

1- Matías

Punitive damages in Argentina

Punitive damages can be defined as a civil fine against a wrongdoer and in favor of a victim; in other terms, punitive damages are a monetary award (a civil fine that receives a victim) that does not compensate his injury suffered but sanctions a wrongdoer guilty of seriously violating the victim's rights, and deters the wrongdoer and others from acting in the same way in the future.

Legal remedies similar to punitive damages existed over forty centuries ago in the Code of Hammurabi and during the 5th century B.C. in the Law of the Twelve Tables of Rome. In 1275, the common law system of the United Kingdom allowed punishments for double damages caused to victims who were religious. Owen (1976) affirmed that the precedent of the term known today as punitive damages is the case *Huckle v. Money* in 1763 (which was a case about an abuse of power against a traveler). The United States took punitive damages from British law: their major repercussion started in the 1970s. Currently, this legal remedy is allowed in forty-five of the fifty states. In the remaining five (Louisiana, Massachusetts, Nebraska, New Hampshire, and Washington), it is not allowed, unless it is specifically authorized by their statutes. In addition, punitive damages are also obtainable in countries whose legal systems are derived at least partly¹ from the common law tradition, such as

¹ Tetley (2000) explains that a *legal system* “is an operating set of legal institutions, procedures, and rules” (p. 681); a *mixed legal system* “is one in which the law in force is derived from more than one legal tradition or legal family” (p. 684); and a *legal tradition or family* “is a set of deeply rooted, historically conditioned attitudes about the nature of law, about the role of law in the society and the polity, about the proper organization and operation of a legal system, and about the way law is or should be made, applied, studied, perfected, and taught” (p. 682). For example, in general in Canada and in particular in Quebec there is a mixed legal system (Tetley, 2000). In fact, whereas the common law system has prevailed in Canada, the

Canada, Australia, New Zealand, Philippines, India, South Africa, and the People's Republic of China.

On the other hand, scholars from pure continental-civil law countries (with the exception of Argentina)—countries with a written law system (rather than a system based on common law)—often view punitive damages with suspicion and distrust because they usually consider this legal tool belongs in particular to the common law tradition (Salvador Coderch, 2001). Consequently, they believe that it should not be allowed by their countries that have a different legal tradition (one with a Roman origin).

In general, the statement that punitive damages are alien to the continental-civil law tradition is irrelevant in Argentina, since the majority of scholars believe that they should analyzed legal remedies (traditional or not) in terms of the advantages and disadvantages associated with their adoption, rather than closing a priori the marketplace of new ideas on legal policy (Salvador Coderch & Castiñeira Paul, 1997).

The idea of admitting punitive damages in Argentina began in 1993 with the published paper written by Daniel Pizarro; he studied this legal remedy and openly advocated for its Argentine reception. This work provoked a rich debate: some scholars supported Pizarro's position (e.g., Trigo Represas, 1995), others opposed it (e.g., Bustamante Alsina, 1994a, 1994b), and others adopted an eclectic viewpoint (e.g., Kemelmajer de Carlucci, 1993). All in

French Civil Code of 1804 has been the main influence in Quebec's private law. Nevertheless, even though the French continental-civil law system does not admit punitive damages, the Quebec Civil Code of 1992 provides them (see Articles 1610, 1899, 1902, 1968, and, especially, 1621). Among others, the People's Republic of China is another example of a mixed legal system. It has, officially, the socialist legal system with Chinese characteristics, and it has been influenced by different legal traditions. There are independent legal systems in Hong Kong, Macau and Mainland China. Hong Kong has the common law system adopted from the United Kingdom, Macau has the continental-civil law system inherited from the Portuguese civil law system, and Mainland China also has this latter system but influenced mainly by the German civil law system (among other European civil law systems). In the People's Republic of China, for instance, Article 47 of its Tort Law of 2010 allows victims to be required to pay punitive damages (or punitive compensation as are denominated in this country).

all, since 1994, the vast majority of Argentine doctrine has agreed that punitive damages should be accepted in the country (Sobrino, 1996; Alterini, Ameal & López Cabana, 1998; Ghersi, 1998; Zavala de González, 1999; Galdós, 1999).

Finally, in 2008, the Amendment Bill to the Law 24240 (2008), Argentine Consumer Protection Law (1993), was approved and incorporated the Article 52 bis. It provides the following:

Punitive Damages. If a supplier does not meet his legal or contractual obligations to a consumer, at the request of an injured party, the judge may impose on the supplier a civil fine in favor of the consumer, which is graduated according to the gravity of the offense and other circumstances, beyond compensatory damages (...)

Because of the importance of this legal remedy in order to sanction suppliers and to deter their seriously reprehensible against consumers' rights and the ostensible vagueness of the Argentine Article 52 bis of the Law 24240, my main research field is to analyze the advantages and disadvantages of assessing punitive damages against suppliers, and the function, admission requirements and proper calculation of their amount, to provide a precise legal guidance to Argentine judges.

