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Social Sensibility and Rural Development: the Innovation as a Process of Social Learning.

Planificación para la Sostenibilidad: Proyectos de Ingeniería en un ámbito Local-Rural

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CASE STUDY

Social Sensitivity and Rural Development: the Innovation as a process of Social Learning

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Rural development has become during the past years in the second pillar of agricultural politics within the European Union, conscious of its importance in an equilibrated development of the land. The following revisions of Agenda 2000 will announce a deep reform of the CAP in favour of rural development and security in the food. The cultural functions of agriculture, the ecological objectives, the ethic issues, the products quality guarantee and the aspects related to the social equilibrium, have passed into the front line, according to the recent opinions of Franz Fischler, the European Commissioner for Agriculture.

In the increasing global context and in the construction of the European Space of *Lifelong Learning* -COM(2001) 687 final- these this paper was presented in the first ***International Joint Workshop on Rural Development Engineering***, in Tampere (Finland). We have note these Workshop constituted a perfect forum to analyse ideas which will make us think about the relationship between rural development, innovation and engineering.

These words will be based on two points which are reflected in the title: The social sensitivity and the rural development projects; but previously we will analyse some complementary concepts which are key to the development of the society: knowledge, innovation and learning capacity.

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1. The historical context. The challenges for the XXI century.

We are at the beginning of a new century which will be headed by technological development. If the Industrial Revolution was characterised by the development of the production processes, and the XX century by the mobility and the importance of the evolution of communications, the following years will be marked by the development of the new technologies, and especially through information and communication.

It is essential that the debate related to how the technological development shall be configured, and its real usefulness, will be participated by a large number of individuals so that the technology of information will provide the largest number of objectives desired by the users, achieving through this a wider acceptance and becoming a reality.

In this way, as a result of these changes in society, **new areas** are opened from where attitudes formed by respect and moderation appear. We daresay that through this we will find ourselves before the new discovery of **solidarity**. This discovery takes us to the need of **designing measures** and **actions** that will allow us to discover and re-dimension the vital spaces to make them again "*humanly taken*".

This concept of solidarity, is not understood as working **for others**, but working **with others**, trying to join the actions done by each individual in a common project. In this projects, **participation** necessarily occurs, which is possibly the most important demand for solidarity, what appears first when the basic necessities are covered, or together with them (*Quintana, Cazorla, 1.999*).

If the modern project created incompatible social spaces, a **post-modern** project claims compatible social spaces, supporting solidarity instead of disgregation. This statement suggests the projection from the

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most personal areas of human beings to create areas of solidarity, which are based solidly in the consideration and dignity of human beings (*Cazorla, 1.997*).

In the past years the citizens are becoming aware that the **scientific knowledge** has contributed towards a profound re-organisation of the technique, with which the living conditions have experienced an extraordinary change and a successive improvement. This meant in all aspects a material progress that at the same time caused a series of problems which are beginning to be valued by the population. In this sense, and from the social point of view, we must emphasise the increasing advance which is taking place within the **new system of values** which could be defined as post-modern, giving place to wider areas of the society to be more interested in things such as the quality of life or the deterioration of the environment.

At the beginning of the XXI century, there are good reasons to be optimistic. The historic acceleration has created spaces inconceivable ten years ago, which have all the elements to affect positively the way life develops in our planet. The challenge for global development overcoming the enormous barriers that still exist is presented now as a priority. The most developed countries must be the first to give solutions which must be headed by only one idea: generosity, suppression of selfishness (*Cazorla, 2000*).

2.- Science, Technique and Engineering

The **new scientific advances**, **the new technologies** and their application to engineering are always three closely related concepts.

In some contexts there is a tendency to associate the concept of technology exclusively, to the machines and apparatus which work (*Tecnos*), excluding the aspects related to technology (*Logos*). Nevertheless, technology is much more than machines; it is practical

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knowledge (Cotec, 1998). Therefore, technology might be understood as "*the systematic implementation of scientific knowledge or other knowledge related to practical work*" (Galbraith, 1980).

