NETWORKS WITHIN CITIES AND AMONG CITIES: A PARADIGM FOR URBAN DEVELOPMENT AND GOVERNANCE

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Abstract
Networks and networking have become catch-words in regional science, and particularly in regional and urban geography in the last decade: we speak about network firms, network society, network economy but also network cities, city-networks, reti urbane, reseaux de villes. Mere catch-words for someone; a true new scientific paradigm according to others. In our view fact we are facing a new paradigm in spatial sciences, subject to some precise conditions:
- that its exact meaning is thoroughly defined,
- that its theoretical economic rationale is justified,
- that the novelty of its empirical content is clearly pointed out, with respect to more traditional spatial facts and processes that can easily be interpreted through existing spatial paradigms.
The theoretical building blocks the network concept or paradigm may be constructed upon are:
- a new view of the economy as a system or web of links between individuals, firms and institutions, where links depend on experience and evolve through learning processes; the existing endowment of knowledge and other production factors is put into value through a relational capability addressed towards the exchange and collection of information, building reputation and trust, creating synergies, cutting down uncertainty, boosting learning processes;
- the acknowledgement of cooperation as a new organisational and behavioural form, intermediate between hierarchy (internal development and merging of external activities through direct control) and market resort; cooperation networks among firms collaborating with each other on technological advances and innovation projects were the earlier phenomenon that was well explored in the past.
In a spatial perspective, two issues are particularly worth exploring through the network concept:
- networking as cooperation among individuals, firms and institutions taking place inside the cities concerning collective action, public/private partnerships on large urban projects and the supply of public goods, and giving rise to new forms of urban governance;
- networking as inter-urban cooperation, assuming the cities as economic actors, competing but also cooperating in the global arena where locations of internationally mobile factors (professionals, corporations, institutions) are decided and negotiated.
The paper is organised in the following way:
- a major section is devoted to the interpretation of the micro-economic efficiency of local networking (local urban networks), in terms of the usual criteria of optimal allocation of resources and collective welfare, viewing the network as an organisational alternative between market failure and state failure;
- a transition section deals with the interpretation of cities, a collective actor at best, as individual/unitary economic actors, given the case for collective action among interest groups, the possibility of defining in broad terms a function of collective preference referring to non-mobile local actors, the engagement of public and private actors in processes of strategic planning and definition of shared visions for the future of the city vis-a-vis mobile actors;
- another main section interprets competition and cooperation among cities (inter-city-networks) underlining advantages, risks and conditions for maximising overall comprehensive well-being.

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1. INTRODUCTION: A GLOBAL ECONOMY CENTRED ON LINKAGES AND CO-OPERATION

Networks and networking have become very fashionable concepts and terms in regional science, and in particular in regional and urban geography in the last decade: we speak about network firms, network society, network economy but also network cities, city -networks, "reti urbane", "réseaux de villes". Only catch-words for somebody; a true new scientific paradigm according to others.

The opinion of these authors is that in fact we are confronted with a new paradigm in spatial sciences, under some precise conditions:

- that its exact meaning is thoroughly defined,
- that its theoretical economic rationale is justified,
- that the novelty of its empirical content is clearly pointed out, with respect to more traditional spatial facts and processes that can easily be interpreted through existing spatial paradigms.

In fact, starting from the third condition, the concept of spatial networks is sometimes utilised merely as a substitute for "interaction": exchange of goods, services, information, contacts among places and nodes. In this case, the traditional paradigm (and related models) of spatial interaction can be easily utilised, unless one could demonstrate that probability of such exchanges is widely independent from distance and size of nodes.

If interaction is underlined by research works interested in the "space of flows", studies oriented towards the description of the " space of places" often use the network concept as a synonym (or an explanation) for polycentricism, a merely geographical and descriptive concept.

Sometimes the same term is used to identify social linkages that characterize local communities or associations kept together by ethnic, linguistic, civic or even criminal goals. While in this case the micro-foundations of these phenomena are studied by other disciplines, like sociology or political science, their spatial effects may well be interpreted through other existing concepts of a more "macro" nature like that of social capital.