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2- Fernando

THE UNDERGROUND JUDGES

Anyone who gives his first step in the judicial career will immediately find that the classic distinction between procedural and substantive law is the same as existing among paper work and literature.

Law is, at the end, a fine mixture between a large number of bureaucratic steps, and truly pieces of literature. The latter, is not always the case, and sometimes they are unreadable writings,

which, regardless of this deficiency, have to be considered by the Judge.

In contrast with what is generally believed, the importance of paper work broadly overcomes the significance of the literature. If it were possible to make a survey among everyone who works with the law, judges, attorneys, experts, etc., it would probably show that almost none of them have read the master pieces of the Law Literature. Nevertheless, the enormous machine remains his work, without paying attention to this beautiful waste of erudition.

Law is, finally, like a game, whose rules are supposed to be known by all the players. But this presumption is not true. Those players, in many cases know very few about that rules or, in other cases, they know nothing at all. As a matter of fact, while the referees of the game have no intention to study the rules, those who actually know them, are usually watching the game from the platform.

The amount and length of the process has overcome since a long time the average human life expectancy. It is like planting a tree that when it reach his final tallness will find already dead the gardener. It is inevitable to feel some sort of compassion about the litigators and his clients, who are like Sísifo, rolling his stone once and again, forever and ever. It is impossible to help them to finish their job. Otherwise, the judge would end up carrying the stone himself.

The steps are inevitable and not even the gods would be able to excuse the parties for performance these duties. The judge is just an instrument of this kind of natural selection, where only a few trials will have a final decision.

The aim of the judge has to be, as paradoxical it appears, to delay the process as much as he could. This is the reason because he has to focus on the formal requirements more than in the rights of the parties. In particular, he has to focus in those requirements related with the kind of paper and characters, mandatory forms, and fees that have to be paid at the beginning of the trial. Mistakes are very commons and the judge should take advantage of them to delay the process.

There are many stages between the complaint and the final decision. Some of them are related with notifications. The notice forms are signed by the judge but previously made by the lawyers. The judge has to control whether they are in the correct way before sign them. The matter is that there is no such correct form. The judicial costume determines its solemnity, and it varies from time to time. There is no way to know it in advance, thus, it become a magnificent chance to retard the final decision.

Related whit the form and content of notifications, is the Officer of the Court work's, who play an important role, because he controls the solemnity of notifications too, even when they were already controlled by the judge. He usually introduces additional requirements that make more complex the paper work.

There is a radiated practice between litigators which is to make various requests at the same time, in the hope that each of them will be determined. This is a vain attempt to forward the clock. This costume has to be avoided, and the solution is not deciding all of them in the first place, compelling parties to make them again, as many times as it is possible. This will ensure that they finally become exhausted. Thus, a strategy of this kind will not be repeated any more.

A crucial stage of the trial is the Evidence Phase, which arrives after the plaintiff's complaint and the defendant's answer. The judge has to analyze every proof offered by the parties. Some of them are totally useless since they try to proof facts that were never argued. It would be a mistake to discharge this kind of proofs regardless the judicial power to do that. This is another way to delay the process.

After overpassing the mentioned stages, the process arrives to the sentence. This is the moment in which the literature comes out. The knowledge of the settled rules and its interpretation would become necessary, but this is not entirely true. Very few trials deal with complex issues which involves questions of law that should be clarified by the interpretation of the settled rules. Indeed, the majority of them are related whit findings of fact, which would perfectly be solved by a

lay person. For example, tort claims based on car accidents.

In the worst scenario, even though the Court would have to deal with substantive law, the knowledge of law is not fully necessary. Attorneys have already done that job. The Judge only will have to choose between the plaintiff and the defendant, and then to copy and to paste the closing arguments of the victor.

How to choose a victor without knowing law is not a big problem. Litigators usually betrayed themselves. When they are not firmly convinced whether they are right or no, they used to give plenty of arguments, and usually would appealed to the ideal of justice. As it was said, "confession of the guilty usually emerges from the heat of his denial". This reminds the Antigona's myth, who invoked to the justice of the "underground judges" when she knew the positive law provided otherwise.

Last but not least, the humbleness of the Judge is not a virtue, as it might seem at first sight. In the contrasts, this is more like an evidence of weakness, which is completely unnecessary. Parties should have the impression that Judges are above them. They should feel that judges are superior beings. Otherwise, his high mission would be impoverished, and his decisions would be questioned.

3 - Antonio

Cold Tolerance in wild and cultivated sunflower in Argentina

The plants exhibit different response to grow and develop at low temperature. Low temperature is one of the most important environmental factors affecting plant development and performance. Sunflower seeds will germinate at 4°C, but temperatures of at least 8 to 10°C are required for satisfactory germination. Seedlings in the cotyledon stage have survived temperatures down to -5°C. At later stages freezing temperatures may damage the crop. Temperatures less than -2°C kill maturing sunflower plants. One of the objectives of sunflower breeders is to maximize the duration of the growing season. An early sowing date could help sunflower plants avoid water-deficit stress which frequently takes place during

the summer. An early sowing date during early spring is characterized by a low and fluctuating temperature regime. In this context, low-temperature tolerance is necessary in the early stages of plants development (seedling).