Some authors defined the **technique** as *the activity developed by the man for the man only aimed to increase the material conditions of life.* We speak about the "know-how", referring to the Greek "*techné*", to art, aimed to the creation of the technological object, which (is there to redeem) a specific and useful function *(Scala, 1991).* **Technology** is therefore conceived as the group of means for the manufacture of products.

The technique has to adapt itself to the changes in society. Even though there are universal and permanent moral rules valid for everyone in all times, in the different cultural contexts appear a system of values, which are not standard and ecstatic, but multiple and dynamic. If the technique contributes to the achievement of well being, it has to adapt itself to the changes that will happen with time (Ortega, 1939).

Although governments have different cultural, political and administrative environments, they often confront similar ethical challenges, and the responses in their ethics management show common characteristics. *Member countries need to have a point of reference when combining the elements of an effective* ***ethics management system*** *in line with their own political, administrative and cultural circumstances* (OECD, 1998).

The **Science** on the other hand, it is not focused on doing something useful for an immediate use. Its aim is to **know the truth,** as accurate as possible. To explain phenomenon happened in nature, to discover its laws, to create new processes and to define the cause-effect relationship.

Therefore, with **science**, the technique and engineering are both improving. The technique supplies observation and analysis tools that, allowing a better **knowledge of the truth**, will enhance the science;

which closes a circle of mutual improvement that contributes to the technological development.

The **Science** provides an accurate and rationalised knowledge of certain things, which are necessary for the study and research. Science is, therefore, a fundamental activity for the development and future of mankind.

We understand e**ngineering** as the human activity that applies the **scientific** and **technical** knowledge in order to solve specific problems, to satisfy human needs, avoiding the degradation of the environmental resources.

In words of professor Ramos, the design of a prototype and the manufacture of the first product is an engineering problem; the manufacture of the following ones is a technological problem. *For example, the planning of a forest for different uses has important social consequences, this is engineering, while the reafforestation project in the area is a technical matter (Ramos, 1971*). In fact, the repetitive character is more a technical matter than engineering; whereas the imagination and creativity.

In the **interconnection** between **science** and **technology** lies a great part of the success of the projects of engineering that will be developed in the future, constituting one of the bases for the progress and cohabitation of our society. Therefore, the intensification of the dialog that will help the setting in common of different points of view on the same topic, constitutes an enhancement and a challenge in which we all must collaborate.

The technology, the knowledge and their switch into innovation constitute determining factors in order to guarantee the competition of the rural areas. Their advance and development must move towards the increase of **human values** and the **dialog** as essential tools for the resolution of an increasing demand in the quality of life of all citizens.

As important as the technical knowledge are the **social contexts** where they are developed. As important is the correct application of the technique to achieve the desired objectives as the knowledge, **a priori**, of the effects caused by the implementation of a certain measure in the population. In this sense, it is essential that the person in charge of the design of a specific project will take into account what is known as ***Social Sensitivity. I***n other words, **the knowledge of reality from all points of view** that allows to **consider** a series of variables as a previous reference for the application of technical knowledge.

Nowadays it is particularly important to discover the reality and the value of things, actions and situations, not only from the material or technical point of view. If we want to know whether we must or must not do something, and the value this action has for the person, it is necessary to deepen into a process of ***social sensitivity***, in a way that our intelligence will travel across the material world of things to enter through a human sense of such things.

This process of Social Sensitivity requires the engineer and the project designer to be adapted to it and a very important previous step in order to achieve such sensitivity is becoming aware of this need.

We will see three other closely related concepts that condition the process of social sensitivity and the ways of its development.

3.- Knowledge , innovation and learning

The societies that, during the last two centuries have headed the global development have turned into economies fundamentally based in **knowledge.**

These societies have organised themselves to face the problems they might find, so it is necessary to **develop the human knowledge from their own human actions**.