Finally, sometimes the term " network" is used to interpret relations and flows that take place within an urban hierarchy, among centres of different hierarchical level. Also in this case, we do not need a new concept for identifying well-known phenomena, unless interactions take place among centres belonging to the same hierarchical level, which are supposed to entertain no relationship with each other by the standard central place model.

On the other hand, there exist other phenomena that cannot be interpreted through the usual tools – some of which were indicated before – for which the new concept could be of use: spatial interaction taking place irrespective to distance, for selected and targeted goals; relationships between centres of the same size and level, performing the same tasks and functions on the territory; linkages among local actors giving rise to a network surplus as a consequence of synergies and cooperation; spontaneous or organised division of labour among centres in a regional context.

The relevant theoretical building block on which the network concept or paradigm may be constructed are:

- a new view of the economy as a system or web of links between individuals, firms and institutions, where links depend on experience and evolve through learning processes (Kirman, 1997; Malecki, Oinas, 1999). The existing endowment of knowledge and other production factors is put into value through a relational capability addressed towards the exchange and collection of information, building reputation and trust, creating synergies, cutting down uncertainty, boosting learning processes (Hayek, ...).;

- the acknowledgement of cooperation as a new organisational and behavioural form, intermediate between hierarchy (internal development and merging of external activities through direct control) and market resort, following the well-known works of Coase and Williamson. Cooperation networks among firms collaborating with each other on technological advances and innovation projects were the earlier phenomena that were abundantly explored in the past.

At the same time, political experiences of vertical and horizontal subsidiarity, i.e. federalism/devolution and privatization/liberalization, leading to a shrinking role of the nation state, are getting widespread. Within a context of diffusion of power, cooperation through networking (among local stakeholders, among government tiers, among cities) may then be an efficient alternative also to the State.

In a spatial perspective, two phenomena in particular are worth exploring today through the network concept:

- networking as cooperation among individuals, firms and institutions taking place inside the cities concerning collective action, public/private partnerships on large urban projects and the supply of public goods, and giving rise to new forms of urban governance;
- networking as inter-urban cooperation, assuming the cities as economic actors, competing but also cooperating in the global arena where locations of internationally mobile factors (professionals, corporations, institutions) are decided and negotiated.

The paradigm of city-networks, complementary to the traditional one of urban hierarchy, initially proposed by the Southern European tradition of spatial analysis, has gained interest and support in other scientific and policy contexts. Recently it was supported by the EU spatial strategy document, the ESDP (Glasgow and Potsdam drafts) in the specification given by one of the present authors, namely that of complementarity and synergy city-networks (Camagni, 1993).

The paper is organised in the following way. Section 2 is devoted to the interpretation of the micro - economic efficiency of local networking, in terms of the usual criteria of optimal allocation of resources and collective welfare. Section 3 deals with the interpretation of cities as economic actors, given the case for collective action among interest groups, the possibility of defining in broad terms a function of collective preference referring to non-mobile local actors, the engagement of public and private actors in processes of strategic planning and definition of shared visions for the future of the city. Section 4 interprets competition and cooperation among cities ("city-networks") underlining advantages, risks and conditions for maximising overall comprehensive well-being.

2. MICRO-ECONOMIC EFFICIENCY OF (LOCAL) NETWORKS

2.1. Between market failure and state failure

A well-known result of economic analysis is that limited resources are put to their best use, in terms of welfare ("utility") generated for the whole of society, when all of them are allocated by means of a perfectly competitive market mechanism working through price signals. However, this is so only provided some conditions are satisfied; if they are not, the risk of market failure materialises.

A further result is that the issues of allocative efficiency and distributive equity can be dealt with separately, giving rise to separate justifications for non-market action when optimum conditions are not satisfied. Finally, whatever is the justification for government intervention, whether for efficiency or for equity, economic analysis is also able to identify the conditions to be satisfied for its success. When these conditions are not met, the risk of state failure materialises; networks may then be viewed as an institutional arrangement avoiding both risks.