In Argentina, more tolerant genotypes of sunflower in seedling stages could allow an expansion of the cultivated area to south. The genetic improvement of sunflower includes crosses with wild relatives, because the genetic variability in sunflower is limited. One of these wild species is *Helianthus annuus annuus* (common wild sunflower) and is usually used for sunflower crop improvement. In the characteristic found in this wild species, male sterile (plants that fail to produce pollen viable), biotic stress resistance (for example virus resistance) and abiotic stress tolerance (for example cold and drought tolerance) are objectives in our project.

In the University of the South, Argentina, the cold tolerance in seedling stage was evaluated under controlled conditions in a growth chamber, having 14 h day length, 80% relative humidity, and a temperature of 15°C in the light and 5 °C in the dark. The leaves length and plants height were measured in intervals of four days and a grow rate was estimated using these data. A total of 150 wild and 60 cultivated plants were evaluated showing significant variability in cold tolerance. Some wild plants showed higher grow rate than cultivated samples indicating a better grow under low temperatures. Although more studies are necessary to confirm this cold tolerance, the better response in the wild plants is due to specific genes that could be transferring to cultivate lines through crosses between cultivated and wild plants. This genetic improvement of sunflower could be generate new cultivated lines with better performance under low temperatures than the existent cultivated lines and therefore useful for increase the cultivated area to south where the environment is more cold. Also, these new cultivated lines could be useful for advance the sowing date to the early spring avoiding the high temperatures and the water-deficit of summer during the crop growing season.

At present, the wild plants with different response to low temperature are being investigated looking new alleles for specific cold associated genes. These genes were selected because several studies demonstrated a significant relation among these genes and cold tolerance response in sunflower and another species. Despite that the genetic base of cold tolerance is very complex; the finding of new alleles could begin to explain its genetic control. The information obtained for cold tolerance and the new alleles found could help in our breeding programmes of sunflower, assisting in the selection of different wild and cultivated plants to be used in the crosses during the generation of new cultivated lines.

4 - Gabriela

Chemistry is a branch of physical science. It deals with the composition, transformations and properties of the matter (matter means anything that has mass and volume). As Chemistry covers a very wide study field, it is divided into five major categories, as follow:

- Inorganic Chemistry
- Organic Chemistry

- Analytical Chemistry
- Physical Chemistry
- Biochemistry

In particular, Inorganic Chemistry is concerned with the properties and behaviour of inorganic compounds; it means substances that do not have carbon, such as metals, minerals. Among minerals are those namely oxides, that is materials that contain oxygen. Oxides are interesting for their properties.

Metal oxides are multifunctional materials. For instance, some of them are natural constituent of soil and are involved in pollution processes because they can attach on its surface many contaminant agents; iron oxide is a good example of this. Also the use of oxides is of particular interest in technology such electronic due to interesting electrical and optical properties. Because of that they are used to manufacture microelectronic circuits and sensors. Nowadays metal oxides play an important role in an emergent technology called “nanotechnology”, (the [National Nanotechnology Initiative](#) defines nanotechnology as the manipulation of matter with at least one dimension sized from 1 to 100 [nanometers](#), being a nanometer one thousand millionth part of a meter) because oxide nanoparticles can exhibit unique physical and chemical properties due to limited size.

I am an inorganic chemist and my research is based on the study of the properties, structure and synthesis of metal oxides. At present my attention is focus on zinc oxide. This compound has been the subject of research for many applications for the past several years, because the material is nontoxic, chemically stable, and biocompatible. It is a white powder and is employed as an additive in a wide class of products like plastics, ceramics, glass, pigments, foods (source of zinc nutrient), batteries, and care products as baby powder, creams and first aid tapes. From the point of view of science the oxide is a semiconductor material so it can be used to manufacture electrodes and sensors. Zinc oxide occurs naturally as a mineral, but most is produced synthetically.

A wide number of methods exist for manufacturing zinc oxide for scientific developments, therefore, depends on the application it could be produced as a ceramic, thin film and nanowire. I synthetized zinc oxide as a thin film.

A thin film is a [layer](#) of material deposited onto a specific surface, called substrate, glass for instance. The thickness of the film is from a nanometer (one layer) to several micrometers (many layers). This kind of morphology is employed in the building of electronic devices and optical coatings.

5 - Ethel

USE OF ENZYMES DURING OIL EXTRACTION FROM SUNFLOWER SEEDS

The processing of vegetable oils is an area of technological and economic importance in the food industry. The world's five major annual edible oilseeds are: soybean, cottonseed, rapeseed, sunflower and peanut. Argentina ranks as the world's second largest seller of crude oil sunflower. Our country process the 92% of the seeds produced, about 70 per cent is exported as crude oil in bulk and protein meal and 30 per cent as packaged refined oil. One ton of sunflower seeds yield approximately 41% of oil, 42% of subproducts and others are wastes. The development of sunflower hybrids is the main objective in many sunflower improvement programs. Nowadays, commercial sunflower hybrids present higher oil content than cultivars grown 20 years ago. Oil content varies between 39 and 53%, according to genotype and environment where the crop was developed.

