JOURNAL OF BEHAVIORAL HEALTH, 2020
VOL 9, NO. 3, PAGE 1 – 4

CASE REPORT

Open Access

Effects of Time & Space in & on Laws

Patrice F. Dassonville*

Freelance researcher

ABSTRACT

However time is not a phenomenon and space has no materiality, there are some interesting consequences on laws and their goals.

ARTICLE HISTORY

Received August 20, 2020
Accepted September 19, 2020
Published September 25, 2020

KEYWORDS

COVID-19, Emergency laws, Marshall Plan.

Introduction

Time and space are often involved in traditions, codes, conventions, ordinances, decrees and laws, whether it comes to legal laws, or to divine laws, or to physical laws. Well, during previous works we have shown that time is not a phenomenon, and that space has no materiality : they are concepts [1]. Given these heterodox[1] results, it is legitimate to find out and analyse the nature of their effects. The survey will be developed at two distinct levels: the change of laws over time and over space, and the role of time and space within the laws.

Diatopy of Laws

Diatopy[2] means change according to the place [2]. Legal laws vary by country ; they differ in relation to the place[3] where they apply. Each country owns its local laws, which foreign visitors are also expected to respect. Three examples:

In sharing space, cars must drive on the same side, whatever the nationality of the driver; and the maximum speed allowed by the highway code, varies by location. Space has no physical existence, but we must aknowledge that the concept is also of use in everyday life: this makes the highway code diatopic.

Let us mention two anecdotes concerning the meter as the international unit of space:

The decree of May 8th 1790 of the French National Assembly stipulates: « The King (Louis XVI) will be begged to write to her British Majesty to convince the Parliament of England to contribute with the national assembly in fixing the natural unit for measurements and weights ». Then « the law of 19 frimaire an VIII (December 10th 1799) retained the final value of the meter at 3 feet 11 lines 296 thousands ». A law of July 4th 1837 made the metric system mandatory from July 1st 1840 [3].

Shortly before the end of World War II, an International Economic Conference was held between the 1st and the 10th of November 1944 in Rye in New York State : among various issues, it advocated the universal adoption of the metric system [4].

Despite all this, Anglo-Saxon countries and the countries of their former areas of influence are not willing to comply with these provisions: the two systems are still used, with the risk of serious confusions.

In *The Peloponnesian War*, the Greek founder of historical science, Thucydides (c.465-c.395 BCE[4]), reports how the plague struck Athens between 430 and 426 BCE, by the progression of the epidemic from Ethiopia to the Piraeus, after first crossing Egypt, Libya, and Persia (*Book II, Song II, 47 to 54*). In *de rerum natura,* the Latin poet Lucretius (c.96-55 BCE) affirms that the plague has « traversed a large air space » (*Song VI, 1142*). It is obviously wrong because the plague did not travel with the wind through space; space is a concept instead of a physical reality. In fact the pathogenic bacteria were carried by sailors and travellers who have contaminated populations.

Thucydides writes: « People overwhelmed by the scale of the epidemic and unaware of what was to become about them, ceased to comply with divine and human laws ». We understand that a major event can cause the population of a specific place to break the laws.

Thucydides reports that he fell ill but was cured, and that « the same disease did not affect the same man twice, or at least the relapse was not fatal ». He also observes that « the doctors, treating for the first time a disease which they did not know, were powerless. It was even among them that mortality was highest, because they had more frequent contacts with the sick ». The Athenian strategist Pericles himself (495-429 BCE) was carried away by the disease.

The coronavirus epidemic in China in early 2020 resulted in laws concerning the use of space, namely stop population flux

[1] Heterodox : contrary to common beliefs, from the Greek *heteros* (other) and *doxa* (opinion). Orthodox,: in accordance with common beliefs, from the Greek *orthos* (straight).

[2]Diatopy : from the Greek *dia* (through) and *topos* (place).

[3] Locus regit actum: local rules act.

[4] By university conventions: CE = common era; BCE = before common era.

Contact Dassonville PF Freelance researcher

and end contacts between individuals. Indeed, we know that the virus does not progress through space as such; it is spread through contacts between people. For example, over 60% of the crew of the aircraft carrier « Charles-de-Gaulle » was infected between mid-March and mid-April 2020.

According to statistical data commonly accepted, as long as the protection rules are not implemented, 1 sick person infects 3 persons, each in turn infects 3 persons, and so on. The average progression is exponential (Figure 1) :

1 > 3 > 9 > 27 > 81 > . . . > N

Contamination stages: 0 1 2 3 4 > ... n

Infected people: 1 > 3 > 9 > 27 > 81 > ... N

written in power of 3: 3^0 > 3^1 > 3^2 > 3^3 > 3^4 > ... 3^n

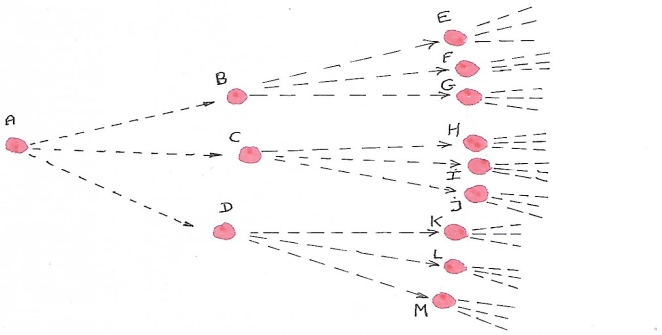

Figure 1: Exponential progression.

