ONZIEME RENCONTRE INTERNATIONALE DU GERPISA
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Les acteurs de l'entreprise à la recherche de nouveaux compromis ?
Construire le schéma d'analyse du GERPISA

Company Actors on the Look Out for New Compromises
Developing GERPISA's New Analytical Schema

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AUTOMOTIVE INDUSTRY ANALYSIS AND THEORY A DIFFERENT EQUILIBRIUM BETWEEN "LEAN ORGANIZATION" AND "PRODUCTIVE MODELS"

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A COMPARISON OF TWO PARADIGMS

As it is known in studies dedicated to the structure and evolution of the international automobile industry, there have been two theoretical paradigms standing against each other. One has been developed within the International Motor Vehicle Program[1] activated by the Massachusetts Institute of Technology of Boston (it will be later on referred to as One-best-way Paradigm), and the other has been developed within the Groupe d'Études Permanent[2] sur l'Industrie et les Salaries de l'Automobile (GERPISA) with the main contribution, albeit not exclusive, by Robert Boyer and Michel Freyssenet (it will be later on referred to as Productive Models Paradigm).

On the whole one can say that the One-best-way Paradigm implies that there is a form of managerial organisation of the activities in the automobile filière which in a given time is more efficient than others. Hence the most advantageous solution from the competitive standpoint consists in the application of such model by all firms, in order to avoid being pushed out of the market due to their loss in competitiveness. The most evident cases of such solution defined as the most efficient above all are represented by the fordist model, developed in the USA by Henry Ford after 1910, and by the toyotist model, developed by Toyota starting from the experiences of Taiichi Ohno just after World War II, and then developed further by the Nagoya automobile firm. Later on

[1] This vast research programme has been designed in 1979 and was launched in 1980 with the cooperation of a large group of scholars in the main automobile manufacturing countries. In 1983 it concluded its first stage with the publishing of a study edited by Daniel Roos and Alan Altshuler: *The Future of Automobile*. Also within the IMVP other research stages followed, with the publishing of various articles, summarised in 1990 in the widely known book: *The Machine that Changed the World*, by J. Womack, D. Jones e D. Roos, in which the characteristic paradigm of such research programme is fully described. Currently the IMVP has concluded in June 2003 its Phase IV: Navigating Auto's Next Economy.

[2] The GERPISA was established in 1981 and acquired an international scope starting in 1992. The scientific production of GERPISA researchers is considerable. Among the significant works referring to productive models of the different automobile firms we can mention the collective books edited by: Freyssenet, Mair, Shimizu, Volpato [1998]; Boyer, Charron, Jürgens, Tolliday [1998]; Lung, Chanaron, Fujimoto, Raff, [1999]; Freyssenet, Shimizu, Volpato [2003-a e 2003-b]. For a methodological presentation of the Productive Models Paradigm please see Boyer et Freyssenet [2000]. For an overview of the output of the various GERPISA researchers see the Actes du GERPISA published since 1984, which reached the 34th issue (October 2002), and the documents presented in the eleven International Colloquia.

the whole of organisational innovations in the production process achieved by Toyota have been brought together in a conceptual framework by scholars of the IMVP programme, and made internationally known as *Lean Organization*.

Against the uniqueness of the "winning managerial model" there stands the Productive Models Paradigm, which argues that in reality the operating conditions of the individual automobile firms and of their respective supply chains are influenced in a peculiar way by the environments in which they operate, environments that differ at least in part,. As a matter of fact the different environments are characterised by:

- ✓ different growth modes of national income[3] linked to historical specific traits of the different countries;
- ✓ different schemes of employment relationship[4] derived from the specific work policies and union traditions of the different countries;
- ✓ different structures of the automobile demand linked to the economic and social specificities of the different countries.

The existence of such structural differences has caused in the past specific competitive trajectories, unique for each automobile firm. All that entails specific effects on: competences which have been accumulated, investments which have been carried out, strategies which have been put in place. Such peculiar traits in turn cannot but translate into a diversity of the respective competitive positions within the competitive arena and hence in the future development of specific profit strategies[5] differentiated from each other since based upon specific and unique:

- ✓ product policies;
- ✓ productive organisations;
- ✓ employment relationships.

