Formation of a European Judicial Area, Game between actors of the judiciary and Cooperation between members of different cultures

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Preliminary version

Since the European Council held in Tampere in October 1999, the formation of the “European judicial area” has become an essential side of the continuation of the integration process in Europe. Indeed, “the enjoyment of freedom requires a genuine area of justice, where people can approach courts and authorities in any member state as easily as in their own (...) [Moreover] judgements and decisions should be respected and enforced throughout the Union”\(^1\). The cooperation between national judiciaries is at the centre of this process to build a genuine "Europe of justice". From now on, the judges of the different member states have to cooperate in the production of justice, concerning the allocation of jurisdictional competences as much as concerning the recognition and enforcement of foreign judgements. Because of the constitutional principle of independence of the judiciary, the judges are given more scope for making decisions; then, their behaviours prove to be decisive. Consequently, to assess the significance and the potential superiority of any institutional and/or procedural solution, the analysis has to take account of the likely behaviours and strategies of national judges and their consequences. It is all the more essential that the judges who have to harmonize their decisions and interpretations live in different countries and belong to different cultures, with diverse cultural and legal heritages. National judges can choose to try to minimize divergences or, on the opposite side, to accurately defend their own culture because they think it is better than others’ ones and, thus, to try to impose it as a basis for the European harmonization. What can result from such a process? What can be modified when rules are changing? To respond to such issues, we will use a game approach as this one is specially interested in the analysis of individual choices in a context of strategic interdependence.

The paper is organized as follows. It begins with a presentation of the process of judicial cooperation within the European Union; doing so, the reasons why a European area of justice is necessary are set out (section 1). The national judges' behaviour is then examined with a game approach. We begin by illustrating the problem of cooperation of magistrates belonging to opposite legal cultures when they occasionally meet together (section 2). Then, we study the consequences of an institutionalization of their relations when they became

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\(^1\) Extracts of the Presidency Conclusions, Tampere European Council, October 15-16, 1999, §5.
regularly repeated. If magistrates have to replay the game, whether it is the case of the same magistrates or of magistrates able to be influenced by the first ones by word of mouth, learning effects may occur. So, we will use an evolutionary games approach (section 3).

1. Judicial Cooperation within the European Union

The will to build an area of justice within the European Union, highlighted in 1999 during the Tampere European Council and reasserted by the national authorities in the Hague Programme adopted by the European Council in 2004\(^2\), mainly answers the increasing number of complex transnational judicial and legal cases, involving citizens and operators from different European countries. The difficulties inherent to these transnational disputes and the need for intra-European movement of national judgements are set out in a first subsection, and doing so, the requirement for judicial cooperation to resolve such problems is highlighted (1.1). Different methods can be used to institute the required cooperation between judicial authorities of different countries, and thus to build an area of justice (1.2). The European Judicial Area currently under construction explores one of these various ways to proceed in this context (1.3).

1.1. The need for judicial cooperation in Europe

Citizens and firms of the member States exercise more and more their right to move around freely within the European Union. This cross-border mobility has given rise to a new context for the production of justice: a context of relative opening up of national judicial and legal areas. Henceforth, national judges have to take the European context into account when they declare to have the jurisdiction to resolve a dispute and when they produce judicial decisions. Let explain this new context, examining the main two consequences of the increased intra-European mobility for the production of justice: on the one hand, the emergence of new kinds of disputes – the transnational disputes (1), and on the other hand, the required movement of national judgements within the European Union (2).

(1) First, the increased mobility expresses in a growing number of cross-border relationships - not only in commercial, professional, and financial matters, but also in the realm of family life - which can sometimes give rise to disputes. The disputes arising from cross-border dealings are particular in comparison to the cases traditionally brought before the courts. They are characterized as “transnational” since they entail elements of “foreign origin” by the individuals involved in - for example, a dispute in contract law between an English firm and a French company - and/or by their subject(s). Because of these elements, the cases concerned can simultaneously be related to several national legal and judicial systems – in the example just mentioned, either the English system or the French one. Consequently, the jurisdictional competences of courts from different countries can overlap, i.e. are potentially in competition, for cross-border disputes. This competition on judicial competences - “jurisdictional competition” - is all the more noticeable since (i) when two States are involved (in particular, because of the nationality of the litigants concerned), none of the national courts is a priori (i.e. in the absence of rules determining the allocation of competences among them) more competent to decide these cases and (ii) no supranational judicial jurisdiction exists to handle this particular form of disputes. Such a situation is problematical for two

additional reasons. First, because a transnational dispute can be brought before two courts which are potentially competent - in the above example, the commercial dispute considered can be brought to a French court and to an English one. In case the two systems consider their national courts as competent, how can we solve the problem of competing competences? And secondly, in case the problem of overlapping competences is not solved, i.e. the dispute is simultaneously referred to two courts (one in France, the other in England, for instance) and each of the two jurisdictions produce a decision to resolve the dispute considered, which of the two judgements will be enforced? This issue is highly significant as the decisions delivered could be distinct and sometimes conflicting. To assess the significance of this problem of “décisions miroirs” (Barbe, 2002: 77), let mention, for instance, the case of the French-German couple Cosette Lancelin – Armin Tiemann in 1998-1999. In this case concerning a divorce and the custody of children, each of the spouses brought the case before a court, one in France and the other in Germany. The two jurisdictions in charge of the divorce – in Blois and in Hamburg - pronounced incompatible decisions on this case: one judge gave the custody of the children to the mother whereas the other gave it to the father. Because of the impossibility to enforce such incompatible decisions, the case took a dramatic turn: the kidnapping of the children by the father3.

Cross-border disputes can concern all types of litigants and, thus, be of different kinds – disputes between firms, disputes between firm(s) and citizen(s), and disputes between citizens - in the different matters of law – contract law, family law, commercial law, etc4.

