

INSTITUTIONAL ECONOMICS : ITS RELEVANCE TO THE NORTH EASTERN ECONOMY OF INDIA

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I. A Framework of Institutional Economics: Institutionalism is gaining popularity in the recent years. But the idea is not new. Thorstein B Veblen (1857–1929) is the founder of this school of thought. The economic characterization of human behaviour as the rational calculation of benefits and costs seemed ludicrous to Veblen. He was a bitter critic of the hedonistic principle of Jeremy Bentham and J S Mill and the Anglo-American economics that grew on this principle. Instead, Veblen argued that human behaviour is best analysed as interaction of instincts and habits and that many social processes may be interpreted as results of cultural lags. In his doctrine of '*conspicuous consumption*' (which is meant for status competition) he explained how imitation of the leisure class motivates the labour class to buy goods in a way that is culturally determined, not price determined as conventional economists would attempt to argue. In a more general sense, Veblen insisted on studying the origin and nature of economic institutions. Veblen argued that conventional economics fails to consider social and economic institutions, artificially reducing human nature to a matter of rational (= pecuniary) calculations. Veblen's criticism of (conventional) economic theory was largely based on anti-rationalist premises.

Let us first characterize the (modern) economy as seen by the institutionalists. This economy consists of two classes – the Leisure class - smaller in population size - and the Labour or worker class, much more populous. The Leisure class has a command over the dominant portion of material resources available in the economy. The labour class mainly lives by selling labour in the market, though it may own some material resources as well. The value system of the entire society is determined by the value system buttressed by the Leisure class. Wasteful consumption, unproductive labour, idle curiosity and pecuniary canons of taste are the major attributes of the value system supported by the Leisure class.

Why is the Leisure class smaller in size and why, at the first instance, they command over the dominant portion of the material resources of the society? The members of this class have a predator's instinct and prowess, of which only a minority is the natural recipient. So, to begin with, this class cannot be large. Once they own material resources, the ownership of such resources bestows upon them the power to command further resources. This snowballing effect keeps them in an advantageous position over the Labour class. On the other hand, the labour class has to live by labour power which cannot be accumulated. Furthermore, the members of this class have the dominant and widespread instinct to emulate or imitate. Emulators are at the disadvantage simply due to lesser degree of freedom and therefore, they can receive only the left over. This keeps the labour class poorer forever. Emulative instincts of the labour class reinforces the social structure so described.

Culture, therefore, is the name of the collectivity of the settled habits of considering the ways of living of the leisure class superior, emulating them and feeling elevated. For the leisure class it is just a way of life, but for the labour class it is venerable. In such a society, rationality is a far cry.

Veblen held that the instinct of workmanship is a fundamental instinct. When a man completes his work with the best of his ability, the work gives him immense pleasure. He is little concerned with what he gets for his work – the work itself is the source of joy for him. That is why many artists have stuck to their jobs, though living miserably as paupers. That explains why technocrats put their life in completing their projects, even though the reward of their labour evidently goes to the masters. On the other hand, the captains of the industry are the rogues who value the pecuniary benefits only. To them it matters only little what is a great creative work – what matters to them is the pecuniary benefit it would fetch. Due to this view, they often retard and arrest the progress of the industry and the economy as a whole.

Some of the terms coined by the institutionalists have permanent place in our concept structure. These are, such opposites as *pecuniary employment* and *industrial employment*, *business enterprise* and *the machine process*, *vendibility* and *serviceability*, *making money* and *making goods*, *acquisition* and *physical production*, etc. There are other terms such as: conspicuous consumption, pecuniary emulation, ostentatious display, absentee ownership, discretionary control and so on. These are very important categories and may help in analysis.

Some of the points highlighted by the institutionalism are very important.

(i) First, that economics ought to be an evolutionary science – meaning an enquiry into the genesis and growth of economic institutions. We define economic institution as a complex of well-settled habits of thought and conventional behaviour. The economic system should be viewed, not as a self-balancing mechanism but as a '*cumulatively unfolding process*'.

(ii) Secondly, since different societies have different histories of their development, their institutional structures are different. To understand the economies of these societies, there cannot be a single 'economics' – each such society will have its own economics – there cannot be a universal economics.

(iii) Thirdly, economics ought not be a narrow discipline – it should be wider, integrated with other aspects of social life. Gunnar Myrdal, a leading institutional economist said: there are no economic, social, or political problems. There are problems, however, and there are economic, political and social *aspects* of these problems. Modern "New Institutional Economists" are trying to explain the pattern, development and evolution of economies (and institutions) by indigenous (inside economic theories and methods) concepts. Modern institutional economists believe that marginal analysis of the 'neo-classicists' is applicable to institutional economics too, though Veblen never thought so.