In conclusion, and according to such paradigm, it is not only impossible to identify an optimal productive and organisational solution, which could be applied without exception by all firms in the international automobile industry, but it is also excludes a future convergence towards a single model to which all automobile firms should comply, given that current differences are not due to disappear[6]. As a consequence there exist at the same time alternative strategies equally effective, with which to achieve development and accumulation objectives pursued by the industry players. What matters is the coherence of each single strategy not only with the domestic market, but also with the institutional and economic framework in which each player operates.

THE THESIS BROUGHT FORWARD: TERTIUM DATUR

The opinion of the writer is that if such two paradigms are considered in their most radical form, they both feature aspects which are not completely convincing. On the one hand, just a few years were necessary to show that the forms of imitation of lean production, albeit formally identified with the same labels (just-in-time, quality circles, kaizen, etc.), have acquired in the various firms different and peculiar shapes. On the other hand the deflate of the Japanese bubble economy has shown how there are non Japanese firms featuring market and financial performances that are not inferior to those of Toyota, redefining the competitive value of the organisational model

[3] In French "*mode de croissance et de distribution du revenu national*".
[4] in French "*relation salarial*".
[5] In French "*stratégie de profit*".
[6] On the specific traits of the various strategic paths it is worth pointing out that there is an even more radical position than the Productive Models Paradigm, which argues that the Japanese models of behaviour cannot be imitated, since they are the result of an ethnic culture which radically prevents imitation. See for example: Morishima [1982].

developed by such firm, and however showing that other Japanese automobile firms were not exempt from stages of crisis and downsizing.

However I believe that also the Productive Models Paradigm, albeit much more articulated and largely more adherent to the specific traits of the various situations of the firms compared to the One-best-way Paradigm, shows some elements of methodological weakness, mainly if intended in its most radical form.

It is undoubtedly true that the individual automobile markets continue to show own peculiar traits[7] and the same can be told for the 'growth mode and distribution of national incomes', given the continued existence of profound differences in the resources available in the various countries[8], in fiscal policies, work policies, etc. But it seems to me that it can hardly be disputed that there are common tendencies which bring the choices of automobile firms together, clearly without making them strictly uniform, and it is therefore necessary for the theoretical paradigm of Productive Models to take them into account.

In other words the thesis of the writer is that in order to have an interpretative paradigm which is more adequate to the complexity of transformations in place in the international automobile industry one must enrich the Productive Models Paradigm. There must be an enrichment capable of achieving a conceptual dialectics between some uniformities which appear in the international competitive confrontation and the structural differences which will continue to exist, but that at the same time will continue to modify according to the interplay of the different strategies of the firms.

This attempt of enriching the Productive Models Paradigm will be carried out through the introduction of some elements capable of:

- ✓ focusing the attention on such evolutionary possibility (convergence or divergence) and hence helping to empirically foresee and analyse the possible effects;
- ✓ and (most important) to accept methodologically both the possibility: different competitive environments can become more homogeneous or differ further.

On the whole this implies nothing but to methodologically define the fact that the future can bring along many surprises and that the competitive evolution can move in one sense or another without the possibility to exclude *a priori* any further change of one kind or another.

THE BIOLOGICAL METAPHOR OF THE STRUGGLE FOR SURVIVAL

Before moving on to present the changes which I believe are needed for the Productive Model Paradigm, it is useful to refer to a metaphor derived from the biological struggle for survival which can help us better understand the methodological assumptions embedded in the two paradigms: "One-best-way" and "Productive Models".