In these societies we can also see a continuous expansion of the projects regarding the knowledge sector: Education, investigation, culture and communication.

The speed of **innovation i**n these societies has had a notable increase, with profound effects in all dimensions of the social activity. These transformations mean important changes in the way of producing, in the way of consuming, in the way of learning, and of course, in the way of thinking although their economic and social consequences may be questioned in some aspects.

The "Innovation" is a complex term. In this instance, it's possible detected different kinds of innovation at varying levels in the projects of rural areas. In the territorial that have participated in the *European Initiative LEADER* experience, the innovative nature of the actions tested under LEADER, include the following random selection of projects: *new job sources, support for micro-businesses, creating links between players and sectors, promoting the environment as a development lever, adapting services more effectively, new attitudes and practices of local democracy (new forms of collective organisation, of organising knowledge, etc.), reassessing an area's resources, recreating a local identity, instituting new forms of financial organisation and management of public policies* (AEIDL, 2001).

But in this context of change, especially present in rural areas, the results in development are not only based on the knowledge or "*Basic Skills*" of local population. The "*Capabilities*" and "*abilities*" of the population to meet the new conditions and opportunities are essential too.

Recently, economists have been impressed by the role of ***"intangible assets"*** in maintaining a firm's competitive trim (OECD, 1998). Most of the intangible factors, it is essential to recognise, are embodied in

people. Intangible assets are mostly **social capital** (Midgley, Livermore, 1998).

Therefore, **knowledge**, **innovation** and **social learning** are included in a hard process of change of rural societies that have human development and the "*social capital*" as nerve centre.

Currently, we can mention at least four principal dimensions that influence the learning systems and the development of societies:

- The **new scientific advances** and **the diffusion of new technologies**, especially information and communication.
- The deep transformation and **diversification** of the activities of **rural economics** and the redistribution of subsequent work.
- The increasing **international relations** and **the tendency towards globalisation** of societies and their economies.
- The increasing **level of education** and the **base of knowledge** in the most advanced rural societies.

4. The innovation as social learning.

From an excessively technocratic point of view of development, **innovation** may be understood as an essentially technical act for the *production of a new device*. This **technological innovation** has been traditionally conceived as a simple act of production, design and engineering of product or process, without mentioning the social processes (Bricall, et al., 2000).

Another one valuable approach is conceiving **innovation as a process of social learning** that includes new human relations, new management, administration and negotiation systems, new forms of learning, new ways of structuring and sharing information and knowledge among all social agents that bring innovation.

Innovation as a **process of social learning** might be therefore understood as a hard, open and interactive process with an important **social dimension**, which means a constant adaptation of the forms of knowledge and learning to the market and technological conditions constantly changing.

The new tendencies point towards an acceleration and important changes in the ways of learning, betting for the processes based in the action –*learning by doing*-, as well as in the training of values and abilities essentially acquired through education. Scala said *the origin of knowledge is observation and experience, "saper vedere" (Scala,1991).*