The quality and stability of sunflower oil are essential for acceptance and placing on the market. It is proved that these properties depend mainly on seed quality, environmental and harvesting and storage conditions, seed treatment before extraction, extraction process, as well as the presence of some minor components (waxes, phospholipids, tocopherols, etc).

Industrially, sunflower oil is usually extracted through pressing of seed and later extraction by organic solvents, the most commonly used is hexane. Although, this method is very effective for the recovery of oil of oilseeds, the use of this solvent is very controversial because it presents disadvantages on environment protection and the operational safety. The use of hexane, generally employed for oilseed extraction is being questioned because of its toxicity and flammability. Hexane generates volatile organic compounds, which can react with other pollutants to produce photochemical oxidants that are hazardous to health and can have a negative effect on crops and in the atmosphere. For this reason, researches are focused to the replacement of the solvent extraction, such as aqueous extraction using enzymes, extraction with supercritical fluids or aliphatic alcohols.

The aqueous extraction process was developed as an alternative to the solvent oil extraction process in the 1950's, but its use was restricted by the low oil yield obtained. In this context, another recent development involves the use of enzymes to assist oil extraction from seeds. The cell wall degradation caused by enzymes increases the release of oil by dissolving water-soluble components. At present, the incorporation of an enzymatic treatment in the oil industry has some disadvantages, such as: additional energy costs to assure an appropriate particle size of the milled material for the action of the enzyme

to be effective, separation of the oil from the formed emulsion, drying the meal to adequate moisture. Even so, enzyme-assisted aqueous extraction process may prove to be an environment friendly alternative to solvent extraction and may allow simultaneously recovery of protein and oil.

With regard to sunflower seeds the effects of enzymatic treatments (protease, cellulose, hemicellulose, pectinase) on the quality of the extracted oil have also been studied by laboratory-scale experiments. As with other oilseeds, an increase in oil yield and others components was observed for the enzyme-extracted oil with respect to that of control and solvent-extracted. The different parts of the process and the conditions under which the enzymatic attack is to be made are still is under study. The action of the enzyme directly depends not only on pH, temperature, quantity of used enzymes and hydrolysis time but also on the treatments before or after kernels enzymatic hydrolysis. Enzymatic efficiency will not be the same on the seeds, meal or the type of sunflower hybrid.

In view of the foregoing and given the importance of the sunflower oil in the in international and national trade, there arises the need to promote and provide technologies socially acceptable, easily adaptable to the environment and eco-friendly.

In addition, the knowledge of this alternative process could improve processing, giving as a result a greater competitiveness against other oils in growth, higher profitability, better quality products, among other benefits.

6 - Yanina

Hello, my name is Yanina and I am scientist (chemist). I took my degree in chemistry in at the Universidad Nacional del Sur of Bahia Blanca (Argentina) where I also did my PhD in organic chemistry. Later on I moved to Alicante University in Spain where I stayed four years as a postdoctoral student.

Now I am back in Argentina, working on the synthesis of new catalysts based on metal nanoparticles in order to synthesize new compounds as potential drugs that could be applied to the treatment of different diseases.

What is the meaning of “synthesis of catalysts based on metal nanoparticles”? Well, to be a chemist is like being a chef, if you want to do a cake you need some ingredients for example eggs, flour, sugar, milk amongst other things. For the synthesis of a new drug I need special ingredient called “catalyst” which benefits the reaction by best yields, short reaction times and middle reaction conditions. The catalyst is the key of my research. The metal nanoparticles are a kind of catalyst highly used in organic chemistry.

Today, the development and application of efficient, convenient, selective, and environmentally benign catalyst is highly desirable in organic chemistry.

Firstly, is important to develop efficient catalysts because we don't want to produce waste products that make our new drug impure. We also need a convenient catalyst so the reaction can take place, not every catalyst can be used in every reaction. Selectivity is important too, as we want our catalyst to behave as we need, also in order not to obtain waste products. Finally, over the last decades has become very important to keep the catalysts environmentally friendly as we don't want to contribute to the environmental contamination.

As you can see our first objective is to obtain pure products, so we can avoid the purification step. Also is important to be able to recover most of our catalyst, mainly due to two reasons, the first one is economic, the most we recover the less money we need to spend, and the second one goes back again to the purity of the new drugs, as the catalysts can also make them impure so again the most we recover the less impure our new drugs are.

The synthesis of metal nanoparticles is carried out by chemistry reduction of a metal salt in the presence of a reducing agent. Then these nanoparticles are supported on different materials with the goal to use the catalyst in several times. Supported copper and iron metal nanoparticles were synthesized using this procedure. The catalyst can be easily recovered by filtration (after treating with a solvent as ethyl acetate) and reused in other cycle. Usually, the support plays an important role in the recovery of the catalyst, we need to find the perfect balance between a support that keeps or even enhances the activity of the catalyst and also makes it easy to recover.