If we consider the One-best-way Paradigm it bases itself upon the thesis that: if different species competing for the same food resources come into contact (same environment) there must be a process of selection which in the end will let only one species survive, that is the strongest one with respect to the environmental characteristics. Such metaphor, which is also at the root of the perfect competition model, implies the elimination of the environmental differences in which the competing species operate. Such homogeneity in turn eliminates the bio-diversities which are less adaptated to the environment, since a perfect homogeneity both in the conditions not dependent

[7] One can think to the recurrent failures of automobile firms (mainly US-based, but not exclusively) who aimed at the production of standard models for a range of markets (world cars).

[8] For example it is evident how the different US energy policy, with a cost of fuel which is sensibly lower than in Western Europe and in Japan, profoundly affects consumer prerefences.

upon the choices of the individual actors (environment) and of the kind of food resources used. As the differences lie in the choices of behaviour only, it is automatic that the trial and error process of the individual subjects is going to select the most efficient survival strategy. Only who can better interpret such strategy will survive. Besides, knowing the amount of food resources available in any given moment, it would also be possible to calculated the number of subjects which can survive in a given environment.

The Productive Models paradigm in turn moves from the fact that the 'environments' are different hence even the needs expressed by the market are different, and the firms can organise themselves to serve different market segments (differentiation). This implies the possibility of a coexistence of different players with different strategies. It seems that such aspects cannot be disputed[9]. It we assume a radical diversity in the environments in which the different subjects operate it becomes obvious that any given environment will select its own peculiar species capable of surviving. In other words there are different productive models and different profit strategies since there is a multiplicity of environments.

However I believe it comes evident that even such approach tends to be too rigid and shows some drawbacks, similar to the one assuming the homogeneity in the couple environment/food resources, although of opposite sign. Translating such situation in economic terms, in its most radical form it coincides with a situation in which there is no competition among individual firms which operate in different environments. In conclusion it is true that there is the possibility of different strategies, but this derives from the same hypothesis assumed in the definition of 'environments' which in economic terms would appear as different industries. Therefore the firm which belongs to a given environment/industry is not by definition in competition with the firms belonging in other environments/industries. It is not difficult to see that this approach too is not capable of express the actual competitive confrontation among firms in the international automobile industry, who are instead in competition with each other. Infact we must underline that:

- ✓ product differentiation reduces, but not eliminates, a relationship of substitution and competition among consumers belonging to different segments. This implies that among the differentiated products there is anyway a cross elasticity which is not zero, and it is just the presence of a high cross elasticity which leads us to say that the automobile firms belong to the same industry[10] hence they are mutually competing. In other words, there are partially different environments, but they are located within a common macro-environment;
- ✓ moreover, firms when trying to best respond to competitive challenges have decided to enter domestic markets of the competitors (US firms in Europe and Japan and vice versa).

Hence the true problem is not the acknowledgement of such differences, which undoubtedly exist, but how much they are important and how they will evolve over time, towards one direction (increase in differences) or the other (reduction in differences). The methodological problem must therefore be seen as requiring the development of an interpretative model capable of reading and interpreting the continuing dialectics between forces which determine convergent movements and forces which determine divergent movements.

[9] In terms of history of economic theory the abandoning of the model of perfect competition, since in clear contrast with the economic realty, and the analytical introduction of the concept of product differentiation and market segmentation dates back to the introduction of the concepts of monopolistic competition by Chamberlin [1933] and of imperfect competition by Robinson [1933].

[10] On "industry" definition see Volpato [1995].

TWO PHENOMENA PRODUCING CONVERGENT ENVIRONMENTS DURING THIS HISTORICAL PERIOD

It is certainly true that there are differentiated environments which in the case of the automobile industry are represented by the socio-economic national systems and their corresponding markets, but there are however at least two phenomena that are increasing the elements of environmental homogeneity for the various firms.