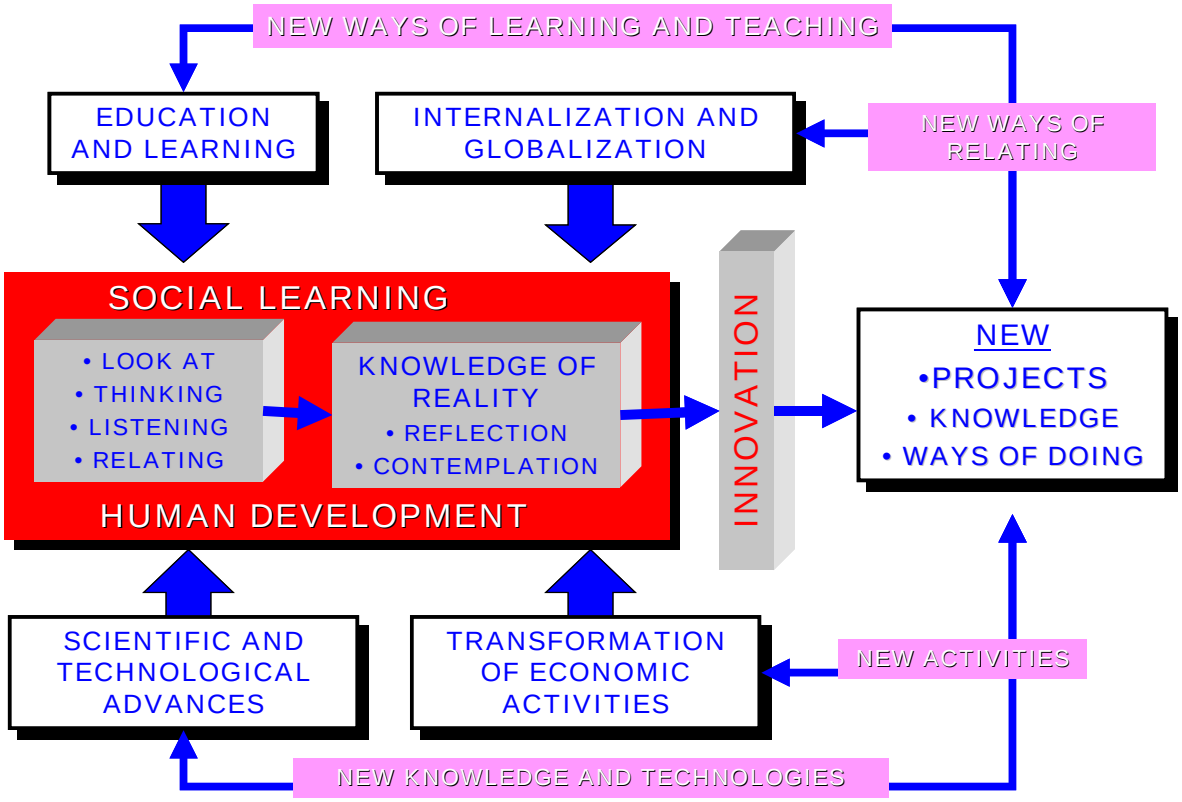
This approach of innovation as a learning process is especially important in the **rural development projects appraisal**, where it is demanded that the rural population change from being an object to being a subject of the projects and processes (Oakley, 1993). In this way of considering development, similar to European LEADER model, the innovation is mainly obtained from the local popular knowledge, which are as appropriated for the action as the knowledge obtained from the professionals and the external input.

Innovation in the European *Initiative LEADER* is essentially defined ***as a process***. Innovation can be analysed on the basis of three components: *the temporal dimension, the social dimension and the collective dimension* (AEIDL, 2001).

Innovation as a **learning process** means also the development of the mental activity of **contemplation**.

We understand contemplation as *the application of the mind- to a material or spiritual object- with attention and a particular affection*. Its aim is to know sensibly and intellectually the realities, being always respectful with the others.

This knowledge, seen with double perspective -sensible and intellectual- starts with a perceptive activity put into practice through the view of things, thinking about them and listening to people. The following chart tries to interrelate these concepts that have their higher meaning when they are related to the human development and his intangible factors (Cazorla, De los Ríos, 2001).



Understanding this way the processes of innovation, and the projects, requires the professionals of development to give up their own ideas and to create a new **social sensitivity**.

5. The social sensitivity.

Sensitivity is *the typical ability of feeling of human beings. We understand it is the natural tendency of people to get carried away by compassion, humanity and tenderness*; this is how the Dictionary of the Royal Academy reads it.

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This definition, applied or related to the social aspects, includes intangible factors, but it has an extraordinary value and it is not only worth of being taken into account, but also of being promoted. This social sensitivity will allow the new generations, new professionals, to develop an especial interest for the historical, social and cultural **knowledge** of the environment in which they are going to perform their projects, as an essential element to guarantee the **well being of citizens** and the success of the initiative taken in each moment (*Cazorla, 2000*).