2.1.1. Market failure

When the market mechanism does not produce the desired result of efficient and effective use of limited resources, the reason lies in the lack of one or more of three conditions. Their lack provides the corresponding economic reasons for collective intervention, and the conseque nt guidelines to the appropriate type of intervention. The three conditions are:
- no market power: not all actors in the market are price-takers – on the contrary, some are able to influence ("make") prices, thanks to their relative size or legal privileges (protection) or better knowledge of available opportunities (the effiquity condition);
- no missing markets: information asymmetries, or externalities, or missing rights or public goods (the efficiency condition);
- acceptable initial distribution of resources (health, education, ability to work, land, capital, other factors of production, …) hence acceptable market outcomes, i.e. distribution of income i.e. purchasing power (the equity condition).

When some actors enjoy market power, a perfect competition failure occurs, taking one of the following forms:
- imperfectly substitutable products: consumers do not care only for price but for product characteristics and service quality as well – but it may be argued that this is a matter of definition of the market and of willingness-to-pay for variety, rather than a market failure;
- long-run imperfectly mobile (across space and activities) inputs (capital, labour, … incl. entrepreneurs) – but it may be argued that mobility is a matter of choice, trading off income against location, so that immobility is the efficient response rather than a market failure;
- non-price-taking firms e.g. strategic behaviour and/or collusion, or economies of scale and scope coupled with a limited extent of the market; calling for market contestability (Demsetz) so that gains from competition outweigh private incentives to asymmetric positions.

When information is incomplete or rights are not clearly assigned, a missing market failure may occur, taking one of the following forms:
- uncertainty about future outcomes under risk aversion, to be compensated by risk premiums (higher rewards) or risk sharing (diversification), or by lowering the cost of collecting information;
- hidden features, i.e. self-selection and adverse selection, where compulsory pooling may be an answer when ex ante equity considerations are at stake;
- hidden action and moral hazard, i.e. conflict of goals between principal and agent, to be reconciled by appropriate incentives (partial refund, aid rationing and auctioning, performance-related pay, …) and by competition on the output and property markets (Arrow, 1985; Hart, Holmstrom, 1987);
- externalities, i.e. uncompensated effects of transactions with social costs differing from private costs, to be taken into account via a Pigouvian tax or a Coasian assignment of transferable rights, or via a merger of affected parties into a single decision-maker;
- non-rivalness and/or non-excludability in consumption, and provision of public goods, to be financed via the sale of collateral private goods, via club creation, or via taxation and public provision.
In most of these cases, at least in principle, the market mechanism may generate modified rules of the game in order to take these features into account, albeit with a cost tag attached. But high transaction costs may prevent such rules to be agreed upon or to be credibly enforceable, so that often the state must step in and force command-and-control regulation or replace the market.

When market outcomes are not deemed equitable, an equity failure occurs: what if the standard criterion for income, i.e. marginal productivity value, is evaluated as resulting into an unfairly low income? A traditional result of analysis is that redistribution of resources can be separated from, and occur prior to, market operations. In this context by resources we mean both income and property and, more basically, health and education. Redistribution may be seen as a sort of insurance policy

("safety net"), but it must not destroy incentives to work, i.e. to economic growth. For this reason, especially in a long run perspective, some favour ex ante redistribution of resources via merit good provision over ex post redistribution of rewards via progressive direct taxation. Redistribution may even be beneficial to public goods demand; indeed, given its benefits, it may be seen as a public good itself (cohesion).

Summing up, at least some types of market imperfection may not be left to take care for themselves, nor may all of these be simply subjected to some regulation engineering aiming at market solutions.

2.1.2. State failure

In the classical and neoclassical period, market was routinely preferred over state because of the costs imposed by the latter on freedom of choice, in broad terms. Although later on the state was deemed useful in remedying market failures, in the last half-century the efficiency costs of the state have also been discussed. From this viewpoint, government intervention is also liable to failure with respect to the efficient and effective use of limited resources.