(iv) Fourthly, economics is much wider than what is conceived by the conventional economists. Market economy is only one of its types in which market as the leading institution regulates the social life. The conventional economics studies the

social organization around this central institution. Yet, it is surprising that how markets emerge, function, and remain in existence (or are reproduced) are problems that the conventional economists have hardly addressed. One of the exceptions is Friedrich Hayek. Between the second half of the 1930s and the early 1960s he formulated a number of ideas about these topics. Historically, these were inspired by his very early work on cognitive psychology, which in the 1950's was one of the sources of neural network models. Among the features that found their way from his cognitive psychology into his market models are the distributed nature of knowledge in a system and its coordination by means of a self organizing process.

(v) Population, its composition and structure, its quality and interrelationship among its constituent individuals and communities are perhaps the most important determinants of development of a region. The composition and structure of population has several dimensions – distribution of the total between male and female, among different age groups, among different religious and ethnic groups, among different classes, occupations, skill categories, abilities and so on. Similarly, quality of population, illiterate, literate and educated, unskilled and skilled, pre-modernized and modernized in their attitudes, behaviour and action, is very important. Interrelationship among different individuals at family, class, ethnicity and region levels also are equally important. And this importance is not mainly for sake of classification and presentation in tabular form, but for the fact that it impinges on the contribution of population towards making themselves, the region and the nation progressively better.

Population is perhaps the only socio-economic category that has dual importance, both as an end and as a means to all endeavours. The society and economy is in fact of the people, for the people and by the people. Other things, whether material or mental, real or ideological, tangible or intangible, are meant for the people, and not for themselves. Material resources – the air with its birds, the waters with their vast wealth and fish, the territory with its fields and forests, the various substrata underground with all their mineral wealth, are meant for and worked upon by the people. Similarly, the soft resources, institutions (meaning the collection of settled habits of thought and action at the community level), mores, traditions, customs, beliefs, and all moral sentiments are continuously shaped and used by the people for making their lives better (or worse, for that matter). In this framework, the interest of the mankind is the sole parameter – the rest others are variables - to plan, change, modify and shape up, by the human efforts. Of late, people have become conscious of over-using, misusing and disusing the material resources leading to the so-called environmental problems. However, this concern does not change the parameter, only the denotation of 'people' has changed. Now 'people' means the present and the future generations; earlier it meant only the 'contemporary' generation. That does not imply, however, that the stress on 'resources for the people' has increased. To care for the resources to bequeath to our grand children needs much to be done by the people of the present generation. Similarly, a concern for keeping the social (and ideological) environment clean is growing. People have started thinking on the deteriorating social capital – the soft resources. Disbelief in oneself and in others is on a rise. Hatred seated somewhere deep inside finds the one or the other excuse to erupt out. Trust has given way to betrayal. And this is more of a concern to the people of affairs, the people busy in the

ordinary business of life, since it interferes with and speaks on the individual and social interest closely connected to the attainment of material requisites of their well being.

Yet, this holistic importance of people is asserted, reasserted and soon set aside, nay, forgotten. Especially, qualitative aspects of population are singularly neglected, more so when they relate to soft resources or social capital – attitudes and institutions (the settled habit of thought and action at the community level) – that grossly determine how people live, earn their livelihood, use or misuse resources to meet their ends and generate, preserve, and economize the resources and innovate or imitate and so on.

The gross negligence of qualitative aspects of population is determined by the habits of thought of that section of the society, which directly or indirectly determines the means, objectives, methodology and content of social action, planning in particular. The organizations that collect information about population (or any other aspect of the economy and the society for that matter) seek directives from those who are recognized for thinking and acting on behalf of the society and matter when they are right as well as when they are wrong. Evidently, such representatives of the society, even when they are genuinely interested in development, are guided by the one of the two philosophies of planning for development, Standard (meaning largely anglo-american economics popularly taught in the universities, sometimes referred to as the establishment economics) or the Marxist, or an illegitimate patchwork of the two. In any case, planning for a reform of attitudes and institutions, even collecting information regarding them, is completely out of consideration. The conservative (Standard) judgment that a reform of attitudes and institutions is largely irrelevant or undesirable, and the Marxist judgment that it is either impossible or inevitable, lead to the one and the same conclusion - undermining the need for a conscious policy directed at a radical reform of the so-called *non-economic* factors in economic development. Textbooks, articles and plans do pay lip service to the need to reform the social framework before economic planning begins. However, these declarations are no sooner forgotten than when the discussion on the conventional concepts of income, employment, savings, investment, etc. begins. The reasons are obvious though unsaid. Reforms of institutions and human attitudes, more painful to implement than financial expenditure programmes, violate vested interests of the power class (and the so-called public representatives are often led to think and act in the interest of this class, whether knowingly or unknowingly, by volition or by compulsion).