(2) Secondly, because of individuals and firms’ mobility within Europe, national enforcement of judicial decisions is sometimes not sufficient; it means that movement of judgements across jurisdictions can be required as showed by the two cases in table 1 below. The differences between national legal and judicial systems, even between member States within the European Union, can give the defendants incentives to behave opportunistically ex post - i.e. after the production of judgements by national courts: for instance, the latter can be induced to move their assets to other countries in order not to comply with the judgements. In such situations, how could the plaintiffs be guaranteed that the judicial decisions they are concerned by would be enforceable in other countries? It raises the question of interstate enforcement, the issue of the “continuity of property rights” (Garcimartin Alferez, 1999). Each State, through its judicial authorities, can exercise its power to enforce decisions only within its own frontiers. The internal law of one country does not deal with the effects of national judgements in foreign countries. Thus, it is up to the legislators of the foreign States to determine the conditions under which these decisions delivered extra territorium could be enforced. Therefore, to have their decisions producing effects in a foreign country, litigants

3 This case had important coverage in the press, in France in particular (among others, “Les rapt s d’enfants au sein de couples franco-allemands restent sans solution” (Le Monde, 16 juillet 1998), “Enlèvements d’enfants : la justice allemande suspend une décision favorable à une mère française” (Le Monde, 18 juillet 1998), “Deux enfants, deux pays, un imbroglio judiciaire” (L’Humanité, 3 avril 1999)).

4 As the European Commission stresses, “such disputes are not necessarily between large companies; they may affect small business or individuals, who may be of modest means. For example, individuals may be involved in an accident while on holiday or while making a shopping trip abroad, or they may buy goods, which later turn out to be faulty or dangerous. Their spouse may have left the matrimonial home with the children of the marriage and settled in another country. They may need to pursue the matter in the country in which the dispute arose or, worse still may be threatened with proceedings there. A small company might sell goods abroad and later be threatened with proceedings in the purchasers’ country. A consumer may order, over the Internet, goods from abroad which are never dispatched or which turn out to be faulty” (extract of the Green paper from the Commission, “Legal aid in civil matters: The problems confronting the cross-border litigant”, COM(2000) 51 final, 2000, page 2).
must address *exequatur* requests to the specific judicial jurisdictions of the “reception country”\(^5\).

### Table 1

**National judicial decisions and extra-territorium recognition and enforcement**

| Example 1 | The Colisée, a local theatre set in Paris, decides to restore its scene, and thus, addresses to the firm Restore&Co, located in Paris too, to execute this work. A few months later, the restoration of the scene is achieved, but after a few rehearsals, some spaces appear between the planks of the scene. So, the director of the Colisée decides to sue Restore&Co for “product defect”. Judge Collins, in charge of the dispute, establishes the liability of the firm Restore&Co, and computes the compensatory damages at 3000 €. But *ex post* (i.e. after the deliverance of the decision by Judge Collins), the firm Restore&Co ceases its operations in France, and moves its assets in Italy, without having paid the damages to the theatre Colisée. Can the latter, the plaintiff, obtain that Judge Collins's decision is given effects in Italy? In other words, can a French judgement be recognised and enforced by Italian judicial authorities? |
| Example 2 | The Martins, parents of a teenager, decide to divorce after ten years of marriage. They apply to a court of Liège (where they live) to deal with the divorce and the issue of child custody. After the divorce procedure, Mrs Martin is given custody of the teenager, and consequently, Mr Martin has to pay an allowance (of 150 € per month) for his son. Let suppose now that, a few months later, Mr Martin decides to move to Luxembourg where his employer proposes him a new job in one of his subsidiary companies. At the same time, Mr Martin stops to pay the allowance for his son. Can Mrs Martin obtain that the divorce and custody decision delivered in Belgium is given effects in Luxembourg, where her ex-husband lives now? |

Thus, as a consequence of intra-European increased mobility, two kinds of specific questions are from then on at the centre of the European integration process\(^6\): first, a problem of overlapping jurisdictional competences – i.e. potential judicial competition between judges from different countries, and secondly, a problem of international movement of judicial decisions – i.e. a decision may have to be enforced abroad, that is in a foreign judicial system. These situations can be analyzed as two forms of judicial competition. To explain it, let consider the production process of judicial decisions. Two important stages have to be considered in the process: first, the stage of “jurisdictional competence” (1) and then the stage of “judgement enforcement” (2) (see figure 1 below)\(^7\). In spite of its relative simplicity, this overall picture of the judicial production process allows us to shed light on the two kinds of potential judicial competition: on the one hand, as regards the competence to adjudicate a legal dispute, and on the other hand, pertaining to the enforcement of judicial decisions. The former – competition for adjudicating competences, i.e. horizontal judicial competition - can occur within a national judicial territory at a differing extent\(^8\), and also between countries as

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5. In France, courts of first instance – i.e. *Tribunaux de Grande Instance* – are competent to deal with these questions of *exequatur*; such a competence is assigned to the *Corte d’appello* in Italy, to the *Juzgado de primera instancia* in Spain, to the *Landgericht* in Germany,…

6. From this standpoint, our analysis takes place before the adoption of common legal instruments such as Brussels regulations I, II and II bis mentioned below, in order to explain how these measures of judicial cooperation could have been adopted.

7. In a way, these stages concern the two aspects of the ‘conflicts of jurisdictions’ dimension of private international law as defined above.

