

**FROM THE “DREAM OF OPPORTUNITIES” TO THE “NIRVANA OF TRUST”:
ISSUES FOR A FRAMEWORK ON COOPERATIVE AGREEMENT STABILITY**

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Abstract:

In the era of hyper-competition, rather than simply coping with dynamic technological capabilities, firms are supposed to have relationship capabilities. Cooperation seems to emerge as an overall option for competitiveness. But a question still remains: is cooperation really cooperative? This paper intends to establish a theoretical approach to the explanation of such dilemma and to propose a framework for issues related to stable cooperation among firms. Strategic alliances and networks are the main options. The difference from one to the other will be the combination of opportunism-trust *vis-à-vis* techno-economic asset interdependence.

Keywords: competition and cooperation, cooperation stability, strategic alliances, networks, cooperativeness

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1. Introduction

Some stylized facts are undeniable features of the on-going business and economic environments. Global markets, electronic connectivity, increasingly complex technologies, and high R&D costs are some of the major challenges that companies are facing in order to obtain competitive advantages. In this context, the search for novelty and quality, flexibility and rapidity, and, above all, for low costs is proposing a whole new spectrum of capabilities.

Many Strategic School studies (Porter, 1985; Prahalad & Hamel, 1990; Mintzberg *et al.*, 1998) have stressed both the mastering of the value chain and the enhancement of the core competences as the shortest path to define a successful competitive strategy. By mixing these features, any firm could produce a “juicy innovative recipe” of information, knowledge, creativity, and technology. The secret to reach such a recipe seems to be the build-up of a perfect technological capability, from which new exclusive specific assets could emerge. This is, after all, the “dream of opportunities”.

It is a “dream”, however, to simply identify which specific assets are necessary. The competitive secret (even before the competitive advantage) is a matter of dynamics (Langlois & Robertson, 1995; Teece *et al.*, 1997). In the on-going economic environment, some very successful specific assets can be simply surpassed by new ones. Any innovative firm can, sooner or later, lose its very position. Thus, firms must constantly search for new information and knowledge. In other words, dynamics generates new dynamics.

This scenario, however, makes the individual competitive challenge harder. In such conditions, dynamic technological capabilities will depend on sources other than the firm's. Autonomous behavior must evolve to a collaborative behavior.¹

Dynamics is a matter of relationship. Dynamic technological capabilities seem to be better attained if built upon relationship capabilities.

The firm must go further than the simple search for individual core competences in a specific value chain; it must connect different agents' competences throughout the value chain. In this context, the study of individual corporate behavior by itself is no longer sufficient to seize

real competitive options. In order to understand such portion of the corporate behavior, one needs to move from an intra- to an inter-organizational approach of the firm, since firms are no longer able to control all necessary conditions and resources to attain their objective (Pfeffer & Salancik, 1978).

The general idea is that, by complementing their tangible (technology) and intangible (knowledge) assets, separate firms (acting together) become able to keep on competing by increasing synergy. Consequently, technological and organizational innovations could become possible where they seemed unviable. It is the “nirvana of trust”, where cooperationⁱⁱ appears as a risk reducer.

In reality, one may argue, collaborative relations are made to reduce both production and transaction costs. Production cost reduction, as a result of cooperative agreements, is easy to understand, since two (or more) collaborative firms will seldom merge their individual best productive specific assets in order to generate new ones.

Transaction costs, however, will emerge whenever firms use the price mechanism based on information that is different from the information expressed or expected by the market. If the existing information and knowledge do not reach market expectations, the firms will have to deal with unexpected costs. In this context, one firm can imagine that, by cooperating with another, it will be able to have a more accurate draw of the market's information, knowledge, needs and technology expectations. When both companies join in the market, they can make better profits.

Therefore, both partners will increase their chances of becoming innovators, which means, having their production cost choice in accordance with market's expectations (a situation in which transaction costs tend to zero).

However, firms must expect that, once competitiveness emerges from cooperation, they will have to share profits. Since opportunism is an essential part of innovation and competitiveness, whenever an individual firm seizes an opportunity, it naturally looks for profit. In competitive markets, one firm profit is based on the incompetence or inefficiency of the others. In this sense, any collaborative agreement will latently be object of opportunism. Thus, the problem with cooperation will be its (in)stabilityⁱⁱⁱ. This, in some sort, helps explaining why so much collaborative experiences turn on betrayal, hostile acquisitions and, among others, failure. The “nirvana” seems not reachable.

In fact, does cooperation really mean cooperative behavior? Will cooperation really be cooperative? When should one seek for individual asset specificity or for complementarity? When to be opportunistic and when to trust?