A rather long excerpt from Streeten (1966) will be illuminating. "... attitudes and valuation and social institutions are normally assumed to be given and adapted. We assume that there is a legal framework, that contracts are enforced, that an efficient civil service carries out government orders and an honest judiciary adjudicates; that people are able and willing to work if opportunities arise; that they are literate, skilled and able to cooperate with discipline, appearing on time and carrying out orders; that money spent is efficiently spent and not diverted into the pockets of corrupt officials; that alternatives are considered largely on their pecuniary merits, etc. It follows that none of these matters is considered a suitable area for planning." Alternatively, in the Marxist scheme "what are parameters become dependent variables. Cultural, political and social

institutions are the superstructure, which is determined by the methods of production. It reflects these conditions and gives rise to tensions and contradictions in due course. These tensions between the degree of development of the forces of production and the prevailing relations of production (the institutions and attitudes) in turn give rise to revolution. After the revolution the attitudes and institutions reflect the new conditions of production. Hence social, cultural and political attitudes and institutions, the so-called *relations of production*, though dependent variables, are, after a time-lag, adjusted to the extent required by the dynamic productive forces. Once again, though for fundamentally different reasons, planning the superstructure is not in question. It would be futile before the revolution and unnecessary after it. It was indeed for their attempts to speculate on how social attitudes and institutions could and should be reformed that Marx and Engels ridiculed the *Utopian* thinkers." Streeten (1966)

In the 'Standard' economics', the idea of labour as a factor of production is based on the assumption that the workers are literate and mobile, mostly in employment. They are highly organized. Racial, religious and linguistic differences are not sufficiently important to break up the labour supply. Furthermore, it is assumed that skilled and professional workers are in substantial quantities.

Similarly, *employment* presupposes a fairly homogenous, mobile labour force, willing and able to work and responsive to incentives. In a society of isolated communities, some of them apathetic or with religious prejudices against certain kinds of work, illiterate and unused to cooperation, the notion "labour force" does not make sense. Further, *underemployment* or *disguised unemployment* presupposes that if only demand and machines were available, men and women would be able and willing to work. In fact, much more would be required: a breakdown of caste prejudices, of apathy, of lack of interest in money rewards, of resistance to cooperation, discipline and punctuality, etc.

The distinction between consumption and investment can have various justifications. In the context of development, it is based upon the assumption that investment enables us to produce more later than we would otherwise have done, while consumption is current enjoyment. But if more food and better health now reduce apathy and raise ability to work, they share in the characteristics of investment: consumption, too, is productive of more output. Thus the distinction between consumption and investment – If investment is defined as "abstaining for the sake of higher consumption later", we commit a mistake of applying a category to a field of experience to which it is inappropriate. However, if investment is defined as any input which yields higher output later, irrespective of whether it involves "abstaining" or not, we fail to group certain activities under investment which should be classified as consumption.

The standard theory describes the economic process of a society in which the atomistic (uniform and unidentifiable) individuals behave strictly hedonistically, where the entrepreneur seeks to maximize his cash profit, and where any commodity can be exchanged on the market at uniform prices and none exchanged otherwise. On the other hand Marxist theory refers to an economy characterized by class monopoly of the

means of production, money-making entrepreneurs, markets with uniform prices and complete independence of economic from demographic factors. In any case, population characteristics are redundant.

II. Experimental Methods as the Most Suitable method for Institutional Economics:

In the year 2002, Nobel Prize in Economics was awarded to two economists: Vernon L. Smith and Daniel Kahneman. Smith was credited for having established laboratory experiments as a tool in empirical economic analysis, especially in the study of alternative market mechanisms. Kahneman was credited for integrating insights from psychological research into economic science, especially concerning human judgment and decision-making under uncertainty. Smith and Kahneman shared the Nobel Prize because their contributions are intertwined among themselves.