The first aspect lies in the fact that the current evolution of the automobile industry increases the degree of internationalisation (presence of all main automobile firms in all main markets, first in the form of exports, then in the form of direct investment in manufacturing capacity). Such evolution is 'bridging' the positions of the various actors because they come to operate within the same *range of environments*, albeit originating from different national systems. As a consequence all actors (automobile firms), although moving from 'different national bases' are going through forms of relative coming together since the competitive confrontation pushes them to mutually enter into competitive environments of the other firms. I believe that such convergent movement will never be 'total', however it determines a reduction in the 'environmental' gaps between firms. If we consider for example the entry of Renault S.A. in capital of Nissan Motor Co., I believe that this will determine a 'coming together' of the operating conditions of the two firms, through the sharing of platforms and components, the development of common technologies and shared competences. I think it is correct to exclude that this could lead (even in the long run) to a complete homogeneity in the operating conditions, and hence in the strategic choices of the two companies, but this does not exclude that the bridging is in place, and that is perceived as such by consumers too.

A second aspect lies in the fact that if on the one hand consumers in the various countries maintain relevant differences on some aspects influencing their purchasing choices, on the other hand it is also true that these consumers share the same macro-environment (the Earth), and have common needs as human beings. For example, in all countries there are growing needs to produce cars with lower pollution, with higher fuel efficiency, higher safety, higher scope for customisation to the various drivers' needs, etc. This implies that the efforts of technological innovation of the different automobile firms move in the same direction, at least in part. This trend as well, being a social product, is not mechanically determined for the future and could modify over time and translate into diverging paths in the different automobile markets, but frankly the hypothesis appears rather unlikely since in the future the motorisation process of the countries with high population (China, India, Indonesia, etc.) bring issues of common and worldwide relevance.

SAME 'SPECIES', DIFFERENT 'VARIETIES'

Going back to our biological metaphor, the come into play of the current factors which drive an evolutionary trend towards less different environments than in the past can be developed by assuming an intermediate position compared to the two mentioned above. We are not in a homogeneous environment in which the selection deriving from the struggle to acquire resources leaves room for a single species eliminating all the others. We are not in an environment in which differences are such to reduce almost to zero the competitive confrontation, leading to the coexistence of different species since they are located in different environments.

We are instead in a macro-environment in which firms have developed over time the gift of ubiquity:

- ✓ firms are present through exports in a multiplicity of markets and these non domestic markets have now acquired a larger weight than the domestic one;

- ✓ firms are complementing exports in most important markets with direct investments both in manufacturing capacity and in research centres;
- ✓ firms are using as first tier suppliers a more restricted and partially common number of component suppliers (concentration), therefore even if the environmental systems remain different all firms tend to be present in the same range of environments and the supply chains activated by the different firms have many sections in common.

In conclusion automobile firms having to provide partly common answers (reduction in fuel consumption, reduction in pollution, increase in active and passive safety, higher driving comfort, etc.) to consumers who share common biological elements, albeit maintaining different socio-cultural elements, compete in more homogeneous spaces compared to the past. The framework can be described through a biological metaphor of a competition among subjects belonging to the same species (the same species defined as: a group of living organism consisting of related similar individuals capable of exchanging genes or interbreeding), but of different variety. Moreover it seems likely that in the near future the necessary sharing of ecological issues in the mega-environment will lead to further convergence (unless the Iraqi conflict turns into a clash of cultures and religions).

META-STRATEGIES

From the methodological standpoint the move from a paradigm in which the differences among environments of the automobile firms are relevant and stable, to one in which there can be forms of 'coming together' of environments and forms of overlapping in firms' strategies, being more and more deployed in a common range of environments (internationalisation) means to introduce a factor which allow the coexistence of elemtns of difference and elements of specific traits / singularity. The proposal developed here is based upon the introduction of the concept of meta-strategy.