8. The purpose of our paper is not to examine in details this form of competition. Yet, we can mention, in a simple way, that some countries allow a relative competition between their judicial jurisdictions (the United States may be the most striking example of such a judicial and legal competition within a nation), whereas other countries, France in particular, limit the competition among internal courts by *jurisdictional rules* (a translation
regards cross-border court cases as stated above. When a legal dispute concerns parties and/or properties from different countries, a national court of each legal system involved could entertain an action: it raises the problem of ‘overlapping’ judicial competences: which judge will be assigned the ‘right’ to produce a decision resolving the dispute? Concerning the second dimension, i.e. the ‘judgement enforcement’ dimension, what deserves interest for our paper is the judicial competition stemming from the movement of judgements across countries. Indeed, in some cases, a national decision can require to be executed in other countries: the litigant in favour of whom a judgement has been rendered would have the incentive to address foreign jurisdictions to have this decision enforced in another judicial system. In some respects, this process can be interpreted as an attempt to enter a foreign judicial area, while the national court has not been assigned a ‘right of production’ on this foreign legal area. In this perspective, interstate movements of judicial decisions are analyzed as expressions of the competition that takes place among judicial national systems within Europe.

The two kinds of judicial competition stem from the fact that each Nation has established its own rules to determine both the competences of their courts in cross-border cases and the effects foreign judicial decisions can be given within its territory - that is to deal with the two issues of “Private international law” (and more precisely issues about “conflicts of jurisdictions”): on the one hand, the competence to adjudicate an international legal dispute, and on the other hand, the recognition and enforcement of foreign judgements. Such a national determination of rules of “conflicts of jurisdictions” could no longer prevail within the European Union, an area where citizens, firms, goods and capitals can move freely. Indeed, because of the problems inherent to such disputes and the judicial competition they entail, it has appeared necessary to institute cooperation between national systems of justice that is to create a transnational area of justice.

Figure 1
The judicial production process

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for the French notion of ‘règles de compétence’) that define competence for each court (geographical as well as material competences).

Another kind of judicial competition could be considered here, a ‘vertical competition’ taking place within a national justice system: in a hierarchical judicial system, higher courts can reverse judgements produced by first instance judges.

Private International Law is usually defined as the set of legal rules applicable to private persons, i.e. individuals or firms, in their international relations – thus, when two or more State legal and judicial systems are involved in because of their litigants and/or the subject(s) of the relationship. The rules of Private international law deal with two sets of legal problems: the “conflicts of rules” (the issue is to determine which legal system applies to a given international transaction) and the “conflicts of jurisdictions”.
What is judicial cooperation? In the following, the expression “judicial cooperation” refers to all the situations in which judicial authorities of two or more countries cooperate in the production process of judicial decisions. Such a cooperation between judges from different systems can occur at the two different stages distinguished in the judicial process, as a consequence of two kinds of potential competition between national legal and judicial systems. So, judicial cooperation can take various forms: adoption of common rules to determinate the competent court in transnational commercial disputes and in bi-national matrimonial disputes, cross-border transmission of judicial and extra-judicial documents, cooperation between courts of different States in the taking of evidence in civil matters and in penal cases, recognition of foreign judgements in civil and commercial matters, etc. The main aim of judicial cooperation is that borders between countries do not constitute frontiers between national systems of justice, frontiers that could prove to be problematical for litigants. Doing so, a transnational area of justice has been created within the European Union.

1.2. Methods to build judicial culture and cooperation between judges

From the point of view of the economic analysis of law, we can identify two kinds of modalities for the formation of a European judicial area. The first way is based on the demand for law and justice, coming from individual agents, citizens and firms; the second one stems from the supply side, from the producers of judicial decisions, i.e. the national judges of different states. Let present each of these modalities to build a judicial culture and to create cooperation – “spontaneously” or “centralized” cooperation – in order to emphasize on their specificities and implication for the production of law and justice within the geographical area concerned.

The first kind corresponds to a formation by the demand for law and justice. In this perspective, the models of “regulatory competition” represent a first theoretical framework which permits to build an economic analysis of the relationship between national judicial cultures, of the formation of a European area of justice and of the emergence of a European judicial culture. These economic models are based on an analogy between markets for legal rules and traditional markets for goods. On the market for law, the supply of law, produced by States, meets the demand for rules coming from firms and individual agents considered as consumers of law and justice. These analyses are of high interest since they show to what extent the competition between legal systems can constitute an efficient alternative to the harmonisation “by the top” of national legal rules in Europe. Indeed, the competition between national rules, as a consequence of the “arbitrage” behaviour of consumers of law, would favour the spontaneous convergence of the legal rules offered by states and, thus, the emergence of efficient rules because of the legal innovations introduced by the competing national producers of law. Recent models have shed light on the complementary nature of the two processes of competition and cooperation in the fields of law and justice, as denoted by the terms « co-opetition » (Esty and Géradin, 2000, 2001) and of « cooperative regulatory competition » (Stephan, 2000).

The second set of modalities according which a European judicial area can emerge corresponds to a formation by the supply of law and justice. In this perspective, three modalities can be distinguished a priori, and thus have to be analyzed in order to assess their respective efficiency. First, a common culture of justice can emerge “from the top”, i.e. be defined in a centralized way within the European supra-national institutions (such as the European Council, the European Parliament, and the European Commission) and then “imposed” to the decentralized levels, that is the national judiciaries of the different member
states. This first mode of emergence of a judicial culture for the European Union gives rise to important questions, in particular concerning its efficiency: to what extent are the common legal and judicial principles making up this judicial culture the best ones and the more efficient ones, regarding the good administration of justice? Is this ex ante harmonisation of national legal and judicial cultures efficient? Secondly, at the opposite extreme, a common judicial culture could emerge from the dialectics of competitive relations that exist at a decentralized level – i.e. at the level of member states – between national systems of justice and the judicial cultures on which they are based. An ex post harmonisation process can come from such relationship. Then, thirdly, an intermediate solution can be identified; it consists of the complementary nature between the competitive and cooperative relationships that exist between national judicial cultures. The main advantage of such a mixed solution is to define common principles for the production of judicial decisions while respecting the national specificities of each member state.