To appreciate the contributions of Smith and Kahneman we have to recapitulate the basic premises of traditional economics. We have also to appreciate the criticism of the non-conformist economists. It all started from Adam Smith who first visualized the market economy as a grand system in which self interest of individual agents worked out the harmonious equilibrium that not only kept it going on, it also provided for growth and justice. However, in Ricardo we find clash of interests and attempts to mitigate or resolve them. Later, it was taken up by Leon Walras who attempted to show the existence of equilibrium in the exchange economy. In the 20th century, Abraham Wald, Kenneth Arrow and Gerard Debreu attempted to show the existence of equilibrium of a market economy and the possibilities of growth and justice in such an economy. The entire development of economics in this direction is based on at least five presumptions: (i) individual agents or atomistic economy rather than working in groups and subject to social ties, (ii) rationality in decision making - homo-economicus - what T. B. Veblen called the pecuniary canons of conduct and he held that men are subject to habits and instincts in their behaviour, (iii) Analogy of the economic system to the physical system – physics giving the paradigm of investigation to economics, or the mechanistic view – against the evolutionary or organic view, (iv) Grand system formulation – trying to understand the entire economic system with a handful of laws, and finally, (v) universality of economic theory – it would fit all places, all social systems, for all time. Mathematical treatment of economics suited to this paradigm.

Nevertheless, voices of discordance were not uncommon. Marx adopted the Hegelian scheme – dialectical – against the mechanistic and arithmomorphic (N. Georgescu-Roegen) – method of analysis. Veblen denied the most of assumption of the establishment economics – rationality for one. Marshall – although based much of his analytical apparatus on the dictum of '*Natura non facit Saltum*' and the calculus methods - he preferred to keep away from an explicit mechanistic formulation of the economic system. This is one of the reasons why Marshall favoured partial analysis to the general equilibrium analysis of the economy. Further, Marshall wrote explicitly that biology – not physics – is the Mecca of economics. A skepticism to mechanistic system building is clear in Marshall.

The period 1920-1933 was of great importance to changing of the paradigm in economics. The economics of imperfect competition, monopolistic competition and oligopoly were great destabilizing forces that made the economics of competitive equilibrium much weaker. Existence of general equilibrium under such conditions have eluded mathematical proof. One cannot proceed to the mathematical theory of growth and justice if the existence of equilibrium itself cannot be proved. Theory of imperfect competition and monopolistic competition – advertising, sales promotion – and rationality assumption can hardly go together.

The mid-1930's introduced empirical testing of various established theories with real world data and econometric methods. This gave a new dimension to economics. The empirical testing of economic theory began. The first Nobel Prize was given to Jan Tinbergen and Ragnar Frisch for their work in econometrics.

W C Mitchell, a great statistician, economist and econometrician, differed on limiting the scope and application of econometrics to only testing the economic theory with the empirical data. He aimed at discovering new laws in economics by the application of econometrics to the real world data. He tried his best, but could not find many supporters of his views. We will see how the dreams of Mitchell were realized by experimental economics.

After the Great Depression matters were never the same again. Soon the World War II began. By the time the War ended, behaviourism in economics had taken deep roots. Many methodological changes swept economics. Habit formation and its implications to theorization in economics made its dent. Tibor Scitovsky's theory of consumption function is important to mention. This theory had to vie with other theories and it lost against the permanent income theory of Milton Friedman. Nevertheless, it was surely ahead of its time. Tibor Scitovsky's paper "*Are Men Rational or Economists Wrong*" is a blow on the assumption of rational behaviour of economic agents.

In this line Herbert A Simon is a great name. Satisficing behaviour and bounded rationality concepts introduced a great change into the paradigm of economic analysis. His "*Models of Man*" "*Models of Discovery*" and "*Models of Bounded Rationality*" are seminal works. Herbert Simon was awarded Nobel Prize in 1978.

All this goes in making what Kahneman and V L Smith did. As Scitovsky has pointed out, psychologists had no delusions about rational behaviour of man, only economists had a great love for assuming man rational. Psychologists study economic as well as non-economic behaviour of man and they find him short of rationality. This was to be studied especially in matters of man's economic behaviour. Psychologists were conducting experiments and that was to be extended to economics. And this was done.