To compete is an autonomous action for any winning strategy will be drawn upon individual asset availability. Williamson (2003) considers that “strategizing commonly involves clever ploys and positions, whereby one strategic actor imposes its will upon another; contract, by contrast, places emphasis on voluntary exchange with the prospect of mutual gains” (p.931). Therefore, to cooperate is an individual bet for any winning strategies will be drawn upon collective asset complementarity based on necessary contracting.

This competition-cooperation dilemma is better seized if we start from the idea that “the combined uses of organization theory, game theory, and transaction cost economics (...) hold out promises for such a purpose” (Williamson, 2003:938)^{iv}. This paper, by pushing forward the discussion on whether to cooperate is better than to compete only if made upon the assumption of **built stability**, presents an approach that will help us on the understanding of such dilemmas. It will propose a framework in which (more) stable cooperative alternatives will be based on the explicit (thus, contracted) balance between opportunism and trust *vis-à-vis* techno-economic asset complementarity. The major input for this decision making process is to find out what cooperative alternative can any interacting firm choose to transform the “dream” into a “nirvana” of trustful opportunities.

The paper is divided in the following sections. Starting with the prisoner’s dilemma, it will discuss the emergence of cooperation and its potential instability (section 2). Using Transaction Cost Economics, the strategic dilemma already mentioned can be better understood (section 3). The paper goal is to reach a framework for stable cooperation (section 4) that will lead to two major cooperative outcomes: strategic alliances and networks. Concluding remarks will follow.

2. The emergence of cooperation: from the prisoner’s dilemma to the trade of complementary assets

What is called “game theory” is in fact the evolution of a human impulse: an attempt to reflect the conflicts of the world (Poundstone, 1992). More than simply mapping conflicts, game

theory, especially when applied to the cases of oligopoly (which are very near to the competition-cooperation dilemma^v), is able to “help (...) to understand and to foresee the coming facts in the economic context” (Kreps, 1990: 5). Therefore, it is a powerful tool for strategy.

Games are systematic ruled structures that deal with different numbers of players, with a number of possible strategies and feasible pay-offs. Generally, playing games results in losers and winners. This is the most common kind of game, called “zero-sum”, because whatever one player wins, the other loses. In such a game, results can only be probabilistically inferred or discovered at the end of the game.

However, this aforementioned game mechanism is almost useless for real competitive strategies, especially while dealing with cooperation issues. The prisoner’s dilemma^{vi}, contrary to zero-sum games, is a positive-sum game, i.e. both players can be winners in the same round. By understanding the outcomes of the latter game, one is able to understand the emergence of cooperation and the need for greater awareness.

2.1. The Prisoner’s Dilemma

What is the result of the prisoner’s game? What is the best choice? Answers may be found regardless of probability. In the prisoner’s dilemma, no player will make any movement by chance. In fact, gains will be foreseen, thus the balance can be positive.

Due to the pay-off provided by each decision, the prisoners will choose strategically for any alternative: “fink the other” or “not fink the other”. Apparently, the dominant strategy is to fink the colleague (and pray not to be finked). But how can a player be sure that the colleague will not fink him? Thus, the best choice is: not to fink and not to be finked. It means that if both “keep being pals”, they will be free much sooner.

The decision on autonomy or partnership implies a similar “dilemma”.

Transferring the prisoner’s dilemma^{vii} to the context of a technological development agreement, one stands as follows: the objective is to strategically decide how to access a competitive market: by developing a new technology autonomously or by collaborating with a partner.

If any firm is completely sure that its technological capability is in fact exactly or even higher than the market expectations, it should obviously decide to compete, since this choice will probably guarantee a higher pay-off *vis-à-vis* its competitor. However, one should always

consider that the opponent firm may also “think” that it has the right answer to market expectations. The competition between two supposed innovators often results in market sharing, with losses. Such confront involves risks, which are actually costs. The risk comes from the assumption that the adversary will be the first one in the market, and, therefore, the only one to win. This situation would lead both to the same lowest pay-off.

The real problem is that, very often, the right technological capability is not fully available (sometimes, it simply does not exist). The on-going stylized facts have shown that such certitude is even quite rare. As a matter of fact, the firm cannot precise how near (or how far) it is from the innovation claim of the market.

As pointed out in the introduction, the stake is to link dynamic technological capability **with** relationship capabilities. Let us keep in mind that “no matter what the other does, defection yields a higher payoff than cooperation. The dilemma is that if both defect, both do worse than if both had cooperated.” (Axelrod, 1984:8).