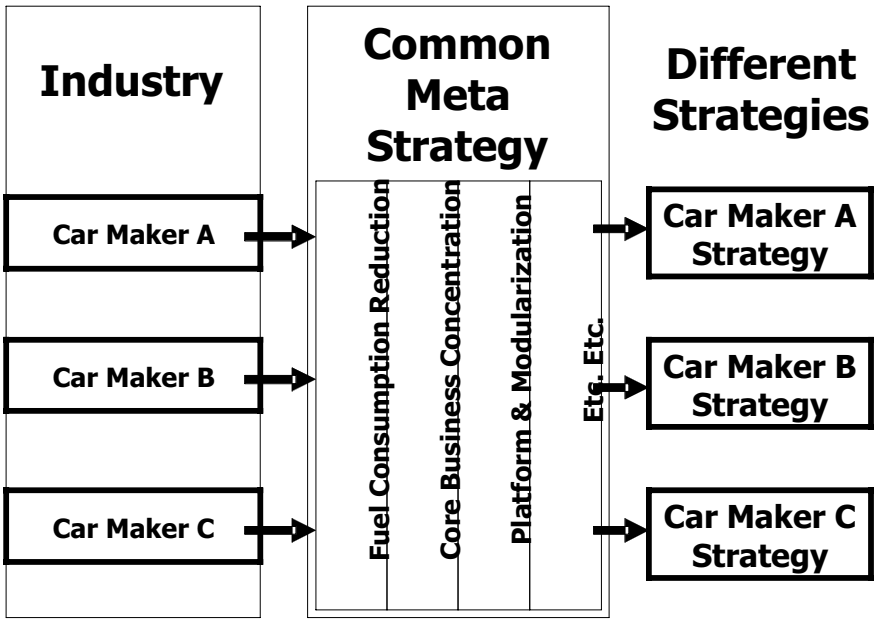
On the one hand the competitive strategies of the individual firms remain peculiar and differentiated, however those strategies represent varieties of a common species, which is a meta-strategy. Firstly we define as meta-strategy a 'strategic goal common to automakers'. As it has been said in many instances in the studies developed by GERPISA, automakers' strategies have specific traits which derive both from their history which over time has shaped their competences, their competitive position, their image, and in general their respective strengths and weaknesses. However for this study it is useful and appropriate from the standpoint of the research methodology and of the value of interpretation, to isolate, if any, the common traits among the firms' strategies. On the whole automakers, competing among them to acquire shares of a same market, are led by needs expressed by consumers who are mainly common. For example in the most developed markets such as North America, Western Europe and Japan, the nature of automobile demand is clearly more sophisticated than in first-purchase markets, both because consumers have higher income levels, and because these consumers already have a vehicle, and they are interested to change it depending on its degree of novelty. As a consequence one can see a common goal for the main automakers, which means to broaden their product range, in order to manufacture niche products, more specialized compared to the past, and hence capable of attracting a demand which is more incline to buy more innovative and customized products. The actual and specific forms through which every firm will interpret such orientation are and will remain idiosyncratic with respect to their competitive structure, to their image and to their tradition, but this does not rule out that a common goals can be singled out: a sort of conceptual space given by the intersection of spaces represented by the individual specific strategies (Exhibit 1 – Meta-strategy).

THE STRENGTHENING OF THE COMPETITIVE MECHANISM

The task of introducing the meta-strategy concept consists in highlighting that firms, if on the one hand have their own specific traits (in the biological language they are 'different varieties'), on the other hand they belong to the same species since they share the same planetary mega-environment and anyway aimed at supplying demands that have many elements in common, albeit such elements acquire different interest and value in the individual national contexts.

For example the degree of diffusion of diesel vehicles is extremely different in the USA and in Western Europe, since the cost of fuel in the USA does not privilege diesel fuel compared to gasoline, as it happens in Europe. However this difference could considerably reduce, be it for a different energy policy of the US Government, or for any further advantage linked to the development of the potential of diesel engines on the fuel efficiency and pollution side. This would mean that all firms who have accumulated an advanced know-how in the development of diesel engines would be advantaged also in a market traditionally reluctant to use this kind of fuel.