Professor L Robbins defined economics in terms of limited means, unlimited wants and choice - decision-making as to how to allocate limited means to selective mitigation of varied and unlimited wants. But Robbins' man is rational, rational in a very

typical sense – of one who searches the most efficient ways to meet the ends. It is neither evolutionary nor extra-utilitarian. The theory of decision making under bounded rationality was for experimental economists to develop. Since the II World War, the methods of Operations Research developed by leaps and bounds. Before that, classical methods of Newton-Lagrange were used for optimizing simple mathematical models made up of differentiable functions. For optimization in a non-differentiable environment Linear programming was developed. Methods of non-linear programming soon followed the suit. Dynamic programming by Richard Bellman was a great discovery. It showed how local optimality at each step was relevant to achieve the global optimality. The concepts of local and global optimality are very important to solve the problems of optimality of a complex system. Side by side the Search Methods to seek global optima in non-linear or rugged mathematical terrains also were developed. The concept of decomposability of optimization task and complexity also were developed. These concepts are very relevant for analyzing the economy since a real world economy is a large, complex and often indecomposable system. Traditional economics held that the economic agent has a single objective function to optimize. But the reality is that his problem is multi-criteria decision making. Significant research was carried out in this direction also.

Much of the main line economics believes that an economic system can be represented in terms of some objective function(s) and some constraints, which may be treated mathematically to search for its optimal points. But the reality is that often the economic agent does not have any precise idea of either the objective function or the constraints. It is not possible to obtain them either. It requires so much of information that it is uneconomical to work optimally. Rational ignorance prevails on the behaviour of the economic agent. How to search for the optima *when the precise nature of objective functions and the constraints are not known* ? This a very realistic problem that experimental economists are trying to tackle. Works of J H Holland (*Adaptation in Natural and Artificial Systems*, 1975) and S A Kauffman (*The Origins of Order: Self-Organisation and Selection in Evolution* – 1993) are very significant in this direction. All this led to the development a new search algorithm for optimization named as the “Genetic Algorithm”. Particle Swarm methods, Ants Colony algorithms, and other methods in the realm of evolutionary approach to search for the optimal indicate the possibilities of learning from the biological systems and the operational effectiveness of bounded rationality and decentralized decision-making for attainment of overall global objectives. Elsewhere, the theory of the Automata, Robotics and the theory of Artificial Intelligence were developed. Now *simplicity* underneath the apparent *complexity* is a great attraction (Wolfram). This has a profound impact on experimental economics. Herbert Simon’s work (*The Science of the Artificial*, 1969) is a landmark in this direction. Ultimately, the prescription of Alfred Marshall prevailed – Biology, not Physics, is the Mecca of Economics. The experimental economics is built on these foundations.

T B Veblen had said of the “Instinct of Workmanship” as the driving force of most of activities, it does not presume any end to defined to meet which aim the economic agents must work. Veblen’s view gives a different meaning to ‘rationality’ if at all. But this is closer to reality. Experimental economics has all this in view.

Since the mid 1960's the Fuzzy Set theory has been developed. Optimisation in a fuzzy environment is much more realistic when we try to understand the behaviour of an economic agent. Biological systems make choice in such environment. Experimental economics has learnt much from this.

We find a very good description of new findings of experimental economics in the paper by F Guala & L Mittone (*Experiments in Economics: Testing Theories vs. the Robustness of Phenomena*). For example, how the experiments on tax evasion led to finding of Bomb Crater Effect and Echo Effect. It is said that troops under heavy enemy fire hide in the craters of recent explosions, because they believe it highly unlikely for two bombs to fall exactly in the same spot at short time-distance. Something similar happened in the tax experiments: immediately after each audit, tax payments fall sharply (i.e. evasion increases). Due to Echo Effect, repeated auditing an individual or group of people may cause a robust reduction of evasion for quite a long time after the event. These experimental findings are corroborated by the real world experience. And there are many other new findings of the experimental economics. This is in line with what W C Mitchell dreamt of some 70 years back.

These aspects make up the subject matter of Experimental Economics. Experiments may show how economic agents feel the landscape of choices for optimization. It does not necessitate explicitly defined objective functions and/or constraints. It does away with the strict assumption of rationality. It assimilates the views of discordant economists like Veblen and Mitchell – the founders of Institutionalist School. Moreover, it gives us a new methodology to investigate economics – away from armchair thinking or econometric search for economic relations. It gives us a scope for discovering new laws, new rules of behaviour and overall it integrates biology and psychology with economics.