In the same competitive challenge above, if the two firms, instead of confronting each other, establish a co-design agreement, they will share R&D costs. This will surely imply future market sharing, but will be based on a higher probability of mutual success (innovation and profit).

Cooperation changes risk evaluation by increasing the ROI. It reduces the risk by making R&D and operations relatively cheaper. In other words, what decreases is the individual cost of “taking the risk”, while the promise of higher pay-off increases in comparison to the doubtful competitive context. Fully aware of these pay-offs, Axelrod (1984) proposes that after “n” rounds, both players will tend to choose cooperation instead of competition.

In this context, cooperation by reciprocity should be stimulated, in the long run, by growing interaction frequency and behavioral transparency. However, this only occurs because firms will expect to get higher individual pay-offs if they act collectively. In sum, **clear and recurrent complementary inter-firm relations are the basis for any cooperative winning strategy.**

What does cooperation mean? Does “cooperation” really mean being cooperative?

2.2. Cooperation: general concept

The on-going complex and dynamic economic environment, coupled with the “autonomy or partnership” dilemma’s higher pay-offs, seems to show cooperation as a feasible alternative. Moreover, the need for innovation seems to drive corporate strategy into a cooperative option (Jorde & Teece, 1989; Hagedoorn, 1990).

However, cooperation is still a matter of trade. Firms aiming at any type of collaborative relationship will have to put different assets together in some type of transaction. Different from regular market transactions, in which companies exchange assets based exclusively on relative price comparisons, in those complex inter-firm relations, firms trade, for example, market knowledge for technology, or logistics and distribution for a new product mix. Other cases can be based on the sharing of operations to reach higher scales, and so on. In all cases, our definition of cooperation implies **asset complementarity**.

Those bi or multi-lateral complementary structures will deal with different competences (tangible or intangible – from R&D all along the value chain up to marketing) assembled to create new ventures, new competitive alternatives that were unthinkable before the partnership became possible. All this novelty is established on a concrete basis of potential **synergy** (Zawislak, 2000).

Starting from the aforementioned “trading” point of view, and having Schumpeter’s classic concepts of entrepreneurship and innovation in mind, we can define cooperation as **clear and recurrent inter-firm relations based on new synergetic mix of complementary assets (the “nirvana of trust”) as a concrete driver for extraordinary profits and competitiveness (the “dream of opportunities”)**^{viii}.

2.3. Cooperation Awareness

Recently, however, cooperative agreement failures have been the source of major concern. Theoretical and empirical evidences (see, for example, Bruner & Spekman, 1998; Das & Teng, 1999; Applegate, 2001; Dyer, Kale & Singh, 2001) draw one single question: why does something supposed to be “perfect” go wrong?

In the very essence of this question is, also, the primal idea of trade: individual economic agents, with individual goals, looking for their best individual results on any on-going

transaction. The problem emerges when a cooperative venture – like any other dynamic business venture – does show different overall (individual and collective) expected goals.

On the one hand, one should never forget that firms, even together, cannot be fully able to deal, *ex-ante*, with market expectations. Since partnerships are based on dynamic information, knowledge and technology transactions, partners can have different individual perceptions on how things worked out *ex-post*. A fact that leads to opportunistic behavior in order to maintain, at least, individual gains^{ix}. Opportunistic behavior, thus, leads to instability. Collaborative ventures, as Parkhe (1993:794) states, are “characterized by inherent instability arising from uncertainty regarding a partner’s future behavior and the absence of a higher authority to ensure compliance”.

On the other hand, the problem with cooperation can emerge within the market dynamics itself. New information, new knowledge, creativity, and new technology produce further innovation, thus further profit. However, since any new profit will never be fully predicted in an on-going partnership contract, can it be shared exactly as the former contract states?

Probably not. The new profit has in its origins new individual asset specificity, such as new product possibilities, internal process enhancement, new marketing options, and so on. Such asset specificity claims for new ownership. **Whenever new individual gains are foreseen in any cooperative agreement, opportunistic behavior can emerge** and, with it, the permanent chance for betrayal. In this case, partners can become rivals once again.

In this context, cooperation does not necessarily mean being cooperative. It refers only to complementarity as a better economic choice than autonomous behavior. However – one should not forget – autonomy will still be the preferred strategic option, mainly when unstable relations emerge inside the agreement. Therefore, the question is: How to manage stability into cooperative agreements?

Transaction Cost Economics will help us better understand the emergence of (in)stability in the context of partnerships^x; perhaps, the concrete way of thinking cooperation as “cooperative”.