It seems that it is this twofold process of competition and cooperation which governs the emergence of the European judicial culture, conciliating the diversity of national judicial cultures within Europe (essentially by the principle of mutual recognition of decisions of justice) and the need to define common principles as the core of the European judicial culture.

1.3. The European Judicial Area under construction

Taking account of the complex transnational situations occasioned by intra-European mobility and the coexistence of national legal rules and systems of justice, Heads of states and of governments of the European States have decided to build a European Judicial Area. To do so, they adopted several European regulations to cement and organize the cooperation between the national judicial institutions of the Member states of the European Union (table 2). The “uniformization” of the national rules of Private international law, and more precisely of those concerning conflicts of jurisdictions, is one essential dimension of this process. Indeed, the Brussels I, II and II bis regulations define, in their respective fields - civil and commercial matters, matrimonial matters and matters of parental responsibility -, uniform rules to deal with problems of competences, recognition and enforcement of national judgements within the European Union. These legal instruments frame the national judges’ behaviour: firstly, national judges have to submit to the common rules of direct competence that have been established in order to resolve problems of overlapping competences in case of transnational disputes, and secondly, they must adopt the established behaviour of automatic recognition of judicial decisions produced in any member state of the European Union. The principle of mutual recognition has thus become “the cornerstone of judicial cooperation” within the Union. This intra-European judicial cooperation depends on a mutual confidence between national systems, and could be enhanced by the “progressive development of a European judicial culture based on diversity of the legal systems of the Member States and unity through European law” (“The Hague Programme. Strengthening Freedom, Security and Justice in the European Union”, November 2004).

Table 2
Main instruments of judicial cooperation adopted within the European Union

<table>
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<th>Joint action</th>
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<tr>
<td>- Joint Action 96/277/JHA of 22 April 1996 adopted by the Council on the basis of Article K.3 of the Treaty on European Union, concerning a framework for the exchange of liaison magistrates to improve judicial cooperation between the Member States of the European Union</td>
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Since the procedures used to institute cooperation give an essential role to the behaviours, let examine these latter.

2. The occasional cooperation between magistrates belonging to different cultures

In this section, we consider the occasional cooperation between magistrates belonging to different cultures: two magistrates, belonging to Courts of different countries, with different legal cultures, have to solve a same case, for instance a problem which had two different issues in each country (two married people, a French person and a Polish one divorced; each one requests to have the custody of their children and different issues have been given in the first judgment).

The game is a single shot one. Each judge knows that the other one is on the case. He can accept a part of the probable interpretation of his pair or not. The combination of their behaviours is typical of a non cooperative game: they cannot or they do not want to conclude explicit agreements able to determine accepted principles of common interpretation. Let the player (1) being of the type 1 (hereafter denoted t1), that is to say a supporter of continental legal culture, when the player (2) prefers the Common Law culture (i.e. he is of type 2 – t2). They choose behaviours, from a strong fidelity to their original culture to an alignment on "foreign" culture. The pure strategy of being close to continental culture is noted r (roman) for players (1) and R for players (2), whereas the pure strategy of being close to Common Law culture is noted c for players (1) and C for players (2). When they use mix strategies (with a changing composition of each cultural inspiration), p is the ratio of r inspiration (so [1-p] that of recourse to c) for (1) and q the ratio of recourse to R ( [1-q] that of recourse to C) for (2).
The value of payoffs is derived from an economic valuation of issues. The least payoffs (arbitrarily noted 0) become when each player uses only and strictly his own culture, so any legal harmonization can derive from the collective work. By contrast, payoffs are positive when players join on a common interpretation, but they are different according to preferences: if (1) and (2) choose the continental culture, magistrates belonging to this culture earn more than the other ones (because of ideological preferences or because it is easier to work in his cultural framework or for any other reason). The cardinal value of payoffs does not import; the key point is the ranking of the payoffs in all the issues:

\[ G_1(r,R) > G_1(c,C) > G_1(r,C), G_1(c,R); \]
\[ G_2(c,C) > G_2(r,R) > G_2(c,R), G_2(r,C). \]

The game has three Nash equilibria, \( \alpha \), \( \beta \) et \( \gamma \).

The \( \alpha \) equilibrium derives from the pair of strategic choices \((r, R)\) and gives players the payoffs \((2,1)\). The \( \beta \) equilibrium is obtained when choices are \((c, C)\) with payoffs \((1,2)\). The \( \gamma \) equilibrium emerges for a pair of mix strategies \((2/3 r, 1/3 c ; 1/3 R, 2/3 C)\) and gives \((2/3, 2/3)\).

The signification of an equilibrium is limited. It only means that each pair of behavioural choices constitutes an equilibrium for each player, i.e. his behavioural choice is the best reply to the other's choice. Nobody regrets having done this choice. Nevertheless, we have to consider more accurately conditions of equilibrium.

Can we presume that players seek to reach an equilibrium issue? We think that is true, even if the play is a single shot one. Each player knows that if he is a passive subject of the
other player’s strategy his payoff may be mediocre. He also says that the issue is related to his own choice but also to his partner’s one, so he may try to build rational expectations. The game obviously represents a systematization of behaviours, each player being able to valuate any issue but it is a pertinent simplification. We can admit that each magistrate can "rank" all the possible issues and know which are better than which (in the formalization, as already said, it is an ordinal valuation which bases the payoff matrix and not a cardinal valuation; we will further qualify this point).