III. Institutional Economics, Experimental Methods and their Suitability to the North Eastern Region of India: How can we benefit by applying the methodology of institutional economics to our economy – especially the North Eastern economies? What are the steps that we have to follow if we part with the methodology of conventional economics and adopt the methodology of institutional economics to analyzing the economies of the North Eastern region in particular ? The following are the steps to undergo:

(1). *Listing of instincts and propensities closely related to socio-economic and political aspects of human behaviour.* It may have two lines of approach – one starting with the assumption of homogeneity of the stock with no innate difference and another starting with that of heterogeneity of stock which assumes that different races have different propensities. One must be careful in not being dogmatic – the approach should be amenable to changes based on real world findings. Are gender differences in propensities, instincts and therefore attitudes innate? Will a matrilineal society have different institutional structure than a patrilineal society ? If yes, what are its implications to development of different institutions ? A society that has a matrilineal history, will it have a different path of economic development even if it becomes patriarchal and

patrilineal in due course of development? Are the matrilineal societies matriarchal too? To what extent the institution of matrilineal inheritance will give rise to other institutions different from the patriarchal inheritance? What kind of propensities will they buttress or suppress? The studies of this type will call for a help from anthropologists. Institutional economics welcomes interdisciplinary studies, as has been noted earlier.

(2). *Listing of relevant economic institutions, tracing the history of their development and the study of inter-relations among them:* It is in the line of institutional economics to hold that different societies will have different institutional matrix and there too, the stage of evolution of different institutions will be different. It is needed, therefore that one must make an inventory of information on the institutional structure. Again, there are some institutions that are concordant with each others, while there are others that are discordant. Mutually concordant institutions reinforce each other and accelerate their evolution while discordant institution, antithetical in nature, clash with each other and create a deadlock. An institutional economist will observe soon that discordant dualism or pluralism of institutions create very strong and robust bottlenecks and deadlocks. This type of study cannot be done unless institutions of a society/economy are listed exhaustively and their inter-relations are examined. Any economic policy cannot succeed unless these deadlocks are removed.

(3) *A study of the geographical and environmental determinants of institutions:* As D C North (won Nobel Prize in 1993) rightly pointed out, geographical and environmental attributes, including the resource endowment of the ecosphere that house an economy shape the structure of the economy. The same is true with institutions as well. The institutional structure in plains cannot be the same as in the hills as much as the institutions would be different in the landlocked regions, frontier regions, central regions and coastal regions. An institutional economist has to assess all these.

(4). *A study of the attitudinal structure of the society and its implications to the economy:* Different societies differ in their attitudinal structure. Modernization ideals that are needed for a successful and efficient functioning of the modern economic organization may not always be buttressed by the attitudinal structure of a particular economy. As a result, severely discordant dualism or pluralism emerges. Gunnar Myrdal in his *Asian Drama* has elaborated on the modernization ideals. A study of the attitudinal structure of a particular economy and its relationship with the modernization ideals will provide us hints on concordance and discordance. It is to be noted that the attitudinal structure of a society is a result of the historical process – common experiences undergone by a series of generations. It requires a deep sense of planning to change this structure in a short time. Traumatic experiences at the community level also determine the attitudinal structure of a society. That would require a study of the social psychology.

(5). *Accounting of Soft Resources:* Every economist recognizes the worth of material resources such as land, labour power, material capital – machines, tools, etc. Of late, failing to explain growth by simply attributing it to material capital, economists had to recognize the role of human capital. However, human capital signifies skill

formation – the skill that is compatible to working with the material capital. We also find ‘entrepreneurship’ – the faculty of innovation and taking risk – in the literature on traditional economics. However, attempts to understanding entrepreneurship became intensified after the works of Herbert Simon. D C McClelland highlighted need for achievement as an important factor in promoting growth. Beyond all these, institutional economist has to understand ‘soft resources’ much more closely. These soft resources include the non-materialistic entities that are shaped by the material environment and in turn shape the material environment – entities such as trust. These resources may be nurtured and generated. They degenerate by wrong human actions. These resources have great economic value. The relevance of ‘soft resources’ has recently been highlighted by Robert Putnam by referring to the soft resources as ‘social capital’, very elaborately discussed by Adam Smith in his “The theory of the moral Sentiments”. Some economists name these resources as the social capital. An institutional economist must study them.

Findings of some prominent experiments in economics suggest the importance of institutions in decision making. Therefore, it appears that experimental methodology of research in institutional economics will be suitable. It is interesting to read the history of development of the experimental economics laboratory at the California Institute of Technology, USA.