3. Transaction costs and the emergence of stability

A firm is, even before its existence in the market, a nexus of internal treaties (Aoki *et al*, 1990). Moreover, it is a set of relations in constant friction and that should be strictly coordinated.

Specially designed managerial systems are responsible for this control. They describe the material, the technology and the most efficient methods of reducing this friction (Coase, 1937). Internally, production costs sum up this whole coordinative effort.

However, the same reasoning is not suitable for the firm's external relations. Since they are based on asymmetric information, internal organization and technological capabilities are not appropriate to control them fully. As Coase (1937:19) says, "outside the firm, price movements direct production, which is coordinated through a series of exchange transactions on the market". Asymmetric information impacts on the firm's *ex-ante* price perception, generating *ex-post* transaction costs.

3.1. Transaction costs and Innovation

Transaction costs arise with the inherently disharmonious market dynamics, caused by institutional pressures, trade conflicts, supply delays, high pricing, low quality, and other unexpected wrong inferences about market expectations. Therefore, and since firms are supposed to exercise full control over production costs, transaction costs are the ultimate costs they try to deal with.

Firms do know that by reducing transaction costs they will make their products (that are already technically feasible – and have a defined production cost) economically feasible. If innovation is defined as an invention (a solution with technical feasibility) that is **economically feasible**, the act of innovate is linked to the success on the market and, thus, to the reduction of transaction costs. **It is only by reducing transaction costs that any invention (with production costs) can be treated as innovation, then generating competitiveness.**

Since prices sum up external pressures – like costs sum up internal ones –, it is important to know what the relevant price in market will be. If the company reaches the "relevant price" by setting-up a really innovative technology, there will be no need for further contracting with any other player. The new individually established price will be accepted as the market price. Here, the firm individually sells its products profitably.

Conversely, wrongly inferred prices will invalidate all former internal innovative effort. In times of hyper-competition, seizing price movements is as hard as coping with constantly emerging complex information. Technology itself will have no value if the good or the service produced cannot be sold.

From the “dream of opportunities” to the “nirvana of trust”: issues for a framework on cooperative agreement stability

Cooperation aims at simplifying the *ex-ante* evaluation of the relevant price (the cost of market entrance) and reducing the risk imposed by the market. In this context, cooperative agreements should be made in order to increase the possibility that new technologies become really innovative and that transaction costs be reduced.

3.2. The reason for cooperation (in)stability

Williamson (1985) present a simple transaction framework based on the different individual capabilities (asset specificity) that should help us better understand, to some extent, the problem of stability.

For the so-called “general purpose technology”, the firm tends to have enough flexibility to assume risks, suggesting an insignificant, tending to zero, risk. Here, the firm should opt to accept the alternative of autonomously competing in the market and, whenever possible, exercise its natural opportunistic behavior. However, for a “special purpose technology”, the firm will be less flexible and, because of that, if it decides to compete autonomously, it will be exposed to a larger risk. As the competitive risk increases its role in the decision making process, the firm should create enough leeway for safeguards in order to avoid risks – therefore reducing the impact of the transaction costs in its structure.

Safeguards are contracts. In some sense, they are cooperative agreements that help firms evaluate the available information (internal and external) and make the most efficient economic decision^{xi}. In fact, the goal is to know (or perceive) what is the dimension of the real (opportunistic) risk involved in the transaction and, therefore, try to reduce (by means of contract) its negative latent impact.

In any cooperative agreement, the more independent a firm is, the more opportunistic it will tend to be. Conversely, the more dependent it is, the more careful it should be. If this is true, no firm will ever get into a cooperative agreement aiming at collective gains. On the contrary, every firm will chose cooperation if, and only if, this option really suggests better individual gains. In other words, cooperation should emerge whenever collective outcome surpasses individual outcome. Otherwise, cooperation will be perceived as risky, thus prone to failure.

In cooperative agreements, the risk of competition is substituted by another one: partners may simply give up, or even betray, becoming “resident evil”. This is like the “temptation to

abandon”, always latent in a relation based on cooperation. It happens when one player decides not to cooperate (he plays false), while the other player votes for cooperation (he is betrayed), and thus, the pay-off (reward) goes to the trickster (the one who played false) (Axelrod, 1984). In all of those cases, contracts are necessary.

Therefore, contracts are the very first step of any successful stable cooperative agreement, since they can “infuse *order*, (...) mitigate *conflict* and realize *mutual gains*” (Williamson, 2003:921). And they depend on external and internal information. First, any firm must search for precise **market and price information**. Then, it must master **techno-economic information** about its own specific assets. Finally, the firm must have **subjective information** on whether the partner is opportunistic or trustful.