From this point of view, the $\alpha$ and $\beta$ equilibria, pure and symmetrical ones, are focal points. Everyone knows that if each player adopts the corresponding strategy, the result will be satisfactory from the point of view of the harmonization of the decisions of national courts, since the decisions taken are coherent between them and are thus likely to close the actions at law relating to the concerned case. Thus, the utility will be maximum. Nevertheless, these two equilibria are strictly opposite. In the case $\alpha$, the two players choose an interpretation completely in conformity with the continental culture while in the case $\beta$, it is the reverse, the two players choosing an interpretation completely in conformity with the Common Law culture. Thus, the determination of a choice, when they met occasionally is hypothetical. Moreover, the fact that each magistrate is ready "to make an effort" to cooperate does not help us. It is perfectly possible that player (1) agrees to sacrifice his cultural preference to play c, in order to lead to the couple of strategies (c, C) but that at the same time the player (2) makes the same, playing R to reach (r, R) so that the exit is the disastrous couple (c, R). If each one conforms to its preference the exit is opposite but quite as bad, (r, C). Resorting to rational expectations thus does not provide a simple solution to the magistrates.

Furthermore, the profits of the players are different: in the equilibrium $\alpha$ (1) obtains 2 and (2) obtains 1 whereas it is the reverse in the equilibrium $\beta$, so that each one is rather encouraged to keep its own cultural reference and than the exits (r, C) gain in probability. One can however note that each one can anticipate this "attraction" for the respect of its culture, to thus fear that the system goes to (r, C) and, as a result, to decide an alignment on the opposed culture; but the system thus goes to (c, R) which also constitutes a bad issue. The players are in circular expectations about decision of the partner between $\alpha$ and $\beta$ and we cannot consider any of the two equilibria as specially plausible.

There is a third Nash equilibrium, the $\gamma$ equilibrium which is a mixed equilibrium. It corresponds to a couple of mixed strategies, player (1) plays (2/3r, 1/3c) and player (2) plays (1/3R, 2/3C). Since the game is not repeated, this equilibrium means that the single shot of each player gave way to the opposite culture (its judgement is inspired for two thirds by its own culture and for a third by the opposite culture). The individual results obtained by the players are there strictly lower (2/3 for each one) than those obtained in the other equilibria, even in the "not preferred" equilibrium (one obtains there 1). This inferiority reflects the economic conditions of the game (the court decisions are only partially compatible in this equilibrium whereas they are completely compatible in the pure equilibria). However, $\gamma$ is indeed an equilibrium: the player (1) may find it beneficial to reply with (2/3r, 1/3c) when the player (2) plays (1/3R, 2/3C) and conversely; any other answer, and in particular the preceding answers, the pure strategies R or C, would destroy this equilibrium. The existence of the third equilibrium comes to complicate the choice of the players, of which we already saw that between $\alpha$ and $\beta$ it was already probably unspecified. Moreover, to play a mixed strategy avoids the extreme losses by guaranteeing that one will not obtain the worst (0) but an intermediate result between 0 and 1, or between 0 and 2, according to the other’s choice.

Another argument in favour of the choice of a mixed strategy is that such a strategy is an effort towards cooperation as the place for another culture is accepted. Might the choice 2/3r for the player (1) (and 2/3 C for the second one) be obvious? Would players have a very strong rationality and a deep knowledge of the theory of the strategic decision, it would be
possible to imagine that they would calculate the mixed strategy of equilibrium. It is perfectly possible to adopt for example a strategy $1/2r$; the player sensitive to the usefulness of cooperation decides to give the same place to his culture as to the one of his partner. And the result $(1/2r,1/2c ; 1/2R,1/2C)$ is not so bad: it gives $3/4$ to each one which is better than in the $\gamma$ equilibrium. Of course it is not an equilibrium; actually, against $(1/2R,1/2C)$ the best answer is not $(1/2r,1/2c)$ but r as faced with $(1/2r,1/2c)$ the best answer is C.

However, here again, it would be impossible to suppose that, in an occasional meeting, every judge would be able to build an argument which would not impose him to have only recourse to equilibrium strategy. And as the game is only played once, there is no training.

Are these results keeping steady if the matrix of payoffs is generalized? To study that, we have to change the game $[A]$ for the game $[A']$.

\[\text{Game} \ [A']\]

\[
\begin{array}{c|cc}
(1) & R & C \\
\hline
\text{(t1)} & (1-q) & q \\
\text{(t2)} & (0,0) & (2,0) \\
\end{array}
\]

In this one, we do not a priori define the level of payoffs of each player but only their order. For the player (1) we have $a>b>0$ and for (2) $a'>b'>0$.

Both previous pure equilibria have the following "values": the $\alpha$ equilibrium obtained with the complex of strategic choices $(r,R)$ gives the payoffs $(a,b')$, the $\beta$ equilibrium with the complex of strategic choices $(c,C)$ gives the payoffs $(b,a')$. The $\gamma$ equilibrium is therefore obtained with the mixed strategies $a'/(a'+b') r,(1-a')/(a'+b') c$ for (1) and $b/(b+a) R,(1-b)/(b+a) C$ for the player (2). It gives the payoffs: $b(1-q)$ to player (1) and $a'(1-p)$ to the player (2). In $\gamma$, the payoffs are always smaller than those that are obtained in $\alpha$ for the player (1)$^{11}$. and for the player (2)$^{12}$. They also are smaller than those obtained in $\beta$ by both players. And the same argument used before about the likelihood of the research of the $\gamma$ equilibrium can be used again as it is. Therefore, the modification of the cardinal payoffs does not concern the argument as far as the classifications of the outcomes by the players keep the orders $a>b>0$ and $a'>b'>0$, which only expresses the actors’ preferences.

What lessons can we draw from this game?

1° In the absence of an installed system of incentive to cooperation and/or of rules imposed on the actors, several solutions of the game are possible, corresponding or not to the Nash equilibria. Nothing can make sure that the decisions taken by the judges are close or compatible.

2° The "good will" of the actors does not necessarily contribute to make easy the achieving of cooperative solutions. However, if the player (1) appears particularly cooperative

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$^{11}$ $b \ (1 - q) = ab/(a+b) < a$, for $b < a+b$.