“Laboratory experimental methods began at Caltech in the early 1970's when Professor Charles R. Plott, Edward S. Harkness of Professor of Economics and Political Science, discovered a methodology for applying laboratory methods to the study of public economics. The methodology, which was related to the experimental methods used earlier by Vernon Smith to study market behavior, opened the way for an experimental examination of public goods and the *impact of different institutions* that might be implemented for the provision of public goods. The initial research, with Morris Firoina, led, immediately, to the discovery that collective decision processes, such as majority rule, when applied to the provision of economic public goods, exhibit an equilibration process. Furthermore, the equilibration process can be modeled by principles of equilibrium (majority rule equilibrium) and game theory (the core of a cooperative game without side payments). Additional research with agendas established that the principles governing public actions are more fundamental than are captured by the straight forward application of game theory and voting equilibrium models because the decisions could be almost completely determined by institutional controls (the agenda). *This prominence of institutional influences on decision processes together with the close relationship between institutional influences and associated theory, continue as a dominating theme of research even today.*

Research in public economics began to merge with research in classical economics when Plott invited Vernon Smith to visit Caltech as a Sherman Fairchild Fellow. During this period Plott and Smith initiated the first systematic study of competitive market experiments since Smith had studied markets in the early 1960s. From the early 1960's until the new research at Caltech in the 1970s no more than a paper or two dealing with competitive markets and an additional two or three papers on

oligopoly were published. Plott and Smith joined in teaching the first course in experimental economics at Caltech and from their efforts came three discoveries that set the stage for a revolution in experimental methodology. The first was the posted price effect, which *elevated the importance of institutions as a key focus of research in market economics*. Early research on the importance of institutions in markets (different auction processes) and the importance of institutions found public economics were now supplemented with a third area. However, the posted price effect was especially important. It had a potential for applications much beyond the other experimental findings because of its connection to industrial organization and policy. The second was the discovery and development of an efficiency measure that could be applied to assess the *efficiency of institutions* implemented in experimental markets in exactly the same way that cost benefit analysis is used to assess the efficiency of naturally occurring markets. The posted price effect and the efficiency measure established a laboratory scientific window for the first attempts to use laboratory economics in an active policy context. The third discovery of the very early 1970's, with Ross Miller, was that speculation could be studied in experimental markets and that speculative activity could be observed equilibrating markets along the lines of classical theory.

With this background, the modern experimental methods in economics began to grow. The research expanded to include many different types of institutions, uncertainty and information. The attempts to apply laboratory experimental methods to policy problems became systematic. Two major policy studies, which were published only several years after the actual research, were an application to posted prices found in the inland water transportation industry (Plott and Hong) and an examination of the method for allocating the rights to land at the major airlines (M. Issac, D. Grether and C. Plott). To these were added the first studies of the role of asymmetric information in markets. The convergence properties of multiple markets were discovered. Conspiracy, price controls and other types of market interventions were examined experimentally for the first time. New forms of markets were studied, such as methods for deciding on programs for public broadcasting. The theory of agendas and public decision making was applied to the analysis of defense problems where committees were thought to make decisions. Classic papers on individual choice, such as the preference reversal phenomena were also produced. During this time many now famous names, J. Ferejohn, R. Forsythe, Dave Grether, E. Hoffman, M. Isaac, G. Miller, R. Noll, and T. Palfrey all became interested in laboratory experimental methods. In the late 1970s Dick McKelvey and Peter Ordeshook, both of whom had active interests in experiments with many contributions, joined the faculty. Caltech had become famous for its contributions to laboratory methods in economics and political science.

In the mid 1980s the Division Chairman, David Grether provided space in Baxter Hall for a new laboratory. Plott, the director, and raised funds for the creation of a laboratory from General Motors Corporation, the Lynde and Harry Bradley Foundation, Pacific Bell, Inc. and the National Science Foundation. Basic research began immediately and, in addition, a grant to the Jet Propulsion Laboratory to study the allocation of resources on Space Station Freedom focused efforts on the creation of computerized experiments. The first local area computerized markets (MUDA) were

created by Hsing-Yang Lee according to the specifications defined by Plott and Caltech's Laboratory for Experimental Economics and Political Science was born in its current form.

From the origin of the Caltech Laboratory the economics profession has experienced an explosion of the applications of laboratory experimental methods. Volumes of experimental papers are being published each year and the number of laboratories is rapidly growing around the world. The Caltech Laboratory is a major facility that is serving as a model for laboratory development throughout the world. Knowledge about the potential uses and limitations of experimental methods has been an important tool for Caltech graduate students in launching their careers.”

Experimental methods to study the attitudinal, institutional, and habit structure and their relationship with the economic variables may prove very helpful: The methodology of studying Economics has three components – *metaphysical* (reflection, meditation, and such processes applied to visualize the functioning of an economy), *observational* (based on collection, processing and interpretation of real world data, without controlling or influencing them by design) and *experimental* (creating or simulating a controlled environment and observing the response of the economic agent – then processing the experimentally obtained information and concluding on that basis). Formerly, economists used the metaphysical method in the main, with some observational content. But after the first World War, observational content dominated over the metaphysical content. Now, experimental content is increasing. Institutional economists should apply this experimental method to understand the economy in a better way. A particular stimulus in a given attitudinal and institutional structure will give a response of economic importance. This will help to understand the economics in the given milieu.