Based on this, **the more information one firm has, the less opportunistic its opponent-partner firm will be**.

Finally, asset complementarity, as *leitmotif*, combined with systematic information gathering, as natural safeguard, will create such conditions that stability could be reached on cooperative agreements. And, probably, cooperation could be called “cooperation”.

4. Towards a framework of stable cooperative agreements

Cooperation is a matter of information and knowledge availability. It is based on complementarity, on learning by interacting and on synergy. Whenever partners really couple their different assets, they increase their chances to reduce transaction costs, thus achieving innovation and extraordinary profits. As long as they are winning together, partner firms will tend to keep their agreement working and any cooperative agreement will tend to last. This is, after all, the general idea.

Once this is understood, the question becomes: what kind of agreement^{xii} should cooperating firms build?

Many authors (see Chesnais, 1988; Hagedoorn, 1990; Lundvall, 1992; Yoshino & Rangan, 1996; Grandori, 1997; Humphrey & Schmitz, 2000) have presented typologies, classifying cooperative agreements into different levels: from pre-competitive (joint R&D, technological agreement) to competitive stages (strategic alliances, joint-ventures, equivalency of investments, users-producers relations); from horizontal (e.g. networks, clusters) to vertical (e.g.

supply chain, knowledge systems); from market (e.g. franchising) to hierarchy (e.g. mergers and acquisitions). All typologies propose different ways to manage cooperation. Despite dealing with different levels of interdependence among partners, they do not take into account the latent emergence of opportunism^{xiii} and its eternal conflict with trust.

The purpose here is to offer an alternative view, where the theoretical advantage of cooperation over competition could lead into more stable types of agreements.

4.1. The “dream of opportunities” and the “nirvana of trust”

Let us define autonomous competition as the “dream of opportunities”; something that is allowed just for innovative firms or, as referred by Williamson (1985), those with general purpose technology. Conversely, cooperation is the “nirvana of trust”, where every player really trusts each other and really considers itself as the unique alternative.

However, neither competition nor cooperation is easily found. We live in a world where risky knowledge application leads to uncertain information, technological and economic outcomes. It is, after all, a world of incomplete information, where opportunism and failure are latent. Both lead to imperfect competition and inexistent full cooperation.

In this context, available information will guide the way firms enter partnerships. Moreover, to reach cooperation stability any partnering firm will need to cope with the **techno-economic asset interdependence**, on one side, and with the dichotomy **opportunism-trust**, on the other. Those are the axels of the cooperation stability framework and the drivers for better contracting.

4.2. Techno-Economic Asset Interdependence

Asset specificity is strongly related to competences (or resources) being, therefore, related to evolutionary-based theories of the firm (see Penrose, 1957; Richardson, 1972; Nelson & Winter, 1982; Fransman & King, 1984; Prahalad & Hamel, 1990; Barney, 1991; Lall, 1992; Teece *et al.*, 1997). For those authors, different levels of capabilities will allow different ranges of opportunities and actions. However, one should not forget that firms will always have incomplete information and asset availability, which can eventually be completed by other firms (Van de Ven, 1976; Pfeffer & Salancik, 1978). This is the overall origin of any cooperative

agreement. More than a consensual treaty among firms, **cooperation emerges from the dynamic interdependency of different (individually unavailable) resources.**

Firms do “get together” because, in the long range, they foresee: (1) the possibility of learning by interacting, (2) the emergence of new exclusive assets, (3) a growing reciprocity, and, therefore, (4) a mutual interest on recurrence.

These features will help the firm better understand its actual strategic possibilities for concrete action. The intangible (knowledge) and tangible (technology) specific asset availability, the market/product value chain main characteristics (e.g. commodities, high-scale, hi-tech, etc), the specific asset needs, the firm’s general goals in terms of technology, operations, and marketing strategies are important pieces of information that will determine how dependent or independent the firm can be *vis-à-vis* some future partner(s).

The partners’ techno-economic specific asset availability will define the concrete and operational range for any cooperative agreement, but will not, by itself, eliminate opportunism or emulate trust.

4.3. Opportunism-trust

Opportunism and trust are related, after all, to human nature^{xiv}. Human nature, in fact, eases the understanding of how institutions, preferences, cognitions, imagination, foresight, decisions, actions, and so on, are originated by – and generating more – bounded rationality. Furthermore, it is a proxy for dealing with imperfect information environments, imperfect knowledge interpretation and its (once more!) imperfect applications.