$^{12}$ $a'(1-p) = a'b'/(a'+b') < b'$, for $a' < a'+b'$. 
and decides to align himself with his partner's culture and that at the same time the other player has the same type of behaviour, we come to a solution \((c,R)\) as appalling as the "selfish" solution \((r,C)\).

The formation of a European judiciary area cannot therefore result from this kind of "spontaneous" running. However, if the game has all the reasons not to lead to a cooperation without an a priori organisation, is it possible to imagine that endless meetings of judges, forming a special type of "institution" would make things better?

3. The regular cooperation between judges having different cultures

We are now in front of two kinds of judges, still having two different cultural preferences and having consequently different utilities, who now are meeting regularly. This can result from the mere multiplication of transnational matters which poses a problem of harmonization, from the constitution of internal and specialized organizations in each country which centralize "transnational" matters and led to regularly cooperate with one another. It can also result from the creation of supranational institutions constituted with judges coming from different cultures and having to decide together.

Formally, we always have a game between two homogeneous sub-populations, players \((1)\) of type 1 having different continental culture, players \((2)\) of type 2 having mainly Common Law type culture. They have to cooperate to establish common rules, an embryonic legal and judiciary Europe. The payoffs are the same, the available strategies too, the only difference is in the repetition of the relationships. So the game is the same (see below the game \([B]\)) on condition that it is no more a "single shot" game but it is a repeated game, while the judges have to adapt their behaviours, particularly according to the results of their past meetings. We are therefore going to consider it as an evolutionary game.

<table>
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<th>Table 3</th>
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**The evolutionary equilibrium approach**

In evolutionary game theory, an equilibrium is represented by sets in which all the players use evolutionarily stable strategies. If the strategy is evolutionarily stable, in a given population, that means that it gives a higher payoff, in any case of invasion, than any mutant strategy. By calling \(\varepsilon\) the percentage of the mutant population, \(\varepsilon \subset (0,1)\), I the evolutionarily stable strategy (pure or mixed) and J the mutant strategy, we have:

\[
E \{ G(I, \varepsilon J + (1-\varepsilon) I) \} > E \{ G(J, \varepsilon J + (1-\varepsilon) I) \}.
\]

A strategy I is evolutionarily stable if this inequality is true for any strategy \(J \neq I\). Theory shows that a strategy can be described as evolutionarily stable if, according to an invasion of a different strategy \(J\), for any player \(I = \{1, \ldots, N\}\) and \(J \subset \{S\}\), strategies set, the following conditions are together true:

1. \(E \{ G(i,I) \} \geq E \{ G(i,J) \}\)
2. (or 2a) is true or (2b) is true
   - \(2a\) \(E \{ G(i,I) \} > E \{ G(i,J) \}\)
   - \(2b\) \(E \{ G(i,J) \} > E \{ G(i,J) \}\)

Thus, we can define evolutionarily stable strategies (ESS) and an evolutionarily stable equilibrium (ESE). In a homogeneous population, the ESE will correspond to the adoption by all the players of an evolutionarily stable strategy (pure or mixed), while in heterogeneous populations (polymorphic) they will correspond to a given and stable distribution of the sub-groups, each one playing a strategy.
Dynamic games assume that strategies with superior pay-offs are generally preferred by the players. There is normally a replication mechanism that associates the variation in the proportion of players using a particular strategy and the difference between the pay-off from this strategy and the average pay-off obtained by the other strategies. The set of strategies is composed of all mixed strategies founded on two pure strategies, \( S_1 \) and \( S_2 \). We use a typical mechanism where \( q_i \) is the proportion of the players choosing strategy \( I \), and \( \frac{dq_i}{dt} = q_i \cdot [G(I,S) - G(S,S)] \), \( S \) being any general strategy of the type \( [pS_1, (1-p)S_2] \), \( 0 \leq p \leq 1 \).

The evolutionary games approach is useful because it does not need any strong hypothesis of substantive rationality, as in ordinary games. The game selects ex post winning strategies and these are not necessarily optimal. Players have only to observe the strategic payoffs and adopt the best strategies through an evolutionary process.

\[
\text{Game } [B]
\]

<table>
<thead>
<tr>
<th></th>
<th>( R )</th>
<th>( q )</th>
<th>( C )</th>
<th>( (1-q) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( t_1 )</td>
<td>( p )</td>
<td>(2,1)</td>
<td>( 0,0 )</td>
<td></td>
</tr>
<tr>
<td>( t_2 )</td>
<td>( 1-p )</td>
<td>(0,0)</td>
<td>(1,2)</td>
<td></td>
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</tbody>
</table>

The solution of the game gives two evolutionary stable equilibria (ESE) \( \alpha \) and \( \beta \), corresponding to the same pure symmetric equilibria of the "single shot" game, and only two. They are symmetric equilibria, each player using the same pure strategy. In the case \( \alpha \) both players choose an interpretation completely in accordance with the continental culture while in the case \( \beta \) it is the contrary, both players (or group of players) choosing an interpretation completely in accordance with the Common Law culture.

What are the lessons of the game?

1° A first lesson is that we can come to two totally opposed situations likely as it may seem, one in which all the players are inspired by a culture, the other one in which they are inspired by the opposite culture. On the contrary, any configuration in which some would be inspired by a culture and the others by another one, cannot constitute a stable evolutionary equilibrium. If, for example, players (1) play the strategy \( r \) and players (2) choose the strategy \( C \), each group is going to obtain 0 and it would be very much to his advantage to change his strategy by integrating an element of the opposed culture: players (1), answering the strategy \( C \) of players (2) by the strategy \( (r/2,c/2) \), instead of the strategy \( r \), would win 1 instead of 0. Any other answer to \( C \) that the strategy \( r \) is better and it is the same for the players (2) for \( r \). It is the same for configuration \( (2r/3,c/3 ; R/3,2C/3) \), the players (1) playing two times out of three \( r \) (or proposing an interpretation inspired in a proportion of two/third of roman-continental culture and for one third of Common Law culture) and the players (2) playing two times out of three \( C \) (or proposing an interpretation inspired of one third of roman-continental culture and of two third of Common Law culture), which corresponds to a Nash equilibrium. In spite of this property, this solution is not an evolutionary stable equilibrium, any other answer of players (1) to \( (R/3,2C/3) \) having the same result \( G_1=2/3 \) and thus the possibility to
be chosen, any other answer of players (2) to \((2r/3, c/3)\) giving also the same result \(G_2=2/3\) and having the same possibility to be chosen.