Exhibit 1. Meta-strategy



Similarly the Productive Models Paradigm, modified as such, results more receptive and flexible facing possible (and I would like to underline the possibility, in contrast to hypotheses of necessity assumed in the One-best-way Paradigm) cases of increase in the degree of homogeneity in markets and socio-economic systems. Let's return for example to the comparison from which the contrast between the One-best-way and the Productive Models Paradigms originated. If on the one hand the new paradigm based upon the varieties of a same species rules out the convergence towards a unique managerial model (that of lean production), on the other hand it can easily admit that Western firms have as a matter of fact imitated, at the meta-strategy level, some important elements of toyotism[11]. Clearly the introduction of such elements does not imply homogeneity of

[11] Similarly, I think it cannot be dispued that Europe and Japan have largely imitated the fordist model between the two World Wars, albeit with many adaptations. The fact is that after this, the degree of heterogeneity was still considerable, but was certainly lower than it previously was.

firms both because the introduction has taken place within different social, economic and cultural realities (for example: *kaizen* has different traits and value in different contexts), but also because imitation has taken place.

Therefore the modified paradigm admits the possibility of a convergence, but also a divergence of the conditions characterising the different environmental areas and the operational strategies of firms, as far as this manifests historically and is empirically grounded[12]. Convergence and divergence are not (and must not to be considered) the result of ideological assumption, but the result of an historical evolution and "certified" by an empirical analysis.

In the current internationalisation process it seems reasonable to assume that there has been some convergence with respect to, for example, the situations preceding the two oil shocks (1970s). The homogeneity or the heterogeneity of environments, of development models, of competitive conditions is not an ontological fact of markets and firms, assumed in an ideological way, but a scientific problem which must be dealt with through the elaboration of an interpretative theory, proving itself adequate with respect to the facts which one intends to analyse and interpret.

HOW THE PRODUCTIVE MODELS PARADIGM IS MODIFIED

With reference to the scheme proposed by Boyer and Freyssenet one must highlight that besides elements of differentiation across national systems and markets there are also forces driving such socio-economic systems together, making them less heterogeneous. If one considers the graphic scheme shown at page 21 in 'The Productive Models' book such step can be done (Exibit 2) by integrating the proposed chart according to the following:

- ✓ first and foremost, it must be underlined that within the international regime there can be forces capable of making systems come together, as in this stage it is justified to assume. The establishment of the European Union with the adoption of a single currency, the abolition of any tariff barrier, the introduction of a single technical regulation on automobiles appears a clear example in such direction, as well as the entry of China into the WTO, the adoption of similar policies in the automobile industry to reduce pollution, etc. Clearly, such forces today play a modest function (and could also completely vanish). However, they could also strengthen facing echological emergencies.
- ✓ secondly, one must integrate the links between the concept of 'growth mode of the national income' and the concept of 'profit strategy' with other links other than 'labour' and 'market'. In particular we suggest the introduction of the concept of 'technology', which can play a significant role in the 'coming together'. But it must be mainly underlined that even the links of 'labour' and 'market' must not be necessarily interpreted as mechanisms of exclusive differentiation of environments, but also accept the hypothesis that they in some cases could generate pushes towards a reduction in differences.
- ✓ finally one must remember that any productive model is immersed into a common mega-environment (the Earth) populated by subjects who have some common needs and some common basic preferences (preferences for more efficient vehicles, safer vehicles, lower polluting vehicles, vehicles with more driving comfort, etc.).

In substance this implies to remember that one must not look at individual productive models at a time, but to the whole of productive models since they are in competition with each other and therefore made interdependent on a multiplicity of common environments (markets), and sharing meta-strategies.