From opportunism to trust, from individualism to collectivism, this latent imperfection explains how individual oriented actions are transformed into socially perceived ones (Lane & Bachmann, 1996; Witt, 1998). The social process is embedded in culture, ethics, principles, organizations, i.e., institutions. The institutions act as the very means of promoting interaction of different organizations, working under basic overall accepted assumptions (North, 1990). This is how firms will deal with limits and opportunities.

If, on the one hand, social institutions create limits for actions, reducing uncertainty relatively (since firms act under known expectation), on the other hand, the same limit is also the starting point for new opportunities and economic ventures. Institutions will help the

From the “dream of opportunities” to the “nirvana of trust”: issues for a framework on cooperative agreement stability

interpretation of the techno-economic availability, needs and developments, and, thus, will emulate commitment and trust for any decision-making process related to cooperation.

Commitment and trust must be taken as a whole. If commitment is the strong belief “that an ongoing relationship with another is so important as to warrant maximum efforts at maintaining it; that is, the committed party believes the relationship is worth working on to ensure that it endures indefinitely” (Morgan & Hunt, 1994:23), trust is the one party’s confidence in the other party’s reliability and integrity of really thinking the same.

Furthermore – and above all – we join Locke (2002) in the argument that trust can be built. Thus, **the major goal of any agreement is to build – because of the latent opportunism – commitment and trust for long-lasting joint competitiveness based on techno-economic complementarity and synergy.**

4.4. The Framework

Inside the techno-economic and opportunism-trust combination-set between perfect competition (“the dream”) and perfect cooperation (“the nirvana”), two major types of cooperative agreements emerge^{xv}: **strategic alliances** and **networks**^{xvi}. For both types, stability is built up and maintained only if based on asset interdependence, commitment and trust. Figure 1, below, sketches out this general idea.

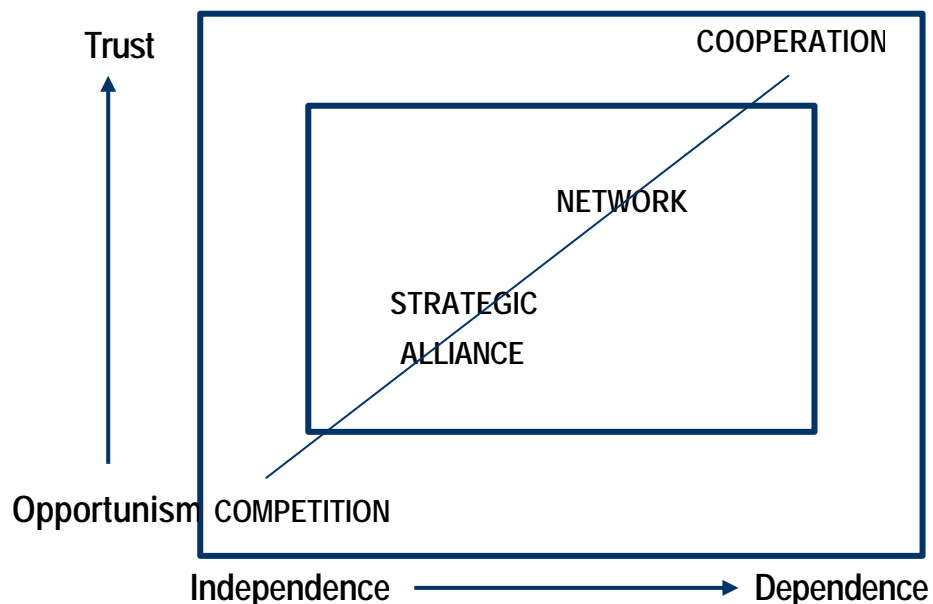


Figure 1: Competition-Cooperation Framework

Strategic alliances are the very essence of the competition-cooperation dilemma. This cooperative option deals simultaneously with individuality and collectivity. Joining a partner (the “alliance” side) is clearly an individual choice (the “strategic” side). Within this option, firms realize that cooperation is a type of escape from risky competition (Zawislak, 2002).

In general, strategic alliances will be defined as bilateral governance structures, created by competitors (horizontally) or by clients and suppliers (vertically). Strategic alliances take into account the fact that each of the partners is “good enough” in its own asset specificity, and, together, they (think that they) will get better!

From this point of view, strategic alliances are explicitly built for the enhancement of individual competitiveness (made through collective efforts). Even in this environment, cooperation somehow emerges, laying its structure on commitment and trust as well as on the partners’ former individual techno-economic asset availability. Here, asset complementarity must drive the partners’ collective effort toward new exclusive synergetic out-comes (innovation).