2° The choice between \((r, R)\) with \((2, 1)\) and \((c, C)\) is completely undetermined. No equilibrium is superior to the other as far as results are concerned: both are Pareto-optimal. No one is superior as far as risks are concerned: if, thinking of ending at \((r, R)\) with \((2, 1)\) the group (1) plays \(r\) but is confronted to a "mistake" of (2) who plays \(C\) instead of the expected \(R\), he only gets 0 but if he is looking for the ESE \((c, C)\), and plays \(c\) but is confronted to an equivalent mistake of (2) who now plays \(R\), he also obtains 0; conversely for the group (2) regarding possible “mistakes” of (1).

3° In the game zones of stabilization and zones of destabilization are opposed. The dynamics of adjustments has to be introduced and this, for each of the existing zones, I, II, III and IV. We have then a dynamics of stabilities and instabilities represented as below:

It can be explained as follows. In case of disequilibrium, that is to say when their strategy is not the best answer to the other's strategy, in other words yields less than possible, is it in (1) and (2)'s interest to adapt themselves by increasing their recourse to \(r\) or to \(c\) (respectively to \(R\) or to \(C\))? We can see that:

\[
\begin{align*}
E\{G_1(r)\} &= 2q \\
E\{G_1(c)\} &= 1-q \\
E\{G_2(R)\} &= p \\
E\{G_2(C)\} &= 2(1-p)
\end{align*}
\]

Therefore, player (1) has interest to increase his recourse to \(r\) for \(q>1/3\) (and to decrease it in an opposite case) while (2) increases his recourse to \(R\) for \(p>2/3\) (and decreases it in an opposite case). Hence the movements symbolized by the arrows of the above graphic and the resulting dynamics.

The zone I is a zone of stability around the equilibrium \(\beta\) \((c, C)\) as the zone III around the equilibrium \(\alpha\) \((r, R)\). If one “slightly” moves away from \(\beta\) (that is to say if one does not go out of the zone I defined by \(p<2/3\) and \(q<1/3\)) or if one is at first in the zone I the dynamic leads to the attractor \(\beta\). It is the same for \(\alpha\) and the zone III. On the contrary, the zones II and IV are instability zones: in II \(q\) tends to increase and to go from the neighbourhood of \(\beta\) to the
neighbourhood of $\alpha$ but $p$ tends to decrease and to draw back to $\beta$, in IV it is the contrary, $q$ tends to decrease and to move towards $\beta$ but $p$ tends to increase and to lead towards $\alpha$. The instability may be durable even final and prevent the game from reaching any equilibrium. We also understand that in the neighbourhood of the equilibrium $\gamma$ there is the most important stability, any diversion would provide from a return back to the point $\gamma$ and lead anywhere.

4° A first factor explaining how the game is going to lead to such or such ESE is the initial choice of the players. If the player (or the players) of a group accepts to make a large enough step (that is to say corresponding to a difference of more than one third in relation to their own culture) and the other group keeps on being rather faithful to his culture (that is to say does not move away from it for more than one third) then the "conciliating" group happens to be pumped in towards the favourite ESE of the "orthodox" group. That just shows that the game starts in the zones I and III and then goes in the first case towards $\beta$ and in the second one towards $\alpha$. Nevertheless, as a rather counter intuitive result, everybody's "good will" is not a proof of success, i.e. obtaining an equilibrium, at least if the dialectics of a mutual opening up is not organized. If indeed while the group (1) happens to be conciliating by integrating more than a third of the other culture but if at the same time the group (2) happens also to be conciliating and by the way integrates also more than a third of the opposite culture, we get out of the zones I and III to reach the zones II and IV. If the initial choice leads the players in zones II and the IV evolutions are a priori unspecified because they depend on relative speeds of adjustment, question studied hereafter. This game thus highlights the importance of the initial situation (which one can generalize at the period of installation of the game) which produces an effect of lock-in. So, are specially important, on the one hand initial elements (which will bring the game closer to the issue $\alpha$ or $\beta$), on the other hand the external elements to the game (conventions, mentalities, focal points,...) which can influence the behaviours and explain why one leads to $\alpha$ or, on the contrary, to $\beta$. From where also the possibility, for an authority, to act upon the game to support such or such outcome.

5° Adaptability speeds play a different part according to the concerned zones. In the zones I and III, the fact that the players (1) and (2) react quickly or not, that some of them react quicker or not than others has only consequences on the length of the adjustment period towards one of the equilibria. This does not modify the final equilibrium point because in all cases, adjustments do not make one out of the zone I or of the zone III. In I the players (1) substitute sooner or later but always in the same direction a choice $c$ for a choice $r$ and the players (2) a choice $C$ for a choice $R$, so that it is only possible to go towards $\beta$ ($c,C$); in III the principle is the same but the substitution is reversed and it is only possible to go towards $\alpha$ ($r,R$). On the contrary, in II and IV, things are much more "opened". Adaptation behaviours rest on a reasonable learning hypothesis. It is possible to suppose that, if the players have a more profitable strategy they give up little by little "the bad" strategy for the "good" one even if they do not know the reasons of its superiority. Then, we presume a replication mechanism, related to the gap within payoffs.