The activity of the catalysts is tested in different interesting reactions, and once we have found the optimal conditions for a reaction, the catalyst is applied for the synthesis of different drugs.

The characterization of the catalyst is very important for us because we can explain some mechanistic aspects about the chosen reaction. We can use different techniques in order to

know the size and morphology of the nanoparticles, oxidation state of the metal and the amount of the metal supported on the catalyst.

The new drugs are analyzed in different tests with the purpose to know the exact biological activity.

This whole procedure is the first link in the chain for the synthesis of potential drugs.

I am very happy with my work because every day is a new challenge for me and I hope to find some useful drug to treat a disease.

7 - Mercedes

Maternal effect on dormancy

Dormancy is a common feature in weed seeds which determinates germination along time and space. The moment in which an annual plant emerges affect their *fitness* – capacity to complete the life cycle and leave offspring – because define environmental conditions, potential herbivore and neighbor competition. The environment where plants growth and develop may influence their progeny phenotype, specially the conditions during flowering and grain filling. This process contributes to the local adaptation and it is called maternal effect.

Lithospermum arvense L. (Boraginaceae) or “Corn Gromwell” is a weedy annual specie of winter cereal crops of the south-west area of Buenos Aires, Argentina. It presents terminal cymes with little flowers which corollas are white and then produce gray-brown, triangular-ovoid, finely tuberculate nutlets. Due to the fact that these fruits have only an embryo they are considered like a seed.

The aim of my work is to investigate the effect of different environmental factors such as light intensities, water supply and nitrogen level of the maternal environment on the variance of fitness components like seed dormancy.

Two field experiments were established at the experimental field of CONICET-Bahía Blanca with the goal to create seeds from plants grown under different environmental situation. In the first essay *L. arvense* seeds were sown inside 1 m² metal structures wrapped in different materials to obtain 64,6% and 37% neutral shade which were compared with seeds sown under full sun. This experiment was carried out twice in 2012 and 2013. In the second experiment seeds were sown inside 1 m² plots covered by a metal structure built with polyethylene in order to control the water input by the artificial irrigation regime (dripping system). Nitrogen fertilization was performed with UREA (46% N) splitted between the vegetative growth stage and the flowering state. These treatments were made in order to obtain two levels of soil irrigation (watered: W⁺; rainfall: W) and three levels of nitrogen fertilization (0 Kg N/ha: N; 75 Kg N/ha: N⁺ and 150 Kg N/ha: N⁺⁺). In this case the first generation (F₁) was sown the next year to have a second one (F₂), both of them were analyzed (2011-2012).

Germination of the seeds, whose mothers were grown under different light intensities, was assessed immediately after harvest. Trials were carried out in growth chambers under three constant thermal regimes: sub-optimal (7 °C), optimal (15 °C) and supra-optimal (20 °C) temperature during three weeks.

Offspring germinability, for the N-water experiment, was assessed on an aluminum temperature gradient bar where seeds of each maternal treatment were incubated at six constant temperatures (5, 8, 12, 16, 20, 23 °C) for 21 days. Such assays were carried out four times during each year.

The proportion of germinated seeds and their rate were analyzed. No differences have been found in the case of shaded seeds compared with the witness. Conversely, the behavior changed in the seeds formed in fertilized and watered plants. For this reason a thermal-germination model was fitted to data for each situation and thermal parameters were compared.

The main results showed with an increase in the level of nitrogen in the soil, a higher maximal germination temperature (T_c) and a lower sub-optimal thermal time (θ_2). In other words, the level of dormancy is lower when the plants are fertilized with UREA. On the whole, in the field we may plan a good control strategy of this weed if we know the managed of the crop because we could suppose the moment when the weed is going to emerge.

8 – Fabricio

INTRODUCTION

Our research group is composed by senior investigators in the department of geology and chemistry at the Universidad Nacional del Sur, Bahía Blanca. The field of study is about underground fuel leaks coming from storage tanks under filling station.

As the amount of vehicles in the streets grows, the demands for fuel have been increasing. Along with this increase are also growing the number of filling stations. The filling stations have Underground Storage Tanks (UST) which contains the fuel.

According to previous studies, one of the main source of contaminants in the urban areas are caused by hydrocarbons leakage from those UST. UST could leak for a variety of reasons. Some tanks are made of steel, which is likely to corrode over time, causing tank contents to leak into nearby soils and groundwater. Negligence, faulty installation or inadequate operation and maintenance of UST systems also can cause a leak.

The problem we address includes an increasing explosion risk at urban sites where the volatile flammable accumulates, the contamination of underground water resources with fuel additives and damages on our near stuary where ends the contaminated underground water.

With this project, our efforts are focused on providing an innovative empirical model to detect the leaks and to know the mode of contaminant migration in the subsurface (known as

“contaminant plume”). We also want to further our scientific understanding of interior corrosion protection in steel tanks.