Strategic alliances will find their balance and stability in-between two strengthening forces: on the one hand, both partners think (in a clearly opportunistic perception of their specific assets) that they are “good enough” to continue alone (whenever it is necessary), while, on the other hand, as they are just “one against the other”, it is easy (or hard) to opt for direct confrontation in case of any disagreement.

Networks are modes of governance with a different structure. Even if they also emerge as an option to hyper-competition, they only exist as multilateral governance structures, like horizontal networks of firms or vertically integrated supply chains.

Here, techno-economic interdependence is crucial, as each partner of the network depends on various other partners. Although each of the partners would prefer to compete alone, it is assumed that no one is good enough to do so. Each chooses cooperation as the only escape from (an apparently) impossible competition. It is not an enhancement choice; it is the ultimate choice!

In some sort, the lack of individual complete asset availability drives the emergence of trustful relations. Firms do realize that the growing dependence among partners has advantages that are reachable by collective effort, based on multiple complementarity nexus.

In this very situation, opportunism is harder to be exercised, because there will always be more than one (very seldom, too many) links to be broken. However, if this should be the case, the bet will be something like “all against one”, normally leading to the defection of the

“opportunist”. This is why firms, in networks, become closer to stable cooperation than to competition.

Network partners look for the establishment of a cooperation agreement in order to improve their competitiveness. As long as the general project does not fail (an existing risk in any other economic venture), the network tends to keep partners together in a longer and more stable way than it would be the case in strategic alliances.

5. Concluding remarks

Cooperation alternatives reveal how crucial asset complementarity is for synergy as well as for the emulation of trust. From asset independence (the “dream of opportunities”) to the inexistence of opportunism (the “nirvana of trust”), however, different inter-firm options emerge.

These options are as follows:

1. **Autonomy:** is the best choice for firms that have strategic core competences along their value chains (techno-economic asset specificity). Those firms, by being fully able to exercise their opportunism, can become individual Schumpeterian *entrepreneurs* and fully control their strictly market-based inter-firm relations.
2. **Strategic Alliances:** is the best choice for firms that have strategic core competences along their value chains and that, by being (slightly) open to trusting some other party, can reach asset complementarity with it. Both firms simultaneously create synergy (more and new innovative capabilities) and enough individual safeguards against the latent opportunism of the partner.
3. **Networks:** is the best choice for those firms that lack strategic core competences but have enough competences to complement different assets throughout the network. Even if a firm is inherently opportunist, it will find in the network some type of “natural inhibitor”, increasing the venture’s chance of success.

Nevertheless, placing firms together is not enough to generate stable collaborative agreements. To build stability, it is necessary to develop a whole contracting and management system of techniques and tools; a system that will enhance mutual information availability, and stimulate asset complementarity, thus inhibiting opportunism; a system that supports “relationship capabilities” for the technological capabilities’ enhancement.

What different assets does a company have and need? When to focus on asset availability or on partnership risks? How can any firm be able to deal with those different options? How to guarantee that individual (through collective) goals will really be reached? How to give collective appearance to something individual? How to express *ex-ante* what should be (but not necessarily was meant to be) divided *ex-post*? Where to find the exact partner? How to inhibit its own, and the other party's, opportunism? How to build commitment and trust among partners? How to deal with learning and adaptation?

Those are some of the generic managerial questions that can be added to other theoretical hypotheses inside the competition-cooperation dilemma, for which the answers constitute much wider research problems^{xvii}. However, a first clue seems to touch upon the creation of a fully operational type of contract that, by its complexity, will focus on the dynamics of the agreement's information and outcomes rather than with the agreement's functioning itself.

In other words, to emulate trust (the "nirvana") and to reach innovative complementarity (the "dream of opportunities"), the contract must go further than the simple reproduction of the already existing individual assets of the partners. It must look forward to the evolutionary process that any partnership is supposed to have. Therefore, it must look forward to learning, adaptation and the addition of collective value.

As Brousseau (2000) points out, classic "contracting is a weak mechanism for planning, generating incentive or conflict solving. Those features are solved by informal negotiations and cooperative spirit" (p.1). The new kind of contracting effort should be purposely incomplete, with enough room to incorporate partnership dynamics, in order to allow behavioral transparency and cooperativeness. The latter is reached by reputation, trust, reciprocity, commitment and repetition.

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ⁱ One should remark that in “autonomous behavior” cases, inter-firm relations will also happen. However, instead of having inter-firm relations as a “competitive secret”, autonomous firms decide for the relationships based on relative cost issues. The very option for collaboration is, after all, a sign of autonomy. Conversely, the so-called “collaborative behavior” deals with much more than this simple decision, as it shall be clearer in the next pages.