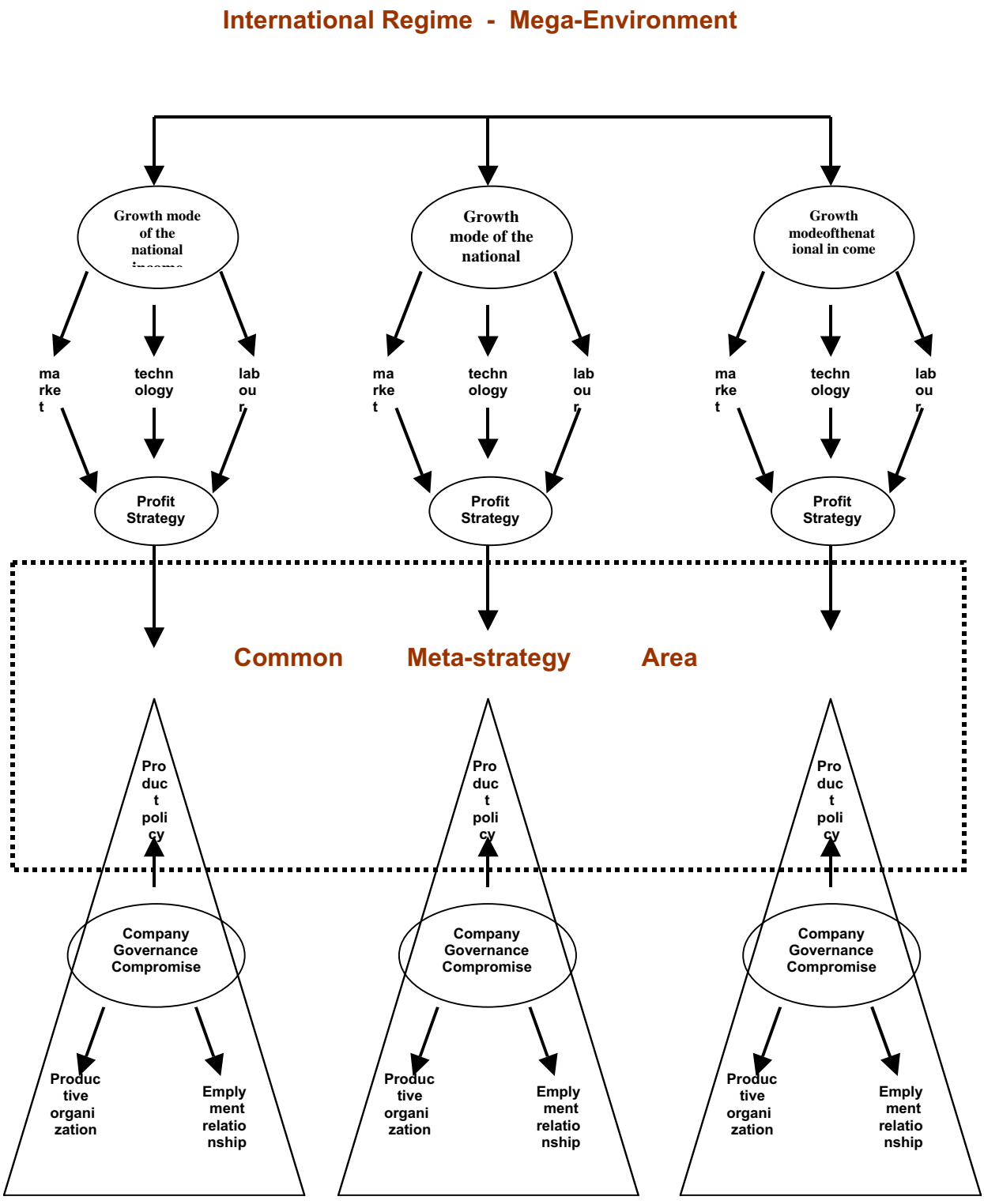
[12] See Boyer, Charron, Jürgens, Tolliday [1998].

CONCLUSIONS

In conclusions this methodological proposal aims at making formally explicit the presence within the Productive Models Paradigm of elements capable of creating forms of homogenisation of the competitive framework which the original version tended to hide, perhaps due to the need to characterise its position compared to the One-best-way.

As a consequence the unfolding of the competitive confrontation and the strategic opportunities offered to the whole of firms derive from a historical dialectics of opposite forces which can make different evolutionary modes prevalent. In other words the future is not pre-determined in one direction or another: it is the researchers' task, with a continuous refinement of their own methodological tools and their interplay with data from experience, to read its development.

Exhibit 2. The Productive Models in the Mega-environment



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