These new professionals from the different areas of engineering, must evolve towards the necessities of the society, involving themselves in new transformations to give a meaning to their profession which will allow them to join up their future to the other social groups.

It is expected that their activity will become a profession of synthesis, located between production, management of natural resources and territorial planning, increasing the dialog that will allow us to know the population needs.

Engineers must know, respect and include these social needs and intangible factors when designing new projects to be developed, and include the traditional "**know-how**", with this new outlook required.

Post-modernity is characterised, among others, by the rediscovery of a key concept that has an important relationship with social sensitivity: the **relationship between man and the environment**. The concept of **care** is emphasised in its development**.** The professor Llano (1988) said that *rationalist and uni-dimensional attitude of the dominium must be substituted for the concept of* ***care***. Care, **as a guiding concept for action**, does not proceed with prepotency and it gives an complete outlook of problems and solutions.

The concept **care** in the **operative** level corresponds with the word **respect** in the **intellectual** level, so we can avoid that the sciences with derived techniques, which firstly were in our side, will turn against us (*Cazorla, 1.997*).

In this way, we will not stagnate ourselves in the short aim of doing it technically right, but also acting according to our nature. The restoration of these co-ordinates of form, will allow us to act with a complete outlook, as a result of doing something right, with respect, knowledge and care together with action.

In order to achieve these objectives, it is necessary the development of processes where the action is based on the **Social Learning**, learning from our mistakes allowing the new information to take the course of action and to implement the corrections in the new required projects.

This social learning is based on the critical feed-back of knowledge from different social actors, being in favour of open meetings that invite critics and comments. This process also requires a strong leader that will not be afraid of accept mistakes, so, when the action fails, the project design and the image the protagonist has of the reality must be questioned, even the last values where the action relies

In the middle of the last century, we were witnesses of the strong apparition of what we can call *environmental awakening*. It allows the people to be clearly conscious of how scientific knowledge has contributed to the material progress, and, at the same time, it has generated a number of serious problems related to our environment.

Given this situation, the first conservationist movements appeared, served notice of the possible scarcity of the resources, and they try to safeguard with **technological** and **scientific** solutions the better usage of natural resources without lessening the natural capital, built up by our ancestors.

In this context, the worries about nature give place to a series of conservationist movements, that even show sceptic towards progress and the technological development. Some of these ecological planners expressed very simplistic solutions, based on the minimisation of the environmental impact (*Ramos, 1.979*).

This situation is followed by the appearance of a series of technical reports published by the FAO and other International Organisations that recognise that the man in contact with nature must act as the **owner and keeper, intelligent and loyal, and not as a carpetbagger and a destroyer**.

The result of this social movement which claims solutions for the problem, gave rise **the political parties** in many countries to include **measures in their programs** in order to give effective solutions to these problems that worry the citizens so much. As a result of this, an administrative system in charge of the management of these measures was generated in time, until now, with national and regional organisms in charge of managing all aspects related to this matter.

This is a point of inflexion from where the project would start claiming for respect towards nature as part of the worries about the living conditions of people currently living on Earth and the future inhabitants. This project, referring to past facts, doubts that the rational and technological progress as it has been conducted, turned out to be an ethical progress. It doubts it so much to ask itself **if we might reverse the terms, to lead the ethical progress to the rational progress** (*Ramos, 1.993*).

After the broadcasting of the sustainable development by the Brutland Report in 1991, the International Union for the Conservation of Nature, the United Nations Program for the Environment and the Global Fund for the Nature jointly published the ***Report Care for the Earth*** which expressed a series of principles and a series of actions for the future of the planet and its inhabitants. The report gave a new dimension to the

sustainable development; The need of what was called the **Ethics of sustainability**. The main principle of this new dimension was the respect for the limits imposed by the natural systems.