METHODS

The project has four main stages. The group is at the INITIAL STAGE, in which we collect and classify preexisting information (hydrometeorological, hydrogeological, hydrochemical and physicochemical data). New data will be soon added in next field journey when we gather groundwater and soil samples and take them to the laboratory to search for hydrocarbon chemicals. We have also groundwater monitoring wells, near active and inactive UST of filling stations, controlling several fuel additives like benzene, toluene, ethylbenzene and xylenes (BTEX).

SECOND STAGE: Hydrocarbons have the particularity of being immiscible in water and constitute what we known as the *Non Aqueous Phase Liquids (NAPLs)*. From NAPLs, the fraction less dense than water or the *Light Non Aqueous Phase Liquids (LNAPLs)* contributes significantly to the contamination.

When hydrocarbons starts filtering through the walls of UST, it moves vertically downward along the Unsaturated Zone until it reaches the phreatic layer (saturated zone). Owing to its lower density, the LNAPLs “floats” on the phreatic layer in the direction of groundwater flow. This mechanism is going to be detected and followed by us with a series of monitoring wells.

THIRD STAGE: All the information gathered during the first and second stage will be used to implement an empiric model which allow to know the dispersal of the contaminant plume. We have a specific mathematical model that uses chemistry and geology variables to determining how much of the leaking fuel is reaching the saturated levels (aquifer).

LAST STAGE: DISCUSSION. There are some factible solutions to prevent gasoline from leaking out of UST.

- Oil industries should investigate a new more resistant corrosion material to contain gasoline.
- It must be mandatory that all filling station’s owners examine with modern systems their UST to detect on time possible leaks.
- Leaking UST sites must be cleaned up to restore and protect groundwater resources and create a safe environment for those who live or work around these sites.

9 - Agustina

Sociolinguistics is a discipline that is usually defined as the study of the relationship between language and society; therefore it is considered an interdisciplinary science (mainly between social sciences and linguistic ones). It means we are not interested in the cognitive aspect of language generation (as Chomsky is), nor in the formal aspect of language structure (as de Saussure is). What we care about is the linguistic interaction between two or more people situated in a social context, for example: communication in different institutions like schools, hospitals, and government offices, among others.

My field of study is **Applied** Sociolinguistics. By “applied” we mean to construct a theory, or to use one already available in order to **detect** and **solve** real social problems that are manifested in the linguistic interaction. In other words, we intend to provide **tools** in order to improve the linguistic performance in any social context, where it is required or could mean some valuable contribution. The fields of application are numerous, as mentioned above, mainly, we are interested in: classroom interaction in every level of education (the actual conversations between teachers-pupils); communication doctor-patient; inter-cultural communication in official institutions like airports, hospitals, and governmental offices; second language teaching; legal matters like misinterpretation in trial situations.

Like any other social or humanistic science, Sociolinguistics contains many “branches” that make focus on different aspects of the relationship language – society and use different methodology, most of which are also part of the applied perspective. These “branches” are interconnected and work together, making it difficult, most of the time, to find the frontiers between them. Overall, they are: Ethnography of Communication, Critical Discourse Analysis, Sociology of Language, Interactional Sociolinguistics, Pragmatics, among others.

Now, I would like to refer to the process followed by an applied sociolinguistic, by transcribing different examples of teacher – pupils conversations taken from a corpus compiled in several classroom situations of different schools. The aim of this corpus is to collect information about the dynamics of classroom communication, that is to say, what kind of relationship is given between: teacher-pupil, pupil-pupil, teacher-teacher, teacher-parents, teacher-principal, etc. It is important to take into account all kinds of relationship because each one implicates different bonds and different strategies as well. These examples specifically focus on teacher-pupil relationship and intend to prove that pupils have

very little space to express themselves within the classroom, even if they are demanded to. In other words, teachers ask pupils to participate in class answering their questions, but at the same time they do not always accept their answers as correct or pertinent or even complete. Teachers are, almost all the time, constricting the few opportunities pupils have to express. All this aiming (mostly, unconsciously for teachers) to reinforce the asymmetric relationship between interactants, in which the teacher is who possess the power and domination over pupils what allows him/her to impose the dominant ideology. It is clearly shown in the three movements organization: teachers start a conversation giving a command, pupils answer, and finally, teachers either assent and expand or correct.

Here is a transcription of two different teacher – pupil conversations about the same topic (they are originally in Spanish, the translation is mine), and intends to show the hypothesis that pupils' voices tend to be silenced in the classroom interaction:

1) The teacher in the third movement corrects the pupil's answer because it is not what she expected, even if she never explicitly said she wanted "a complete sentence" for an answer:

-Teacher (T): What's the weather like today? One at a time... Adrián

-Pupil (P) Adrián: Sunny

-T: What's sunny? No. You should have answered: "Today it is sunny".

2) The teacher expands the pupil's answer in order not to lose her control of the conversation:

-T: What's the weather like today?...

-P: Today it's rainy.