According to this simplified mathematical modeling, the progression rate is approximately proportionnal to the duration:

n # a . t

Therefore we have:

N # $3^{a.t}$

in which « a » is a constant and « t » is what the clock of the laboratory indicates.

In fact, what happens is much more complex, because the contamination has numerous causes, including unidentified causes and non measurable causes. For example, the contamination delay from a sick person to a healthy person is stochastic[5]:

a) « n » is no longer proportionnal to the duration « t », but it is a stochastic function related to « t ». The doted arrows correspond to a few seconds or a couple of weeks.

b) « 3 » is an average propagation index ; for example, « C » could infect 2 people (« H » and « I ») and « D » could infect 4 people (« J », « K », « L », « M »).

Accordingly the contamination rate is erratic[6] (figure 2), knowing that a probalistic modeling would require the processing of a large amount of data, part of which is inaccessible.

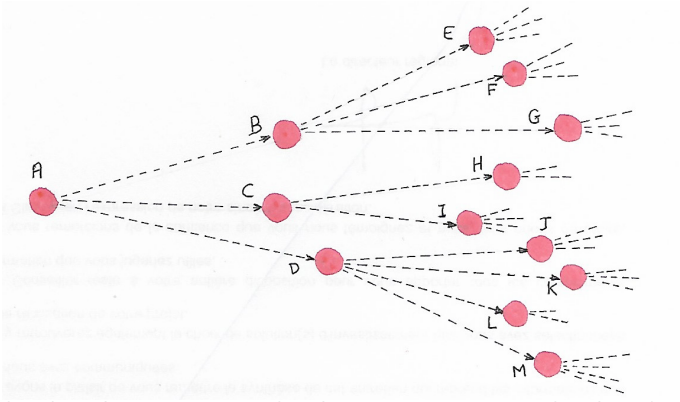

Figure 2: Exponential and erratic contamination.

Therefore, it was about slowing down the progression of contamination, and then stopping it by a compulsory limitation of population movements and a mandatory sanitary containment of half of Humanity. For example, a minimum safety distance between two persons is required, not because the space would be a shield, but because the individual stays much more out of range of the viral vectors.

N # $b^{f(t)}$

Instead of b = 3, a strict confinement leads to b < 1 ; therefore N < 1, whatever the value taken by f(t) which is positive.

Figure 3 is an example of a « one by one » contamination ; « A » infects only « B », « B » infects only « C », but « C » does not infect « D » : the efficiency of the protection procedures leads to a gradual reduction of the infection rate.

Figure 3: The contamination is still erratic but no longer exponential.

Accordingly, it was going to have to be enforced all over the world by emergency laws; it means in each country, authoritarian decision-making adapted to local resources, including gradual worsening rules and sanctions. For example, the regular review and adaptation of labor law in France.

Diachrony of Laws

Diachrony[7], originally designed by linguistics, means change with time, not because of time. It must be emphasized that time is not the cause of the changes 2].

In the same country, legal laws change over time; in fact, we should say that laws change from major events. They are either adapted, or upgraded, or simplified, or worsen, or replaced, or abolished: nevertheless, for convenience we shall use the expression diachrony of laws.

During the plague which lasted about four years, the Athenians no longer cared about the laws. « People were no longer held back either by the fear of the Gods or by human laws... as to the crimes that could be committed, no one expected to live long enough to be punished », Thucydides writes.

Of course, time was not the cause of the social disaster ; given that the disease was unknown, the enactment of proper laws

[5] Stochastic: from the Greek *stokhasticos* (conjectural).

[6] Erratic: irregular, from the Latin *erraticus* (wander).

[7] Diachrony : from the Greek *dia* (through) and *khrônos* (time).

was impossible and the city of Athens could no more operate by law ; *ex lege*, would say the Roman scholar Cicero (106-43 BCE) [5].

The Physical Laws

According to the principle of Roman law, the law dictates (*lex imperat*). Legal laws are prescriptive, they are the same for each citizen, and no one may ignore them [6]. In that purpose, laws, codes, traditions and conventions, use time and space among other concepts, to specify their prescriptions : deadline, duration, limitation period, date of entry into force of a law, length of a prison sentence, life sentence, restricted zone, prohibited area, sacred area, sacred dimensions of tombs or religious buildings, calendars of religious rites, limited number of people in one place, etc.

By cons, the laws of classical physics, that of relativistic physics and that of quantum physics, are the same everywhere in their specific scope. In other words, each field of physics has specific laws that apply worldwide and in the observable Universe; although some advanced research can provisionally give rise to nuanced interpretations, like about the Big Bang, or black holes, or black matter, or black energy. Therefore, the physical laws are not diatopic.