Suggested Readings

- *Papers in Experimental Economics* by Vernon L. Smith.
- *Bargaining and Market Behavior : Essays in Experimental Economics* by Vernon L. Smith.
- *The Handbook of Experimental Economics* (edited by John H. Kagel and Alvin E. Roth)
- *Paving Wall Street : Experimental Economics and the Quest for the Perfect Market* by Ross M. Miller, Vernon L. Smith (Foreword) (Hardcover - January 2002)
- *Essays on Genetic Evolution and Economics* by Terence C. Burnham, Edward O. Wilson (Editor), Adam M. Brandenburger (Editor), Vernon L. Smith.
- *Choices, Values, and Frames* by Daniel Kahneman & Amos Tversky (Editors).
- *Heuristics and Biases : The Psychology of Intuitive Judgment* by Thomas Gilovich et al. (Editors).
- *Well-Being : The Foundations of Hedonic Psychology* by Daniel Kahneman et al (Editors).

- *Judgment under Uncertainty : Heuristics and Biases* by Daniel Kahneman et al. (Editors).
- “*Biases in human behavior*” by Massimo Egidi megidi@gelso.unitn.it, CEEL, Computable and Experimental Economics Laboratory, University of Trento.
- “*Experiments in Economics: Testing Theories vs. the Robustness of Phenomena*” by Francesco Guala and Luigi Mittone.
- “*Conditional Cooperation: New Evidence from Public Goods Experiment*” by Roberto M. Burlando and Francesco Guala.
- “*Rethinking Bounded Rationality*” by Massimo Egidi, CEEL, University of Trento.
- “*Division of Labour and Social Coordination Modes: A simple simulation model*” by Massimo Egidi and Luigi Marengo, Department of Economics, University of Trento.
- “*Virtuous and Adverse Selection within Economic Organisations*” by Massimo Egidi, Department of Economics, University of Trento.
- “*Mind, Market and Society: Network Structures in the Work of F. A. Hayek*” by Jack Birner, Department of Economics, University of Trento
- “*Learning by the experience of others: An experiment on information contagion*” by Alessandro Narduzzo (Dipartimento di Economia e Studi Aziendali, Università di Bologna, and Experimental Economics Lab, Università di Trento) & and Massimo Warglien (Dipartimento di Economia e Direzione Aziendale, Università di Venezia, and Experimental Economics Lab, Università di Trento). For correspondence: warglien@unive.it
- “*Learning in Evolutionary Environments*” by Giovanni Dosi, Luigi Marengo and Giorgio Fagiolo. of Dept. of Economics, University of Rome “La Sapienza”, Italy and Science Policy Research Unit (SPRU), University of Sussex, Brighton, UK; Dept. of Economics, University of Trento, Italy and Faculty of Statistics, University of Rome “La Sapienza”, Italy, respectively.
- “*Interdependencies, Nearly-decomposability and Adaptation*” by Koen Frenken¹, Luigi Marengo and Marco Valente.
- *Analytical Economics* by N Georgescu-Roegen. Harvard Univ. Press.
- *The Entropy Law and the Economic Process* by N Georgescu-Roegen. Harvard Univ. Press.
- *The Use and Abuse of Models in Development Planning* by Paul Streeten, in Kurt Martin and John Knapp(eds), *The Teaching of Development Economics*, Frank Cass & Co. 1966.
- *Are Men Rational or Economists Wrong* by Tibor Scitovsky, in Paul David and Melvin Reder (eds) *Nation and Households in Economic Growth*, Academic Press, NY.
- *Models of Bounded Rationality*, by Herbert Simon, Cambridge Univ. Press, Cambridge, MA, 1982.
- *Foundations of Swarm Intelligence: From Principles to Practice*, by L. Fleischer, Swarming Network Enabled C4ISR, arXiv:nlin.AO/0502003 v1 2 Feb 2005.
- A New Optimizer using Particle Swarm Theory, by RC Eberhart and J Kennedy, in *Proceedings Sixth Symposium on Micro Machine and Human Science*, pp. 39–43. IEEE Service Center, Piscataway, NJ, 1995.
- *A New Kind of Science*, by Stephen Wolfram, Wolfram Media, 2002. (for online version <http://www.wolframscience.com/nksonline/toc.html>).