-T: It's raining? Oh, yes. OK. It's a rainy morning, though now it's stopped.

Once the corpus is compiled and analyzed, and finally, the hypothesis are proven, the researchers, following the “applied” basis of action, write down their results and their proposals of solution or improvement for the situation studied, and then they publish them in order to make these known to other researchers, but also to teachers and the people involved in education who will be benefited from this information and its implementation. They also usually give courses to teachers where they explain their proposals and their specific application to the classroom activity.

This last part is what characterizes the “applied” aspect of Sociolinguistics, its focus and emphasis on detecting problems and proposing solutions to real social problems.

10 - Lorena

My field of study is **Genetic Improvement of Forage**; in particular we are studying a *Panicum coloratum* species. It is a perennial forage grass native to South Africa that has been introduced to different parts of the world including Australia, Japan, Texas, Mexico and USA, but poorly adopted by ranchers in Argentina. The interest in studying this species arises because it is adapted to a wide range of soil and climatic conditions and constitutes a good forage resource for **zones with edaphic and climatic restrictions**, where cattle rising activities are here displaced in our country.

The Pampas of central-eastern Argentina is a plain of more than 50 million hectares whose high fertility and productivity provides significant advantages for economic production. Unfortunately, during the last decades, this region has experienced a process of “**agriculturization**” over areas previously dedicated to cattle ranching. The most dramatic technological innovation was the introduction of genetically modified soybeans tolerant to glyphosate (an herbicide that controls weeds but does not affect soybeans), which displaced other crops, pastures, and forests. Soybean currently is more profitable than other crops, given that require less investment and labor. Later, this process started to expand towards extra-Pampean regions and over natural ecosystems; as consequence, the **cattle rise operations** were displaced into **marginal environments** with soils of less aptitude (drought, waterlogging, salinity, low mineral nutrients, extremes temperature). This scenario raised the need to explore **new forage resources** that can adapt to these **abiotic stresses**.

In relation to **salinity**, this is the presence of salts (such as sodium chloride, magnesium and calcium sulfates) and bicarbonates in soil and water; is one of the most brutal environmental stresses that hamper crop productivity worldwide. Salinity stress involves changes in various physiological and metabolic processes in plants. Soil salinity is known to represses plant growth which is then followed by ion toxicity. During the initial phases of salinity stress, water absorption capacity of root systems decreases and water loss from leaves is accelerated due to high salt accumulation in soil and plants. This stress causes various physiological changes in the plants, such as interruption of membranes, nutrient imbalance, decrease in stomatal aperture, and decreased photosynthetic activity. In addition, salinity can lead to oxidative damages in various cellular components such as proteins, lipids, and DNA, interrupting

vital cellular functions of plants. Against this, plants exhibit several responses at molecular, cellular, metabolic, physiological, and whole-plant levels to mitigate salinity adverse effects.

In Argentina, over two million of hectares are affecting by salinity. Therefore, the introduction of salt tolerant forage species is one of the most useful alternatives to overcome salinity problems. The purpose of our study is to evaluate the response of *Panicum coloratum* to salinity. Our attention is centre on features that are relevant for pasture establishment, such as germination and seedling growth over salt controlled environment experiments and comparing these results with salt field trials. Successful establishment of any crop in a saline soil depends of adequate germination and the ability to growth under saline conditions for ensuring the natural self-seeding of the pasture. Because the degree of salt tolerance varies among and within plant species, the point of interest of our research is to evaluate **genetic variations** and differential responses to salinity stress in a set of plants of *P. coloratum*, through the use of several morphological and molecular techniques. This would enable us to detect individuals with highest salt tolerance and to identify physiological mechanisms, sets of genes, and gene products that are involved in increasing stress tolerance. The ultimate aim of the project is found promising genotypes for further cultivar development, which would allow increasing the availability of forage in areas with this type of environmental restriction.

11 – Maryra

Currently, in the food industry there is a trend to the development of edible coatings as an alternative to the use of synthetic packaging and also to help reduce and biochemical changes and quality in the product caused by the transfer of water vapor between the food and its surrounding medium. It is important that the coatings are formulated with components capable of forming a suitable, cohesive, continuous matrix. Their formulation from emulsions, industrially interesting because it involves little preparation operations, has been expanded, so that each component provides functional properties and minimize the disadvantages. Most coatings are composed of hydrocolloids and lipids provide structural integrity to provide good barrier properties to water vapor. Comparisons made by some researchers demonstrated that the most efficient hydrophobic substances are fatty acid waxes and supported on low methoxyl pectin. Pectin is a polysaccharide, is one of the most used in the formulation of edible coatings, is a component capable of reducing the interfacial tension between the hydrophilic and hydrophobic phases and provides efficiency in preparing emulsions. Sunflower waxes could be applied to improve properties of water vapor barrier coatings made from emulsions material. The stability of emulsions is important in determining its efficiency in obtaining edible coatings, is the ability than the emulsion has to resist changes in its properties over time; in this way, the emulsion is more stable if their physicochemical properties change slowly. Instability phenomena may occur due to physical and chemical processes, physical processes result in an alteration in the structural organization of the molecules such as the phenomena of settling, creaming, flocculation or coalescence. The first two include particle migration and are considered reversible processes and the last two include variation of particle size considered irreversible. One of the equipment more used for measuring the stability is TURBISCAN, is an analyzer than consists of a reading head moving along a cylindrical cell during scanning of the height of the sample. The reading head consists of a source of