However, the physical laws are provisional because of the progress of research: it leads to the diachrony of physical laws.

Consequently expressions like « physical laws », « laws of physics », « laws of biology », are preferable to « laws of the Universe », « laws of Nature » (*Lex naturae*, in Cicero) **[**5**]**. Laws of nature are survivors from ancient divinations of Nature, which were considered superstitions by Lucretius [7].

Indeed we have shown that the Nature does not obey physical laws, because physical laws do not prescribe; in fact they describe, and they do not exist as such, in the Universe **[**2]. Instead, physical laws provide a temporary description rather than a permanent imperative.

Einstein gave up looking for a global picture of the Universe, explaining that he was not disavowing a principle, but applying a method [8].

Time & Space within Laws

In addition to their diatopy and their diachrony, laws need time and space to apply their provisions, to say what we can do or not do, etc; provided that we remember that time and space are not active factors. By way of illustration of the relation of laws with time and space, let us refer to some terms of the specific terminology:

Banishment: Stay away from a place (space) during a certain time (time).

Conservatis temporibus (in Cicero): By respecting the chronology (time).

Lapsing: Expiration of a drug's validity (time).

Law of series: Repeated train or aircraft crashes often make people conjecture a law of series; but this is a mistake, because the purpose of such a law is to predict, while these accidents are not predictable.

Law of political economy: The economic cycle is not a law of economy, because crises and collapses remain unpredictable in term of time and space, whatever their nature. Moreover, economists and politicians are unable to predict crises; they do not even agree among themselves about how to find a way out of a crisis.

*Lex fori***:** Law in force in the country in which the action is brought (space).

*Lex imperat***:** It is also the title of the painting (1880) which adorns the ceiling of the Grand'chambre of the Court of Cassation in Paris, by the French painter Paul Baudry (1828-1886).

*Ne varietur***:** Without any change (time and space).

Prediction: Thucydides talks about « these surprises that often come to thwart human calculations » (*Book 7, 24*), and he quotes Pericles according to whom « events are subject to fluctuations as unpredictable as the moral dispositions of men » (*Book I, 140*). Covid-19's global invasion must be seen as a tragic reminder.

Prescription: Time puts an end (time) to the possibility of prosecuting a crime; there was no such limitation (time) in the Code of Hammurabi (Babylon, c.1750 BCE) and in the Code of the Byzantine emperor Justinian I (*Codex Justinianus*, 6th century CE): *tempus non occurit regi.*

*Prorata temporis***:** Proportional to the duration (time).

Prorogation: Extension of a period of validity (time).

Quarantine: sanitary isolation by keeping a sick person away (space) from others, for a certain period of time (time).

Sanitary containment: Separate people (space), sick or not, to reduce the risks of contagion, for a certain period of time (time).

Sine die: Without set date (time), for an ajournment or a postponment.

Temporalitas: Limited time, in the Latin writer Tertulian (c.155-c.222).

Viduity time frame: Statutory waiting period (time) required for women before they are allowed to remarry.

Waiting days: Unpaid days (time) during sickness.

Waiting period: Duration (time) of invalidity (suspensive conditions) or duration (time) of prohibition of an activity in an area (space), stipulated in the terms of certain contracts.

Conclusion

To develop and implement laws appropriate to the circumstances, one must first understand those circumstances. The exponential global spread of the coronavirus has highlighted the obvious fragility of mankind; it has also shown the efficiency of an urgent legislation « steeped in time and space », as well as the effectiveness of bio-medical engineering; however, one did not know much about this virus. Time and space have no physical effect on laws, but if laws were deprived of these two concepts, they would lose a major part of their proficiency.

Eradicating the Covid-19, preventing viral blowbacks, and

reviving the world economy, will probably require Marshall Plan type organizations for health as well as for the economy. These organizations should be framed by legal provisions with a particular care for underdeveloped countries. But no one knows if and how it will work, and how long it will take, considering the other looming nightmare: the global warming.

References

[1] Dassonvillle P. L'Inexistence du Temps (The Inexistence of Time) (Persée 2012).

[2] Dassonville P. The Invention of Time & Space (Springer Verlag 2017).

[3] Tarbé M. Poids & Mesures (Weights and Measurements) (Librairie Encyclopédique Roret Paris 1840).

[4] Céré R. & Rousseau Ch. Chronique du Conflit Mondial (1939-1945). Chronicle of the World Conflict. SEFI Paris 1945.

[5] Gaffiot F., Flobert P. Dictionnaire Latin Français. Hachette 2012.

[6] Code Civil des Français, Promulgué par le Premier Consul (Original edition of the French Civil Code enacted by Bonaparte in 1804) (Imprimerie de la République, An XII).

[7] Dassonville P. The Anthropic Principle. Journal of Forensic Sciences and Criminal Investigation. Juniper Publishers. Newburry Park, CA, USA, January 2nd 2018.

[8] Einstein A. (1879-1955) (1934): Mein Weltbild (My Worldview) (Comment je vois le Monde - Flammarion 2009).