debate, positive confrontation and discussion may arise, rendering convergence and collaboration possible.

For an effective and efficient use of M&S, historians and social scientists need a conceptual framework that can be found in a discipline, and the SD approach has all the features to satisfy this condition.

What we tried to achieve in this work, was to use some hind sight wisdom to interpret, explain and gain insight into a successful example of good governance. And that brings us to the following final considerations in our search to validate the "International Crisis" Archetype (Armenia & De Angelis, 2013):

1. The System Dynamics Modeling & Simulation approach, together with its qualitative premise (causal loop diagramming) can be an effective approach to model historical facts as produced by dynamics typical of a system's structure,

and whose relationships may be reconstructed by historical data and/or documents (sometimes, as in Caesar's case, from the very same protagonists)

2. Analysis of "historical crises" may help us corroborate the idea that our crises archetype is able to grasp "universal" behavioural dynamics in crises situations.

In conclusion, let's be clear: we do also hold the view that historical events are unique and non-repeatable (Joynt & Rescher, 1961), and in this work we were under no illusion of analyzing a set of occurrences that might have repeated themselves across the centuries. Nevertheless, human behaviors and interactions have not changed much in the last, say, 2000 years! So, however true it might be that historical events are unique and not repeatable, it is also undeniable that the underlying dynamics can be considered a historical constant. Gianbattista Vico's theory of reflux, by a latitude, points in this direction (Croce, 1913). All things considered, don't we study history with the conviction that the lessons of the past inevitably apply to the present? With that in mind this work represents an attempt to draw some deeper sense and insight into one very important history lesson: that good governance and long term steady state solutions can only stem out of a thorough systemic understanding of complex situations.

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