light and two detectors. The transmission detector (T) receives light passing through the sample (0°), while the backscattering detector (BS) receives the backscattered light (135°). The samples were opaque and then we used only the backscattering detector in most assays. The reading head acquires data of T and BS every 40 microns to a maximum height of 80 mm. The profile obtained characterizes the sample homogeneity, the particle concentration and average diameter. The parameters are represented by a curve showing the percentage of light BS or T as a function of the sample height in millimeters. The greater the value of %BS so is the amount of light scattered by the droplets and the turbidity of the sample. The acquisition along the product is repeated with a programmable frequency that characterizes the stability or instability of the same (if the readings are identical, the more stable the system). For studying the kinetics of destabilization of each phenomenon is necessary to define height zones in the sample. Microscopy techniques provide information about the structure, size and organization of the components of the emulsions and also allow knowing particle diameter for getting images than then can be processed for specialized software. The structural organization of the particles influences the properties of the emulsion, and therefore, in the barrier properties of the coatings made from such emulsions. The microstructure could be determined by scanning electron microscope, where could see that the pectin makes a network that supports and distributes the wax crystals. The analysis of the stability and microstructure of aqueous emulsions of pectin and sunflower waxes will be used as a basis for producing edible coatings for food.

12 - Marina

José Martí: key of Cuban Independence.

During the nineteenth century, Latin America was involved in a complex process, full of contrasts and divergences: the ancient Spanish colonies started to fight for its independence. As a result, by 1850 after many years of struggles, the entire continent slipped out of the hands of the Iberian powers which had ruled the region since the conquest.

However –by the late nineteenth century– in the Caribbean area the independence process remained incomplete, unfinished; in fact, Cuba and Puerto Rico were still under the Spanish colonial domination.

In this framework, our field of study is Cuban independence process and more precisely, the role of the island José Julián Martí.

Martí –also known as “El Apóstol– was born on January 28, 1853 and died in battle against the Spanish forces on May 19, 1895. Although he is generally accepted as one of the most important figures in Latin American literature², Martí was more than just a writer. For this reason is fair to say, for example, that he worked furthermore as a journalist, a professor, a publisher, diplomat and representative of several Latin America republics; all these activities reflected his political and social commitment, his support for the cause of Cuban independence. As Richard Gray argues, Martí was at once “anthropologist, historian, sociologist, political scientist, economist, writer, philosopher, and something of a rebel (...)”³

As a consequence, literature was very important owing to the fact that it can be considered one of the key instruments in his political activity for the conquest of liberty.

At the age of 16, he wrote many texts to express his commitment with this aim. As a result, he was arrested and incarcerated in the national jail, following an accusation of treason from the Spanish government. At last, Martí was sentenced to six months of hard labour and, in 1871, deported to Spain.

After many years of travelling around Europe and Latin America, Martí lived his last fifteen years in the United States where he founded –in 1892– the Partido Revolucionario Cubano (PRC); finally, in 1895, “el Apóstol” left New York, returned to Cuba and started the war.

Despite he dedicated his life to the promotion of political independence for Cuba, and intellectual independence for all “nuestra América”, the majority of studies written until 1940, presented an apolitical, uncon-troversial, and essentially neutral image of Martí.

Nevertheless, during the second half of the twentieth century, few researchers have addressed the problem of Martí’s revolutionary action. Nowadays is possible to expand those research lines, and many Latin American historians and philosophers are interested in an alternative approach to José Martí.

² During his life Martí combined different genres. In fact, his written works condensed poems, essays, letters, lectures, a novel, and even a children's magazine. He wrote for numerous Latin American and American newspapers and he also founded a number of newspapers himself.

³ GRAY, R., “Jose Martí and the social revolution in Cuba”, Stable URL: <http://www.jstor.org/stable/164812> p, 249.

For this reason, we pretend to analyze Martí's *praxis* in the revolutionary context; these kinds of studies try to demonstrate and explain the relation between Martí's written legacy and his political goal: the independence of his country and the process of emancipation of "nuestra América", both against to the expansion of North American imperialism. Martí wrote several texts about this last aspect, indeed, he adopted "yankee" imperialism as one of his areas of interest.

From this perspective we try to understand the figure of our author as an intellectual and a revolutionary actor; in others words we recognize Jose Marti as an "intellectual revolutionary", with radical political opinions and committed revolutionary.

Lastly, according to this framework and for our purposes, we investigate a documentary corpus composed by different types of literay genres: a speech ("Madre América 1889), an essay (Nuestra América, 1891), various letters and political texts writing before and after the foundation of the PRC.