Every development, invention, and scientific innovation, is as valid as the traditional uses and customs, as long as in every case the ethic of sustainability is maintained, and based on the respect for the limits imposed the natural systems. Only in the carrying capacity of our planet viability projects may be developed to maintain, in the future, the human being as an essential part of our planet (UICN/PNUMA/WWF, 1991).

The road towards a sustainable society demands a change in the perception that we have of others, the other human beings and the Earth. It also demands a change at the time of evaluating the necessities and priorities as well as our behaviour. To live in a sustainable way is therefore a personal and individual option which depends in the believes and compromises of each one of us, being the community the only channel through which we can express our compromise in an appropriate way (UICN/PNUMA/WWF, 1991).

In order to achieve this sustainable ethic it is necessary for people to think about what is right and what is necessary to do; for this purpose, it is necessary to create conditions to think and acquire the knowledge and abilities required.

All these needs are questioning the validity of many educational models and we began to see some reforms that try to include the relationship between human beings and nature.

6. The engineering projects in the rural environmental

If there is a common aspect for all the engineers, it is without doubt the Engineering Project considered as the instrument which allows the transformation and materialisation of an idea to come true using a methodological process.

The Engineering Project is the Art of applying the scientific knowledge to invention, improvement, utilisation of the techniques in all its determinations.

The result of this project, is a device (made artistically) which has as objective to find solutions for a series of aspects demanded by society, with an immobilisation of the human resources and materials in a temporal dimension (*Trueba, 1995*).

If a problem does not imply large dimensions of this type –aspects such as security, legality, beauty and economy; or factors of a social character, ethical, political, cultural and psychological- then is not a problem of engineering but purely a ***technical problem****. If the solution to an* ***engineering problem****, is only based on technical reasons, it is only a technical problem and not an engineering problem* (*Foecke, 1979*).

All the theories converge in the need of every project to be adapted to peculiarities of the spatial context for what is absolutely needed to have an accurate knowledge of rural system, its needs and expectations. To conclude, every project needs a process of **Social Learning**.

Following the American tradition and the common sense, this process of learning , will allow to obtain some data to start with, about the expectations which the project intends to develop and the changes it can create. All this social information will have to be seen in the design of the projects, and the final results must be adapted to the demands of those who will have to live with the results of such project.

To achieve a knowledge of the human values and the dialog, which definitely constitute what we called **Social Sensitivity**. It is essential the intervention of **multidisciplinary** working groups that will be able to contribute in each moment with different points of view of the same

truth, that will have profound effects over a more specific knowledge of the rural system.

But the characteristic that mainly differentiates rural development projects and other projects, is precisely the reality which we pretend to transform: the rural environment. In this sense and although currently, as a consequence of generalisation of the behaviour and the consumption patterns of the population, it does not make sense to speak about a separation between the rural society and the urban one, we must consider a series of characteristics which differentiate the rural development projects that must have a strong presence in any engineering project which we apply.

Respect and primacy for the people

- First of all, the engineering projects related with rural development demand **respect for the people**, which are the main elements to be considered in any development strategy and in the design of any technical innovation.

- The authorities and the professionals which promote these projects, are obliged to respect the fundamental rights of these people, their traditions and their cultural identity. Respect and social sensitivity must extend to the people in charge of managing the development projects that must be defined and negotiated through participative processes of social integration.

- The **contemplation** or complete outlook in the solution of the problems constitute two lines of thought and action, essential to achieve equilibrium of form and depth in the stresses created at the beginning of the century.

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To guarantee social well being and sustainable development

- On the other hand, this development projects require social well being and sustainable development of rural communities; the technical investment and the efforts made must be directed to satisfy the necessities of rural population and their well being. This circumstance requires that the planners, together with the local population, must put together development projects that will guarantee the sustainability of rural areas, being maintained in time, warranting activities, jobs and environmental resources.