ⁱⁱ All along this paper, “cooperation” will be used as the term that covers different concepts, such as alliances, partnerships, collaboration, networking, inter-organizational relations, and so on. Moreover, it could be referred to as in Watts (2003): a new emerging science, the *science of networks*. However, even in this sense, one should know that cooperation is much more a general concept (for an industrial competitive strategy) than a full and real cooperative relationship among companies.

ⁱⁱⁱ Dussauge *et al* (2004) point out the asymmetric outcome of alliances. This reinforces the idea that cooperation, even based on collective goals, is, at least, opened to unbalanced individual competitive advantage. Thus, it leads to further opportunism. This will be discussed later.

^{iv} Game Theory and Transaction Cost Economics are not the only approaches available to start any definition of cooperation. The behavior of the firm (Simon, 1947; Cyert & March, 1963), the growth of the firm (Schumpeter, 1934; Penrose, 1959), the resource-based view (Barney, 1991) and even enlarged pure evolutionary approaches (Langlois & Robertson, 1995; Teece *et al*, 1997) could be used. Recently, Chen & Chen (2003) and Foss & Foss (2004) have proposed a further merger of the transaction cost economics and the resource-based view. These approaches will even be used on section 4.2.

^v Oligopoly is the competition among few companies. This is, probably, the most common market structure and one of its major organizational outcomes is cartel formation. In some sort, this is a type of “cooperative agreement”. Moreover, mergers and acquisitions normally emerge inside oligopolistic markets.

^{vi} Tirole (1988) describes the story of two people arrested for a crime, where: “the police lack sufficient evidence to convict either suspect and, consequently, need them to give testimony against each other. The police tell each suspect that if he testifies against (finks on) the other, he will be released – provided the other suspect does not fink on him – and will receive a reward for testifying. If neither suspect finks, both will be released on account of insufficient evidence, and no rewards will be paid. If one finks, the other will go to prison; if both fink, both will go to prison, but they still will collect the rewards for testifying. In this game, both players simultaneously choose between two actions. If both players cooperate (...) (do not testify), they get [3] each. If they both play noncooperatively (...), they obtain [1]. If one finks and the other cooperates, the latter is rewarded (gets [5]) and the former is severely punished (gets [0]).” (p. 426)

In this case, there are four possible results (alternatives) that are set by existing pay-offs:

	not fink the other	Fink the other
not fink the other	3;3	0;5
fink the other	5;0	1;1

^{vii} Axelrod (1984) did it in a very innovative way, explaining cooperation from reciprocity. See also the “Hostage Model” in Williamson (1985) and some arguments in Parkhe (1993).

^{viii} Complementarity and asset availability are concepts that have been stressed on different studies. Among others, Hoffman & Schlosser (2001) dealing with the resource-based view and knowledge

systems, as well as Osborn & Hagedoorn (1997) presenting an organizational and managerial approach, and, probably, above all, North (1990) defining institutions, represent a sample of different ideas. Voisin *et al.* (2000) present a comprehensive collection of papers dealing with this subject.

^{ix} The work agrees with Hodgson (2004) in that opportunism is not the major reason why firms exist. But, for cooperative agreements, this concept must be taken into account as a starting point to better understand commitment and trust. Moreover, several different forms of opportunism (e.g. behavior and circumstantial) should be considered (Wathne & Heide, 2000).

^x See note iv above.

^{xi} Economic efficiency means productive efficiency plus successful commercial transactions. Back to the argument about invention (just technique) and innovation (technique in trade), one must consider the production cost added to the transaction cost.

^{xii} By “agreement” one considers the **type** of the inter-firm relation and not the contract itself.

^{xiii} See note ix, above.

^{xiv} However, the paper is converging to an overall concept, such the once classic Williamson’s definition of opportunism: self-interest seeking with guile. Recently, in Williamson (2003), the author himself has enlarged the concept by dealing also with cognition and foresight. This seems to be much more adequate.

^{xv} From competition to cooperation, one can foresee different positioning possibilities. As a matter of fact, each one of these positions is autonomous and should fit for different socio-psychological and techno-economic asset availability, as well as different strategic goals. Moreover, one does not consider them as temporal stages, through which a firm should evolve. They are put in the same chart as a means to understand different strategic options that follows different firms’ asset availabilities.

^{xvi} It is expected that empirical evidence will show other different types, such as supply chains, clusters, franchising, merger and acquisitions and so on. All of them, however, should fit in different positions in between the two major cases.

^{xvii} The Brazilian Research and Development Council (CNPq) is financing a wider research on whether inter-firm relations among automotive companies are, or are not, stable cooperative agreements.