In our game, the players (1) can play $r$ ($p=1$) and win against any strategy of (2) (i.e. any value of $q$ between 0 and 1), $2q$; if they play some strategy $p$ ($p$ varying between 0 and 1) this one brings in against $q$: $2pq+(1-p)(1-q)$. The variation of $p$ (increasing or decreasing his recourse to $r$) depends, on the one hand, on the initial level of $p$ (the share in the players (1) strategy corresponding to the choice $r$), on the other hand on the difference of payoffs. If one chooses the easiest linear formulation $dp/dt = p \left( E\{G(r,q)\} - E\{G(p,q)\} \right)$, thus: $dp/dt = p \left[ 2q - 2pq + (1-p)(1-q) \right]$, then $dp/dt = p (1-p) (3q-1)$; and $dq/dt = q (1-q) (3p-2)$. They are different if a faster adjustment is introduced, supposing for example that the adjustment is proportional, not to the difference of payoffs but to its square. It is also possible to imagine situations in
which the players (1) and the players (2) do not react in the same way, some of them adapting themselves linearly, and others quadratically. The conclusion is that, in these zones II and IV, different paths are possible without any guarantee of getting to an equilibrium, and a fortiori of getting quickly to one of the two equilibria.

6° In the previous game [A], we interpreted the payoffs in ordinal terms, starting from the idea according to which the asymmetric solutions, \((r,C)\) and \((c,R)\) gave the worst result and the symmetric solutions \((r,R)\) and \((c,C)\) the best one, the players (1) and (2) having moreover a preference according to the appeal they had for their own culture - hence the results \((2,1)\) and \((1,2)\). We can try to take into account the fact that the different types of players may have more or less strong links with their culture, and that therefore the difference between payoffs of symmetric solutions and asymmetric ones is important. This allows to imagine what would happen if the "endogenous" preference increases or decreases. For that let's imagine the game [C] as follows:

\[
\text{Game [C]}
\]

The type of solutions does not change but the area of the stability and instability zones are modified according to the diagram below. The likelihood of a lasting instability strongly grows, the game having important chances to take place –except if there are organizing or particularly incentive measures- in the zone IV:
It is also possible to think of situations in which the “endogenous” preferences are more or less strong according to the type of the agents. The game [D] illustrates such a situation: the agents (1) have a preference for their culture much more superior than the preference the agents (2) have for their culture.

\[
\begin{array}{c c}
\text{Game [D]} \\
\hline
(1) & (2) \\
\hline
\text{t1} & \text{t2} \\
\hline
r & R, q \\
(1-p) & C, (1-q) \\
(9,1) & (0,0) \\
(0,0) & (1,2) \\
\end{array}
\]

Here again, the type of solutions does not change but the area of stability and instability zones is here also modified, according to the diagram as below. Unlike in the previous game, the effect does not only concern the extension of the instability zone but also the respective size of the attractions areas of both ESE, \(\alpha\) and \(\beta\), as shown in the diagram below. The likelihood of the \(\alpha\) equilibrium grows compared to the one of \(\beta\).

In the games [C] and [D], risk plays a more noticeable part than in the game [B]. Of course, in all cases, the players get 0 when mistaking, whatever may be the equilibrium they aimed at. In the game [C], if (1) plays \(r\) to reach \(\alpha (r,R)\) which gives \(9,1\) and that (2) is "mistaking" he only obtains 0 and feel particularly disappointed as he was hoping for 9, whereas if he plays \(c\) to reach \(\beta (c,C)\) which gives \(1,9\) and that (2) is "mistaking", he also gets 0 but his disappointment is weaker as he was only hoping to get 1. It is the same for the players (2) in a symmetrical way (the disappointment is stronger they try \(\beta\) than when they try \(\alpha\). It is possible that under some circumstances the risk of disappointment affects the players' behaviours as
far as the choice of the aimed equilibria are concerned that to say the equilibrium they try to make appear during the game. In the game [D], things are getting more complex as disappointments of both types of players are different. If (1) plays r to reach $\alpha$ and that (2) "is mistaking" he obtains 0 instead of 9 whereas if he plays c pour reach $\beta$ and that (2) is mistaking, he obtains 0 instead of 1; for the players (2) the result is also 0 any time the partners are mistaken but with a less varying disappointment as they thought to reach 1 when they were aiming at $\alpha$ and 2 when they were aiming at $\beta$.

7° The result of a game such as the games we already described depends on the number of players of type 1 and 2. In some cooperation situations, two courts have to cooperate and it is legitimately possible to describe them in terms of the games [B], [C] or [D]. The players of a court are all type 1 players, and the players of the other one are all types 2 players. On the other hand we have to consider situations in which courts including different types of players, in variable proportions, are led to take decisions. In these cases meetings t1-t1,t1-t2 (or t2-t1) and t2-t2 may take place. The results have to depend on the proportion of types in the population of reference.

A few temporary conclusions

The construction of a European judiciary area cannot derive from occasional cooperation between national judges. Nevertheless that does not mean that any decentralized procedure is inefficient. Different elements are in favour of a progressive and dynamic harmonization. The first one is the regularity of the cooperation which allows learning behaviours. The regularity of the relations between magistrates brought to take part in the harmonization is not enough to solve the problem. Nevertheless it facilitates the adaptation of the behaviours. The judges will be all the more co-operative since the higher authorities will fix initial conditions (we have seen that these conditions carry effects of lock-in) which encourage the choice of co-operative equilibria clearly identified by the actors. In the same way, they can exploit the speed of the decentralized adjustments. Finally, the authorities can deliberately play on the matrix of the payoffs. Various other elements will have in their turn to be introduced into formalization, especially the effect of strategies of reputation, strategies which can be made more probable by a voluntarist action on the matrix of the payoffs. Finally, we will study other procedures combining decentralization and organisation as the use of several degrees of jurisdiction.