- The technology, the knowledge and their switch into innovation constitute the determining factors to guarantee the social well being. The advance of new technologies means a great step towards the resolution of social and economical problems, in the increase of the quality of life of all citizens, as well as the economic growth, strengthening the competition and the encouraging job creation.

Bottom-up and multidisciplinar approach

- In each one of the different stages in this type of projects, it is necessary to guarantee a principle of **subsidiary**, in which rural development projects are responsibility of the agents from the rural community, where we can find several representative actors from the different areas of the activity among them.

- The approach used by the new professionals must be up/down, bottom/up reinforcing the ability of the people, knowledge, practice, to ensure permanent development of their territory allowing a better efficiency in public investments, acquiring a bigger social dimension.

- For this commitment, it is necessary to create a network that facilitates an accurate knowledge of the territory, as well as the action of multidisciplinary teams that offer an positive view of the

reality, from different points of view, allowing to take actions with a better perspective of success in terms of the possibility of giving appropriate answers to the necessities of the population.

Endogenous and integrated approach

- The development projects, require a **global approach** which will take into account all the aspects, as the plurisectorial interventions with the intervention of socio-economic agents and managers, which will allow to create new combinations and synergies generating new projects and new activities.

- The engineering projects, common element to all engineers, constitute an immobilisation of scarce goods and resources (investment) in order to generate a flow of goods and future services, susceptible of being evaluated from the technical, economic, social and environmental point of view (*Trueba, 1.995*).

- Every project has a series of stages -project cycle-, a technical articulation, an economic investment, even a necessary evaluation of environmental impact, compulsory not so many years ago.

- Finally, we have the necessity to make an effort in order to see with more emphasis the social part of the project, and the necessity to reinforce social learning.

- The geographic scale of the projects must be correspondent with a territory of reduced dimensions that allow the mobilisation of the local community and involve them in the process of social learning that will achieve an endogenous development generating projects based in the resources available in the area.

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Epilogue.

In conclusion, given the above situation and outlooks for the future, the role of the engineer in the following years, must be **wrapped** with a high **social component**. The work elaborated from a technical office away from reality, must be substituted in a period of profound changes as the one we are in, due to the activity performed by multidisciplinar working groups which will face a certain problem through different points of view, and in which the opinion of the people affected by the results of the initiative which is being thought to be developed, will take a privileged place in the decision-making process.

The attitude of the engineer must be clearly receptive in order to see all the necessities of the medium, all the opinions, all the points of view in order to make a correct use of the technique.

In this sense, from the Department of Projects and Rural Planning of the Technical College of Agricultural Engineers in collaboration with the regional government of Madrid and the local Action Groups of the Leader initiative we have developed participating methodologies for starting up development actions.

As Agricultural Engineers, our field of action has been closely related with the people, their territories and their future, and that is why the social face of our work has been as important as the technical.

Our experience tells us that each project developed in the rural context, because of its particularities, will only be effective if it takes into account the demands of the affected population and their necessities. Technically acceptable decisions, made withouth thinking on the affected people, are irremediably bounded to failure.

The perspective of great changes produced in the immediate past and the ones which are waiting for us in the future, it is necessary that all

the professionals from the different branches which form the engineering specialisation, that all the engineers will assume the necessity to know the social reality, necessities, demands, problems, anxieties, in definition the personality of the individuals affected by the development of an specific project, as a previous step for its design and correct application of the technical means.

In these moments in which, parallel to the field of the new technologies, so much is being developed in the application of quality systems and of client services we as engineers, and in our professional activity, we must assume the concepts of internal client and final client, inside the denominated "total quality", in a way that the opinion of the internal client is so important, from the technicians which take part in the multidisciplinar teams, as the opinion of our "final client" protagonist of the evolution of the results of the project which is being designed, and therefore responsible for the success of it.

As engineers we must recover the true concept of action in the relationship between man and nature, assuming the maxim of " the unjust by nature cannot be at the same time the optimum functionality", in other words, we must not necessarily do all that technically we can do.

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