As a matter of fact, while costing the effects of market failures, we tended to forget that state is not costless: for each public intervention we should ask ourselves whether social benefit exceeds state cost. The issue may well turn out to be an empirical one, but some general guidelines are available.

In parallel to the three conditions for the success/failure of the market mechanism, one or more of the following three conditions may be lacking:
- no side effects of state power (the effiquity condition);
- no inability to deal with missing markets (the efficiency condition);
- no, or worthwhile, efficiency costs of redistribution (the equity condition).

First, when government intervention to check market power does not take the form of competition-oriented market regulation, it is liable to fail in that it weakens or distorts incentives to efficiency:
- nationalisation may generate X-inefficiency, due to the lack of economic incentives;
- rate of return regulation may encourage capital over-intensity or cross-subsidies;
- mis-specification of service requirements may favour service providers over the service users government is supposed to represent.

Secondly, the very existence of public intervention may generate a position externality, a monopoly rent that shall activate strategic behaviour by private partners, also known as "rent seeking". Fairly often the benefits of well-meaning, state-sanctioned protection of rent-generating situations are concentrated, whereas its costs are dispersed (or vice versa), raising obvious equity issues. In such cases the benefit-cost calculation can easily get superseded by the rational willingness to spend resources to twist the decision. Thus, the benefits are wasted in competition ("positional externality"): partial remedies may be partial financing, price-based auctions or a uniform distribution of transferable rights.

Third, the issue of rent seeking may get intertwined with the issue of adverse selection by unmodifiable features, e.g. when the equity or the protection motive are directed to existing firms (a means) instead of people and their welfare (the end). Alternative remedies to the risk of subsidising structurally inefficient firms may include partial financing, compulsory group insurance or assessment and statistical differentiation by objective criteria.

Fourth, the state itself enjoys market power, indeed is a sort of monopolist in the markets for collective decision-making and collective actions. As such, the state has poor incentives to efficiency, above all in relation to time issues:

- decision-making processes may afford to be untimely, in contrast to the importance of "time-to-market" for firms;
- decision-makers may have an interest in short-run policies over socially more appropriate long-run policies, in that the former yield visible results within the politically appropriate time horizon;
- once decided upon, rules are static objects in a dynamic system: e.g. antitrust law may prove inadequate in front of the dynamics of innovation, planning decisions may outlive their welfare justification, …;
- conversely, governments can afford time incoherence, i.e. reneging on previous commitments: credible commitments often require independent authorities.

Attempting a response to this situation, the Tiebout logic adopts the idea of competition in the public sector by introducing government tiers and favouring bottom-up subsidiarity. Apparently, the model obtains responsive and efficient local authorities to communities with homogeneous preferences from the ability of the public to vote with the feet. However, others may argue (Mrs Thatcher did) that wasteful competition, both between and within government tiers, is the other face of competition and redundancy, resulting in excess financing of collective decision-making and consequently more constrained private decision-making. Besides, competition need not be the only behavioural rule: cooperation is possible and sometimes desirable, but collusion is the other face of cooperation, reducing transparency and restoring market power to the damage of outsiders, primarily the citizenry in this case.

Fifth, and consequently, the issue of accountability: why should individuals delegate choices is not a once-for-all decision. More fundamentally, the widespread assumption of a benevolent and impartial dictator, aiming at social welfare without any own goals, is not justified in practice. Individual interests may take precedence over the common good. Moral hazard and choice of (hidden) action of the principal-agent type are real for public officials as well as private managers (Levinthal, 1988; Tirole, 1994). Further, the problem may be compounded in the case of government-dependent agencies with public agency – private firms relationships, since the monopolistic setup of most agencies, by instrument or by territory; makes them easy to capture by lobbies (Morimort, 1996; Laffont, Morimort, 1998). Unlike in the market sector, hostile takeovers and/or organization closures are de facto impossible for governments, while output market competition is usually legislated away and performance-related rewards are hard to design, except for the electoral sanction (Pompili, 1996 and 1998). What is left is good old command-and-control, in the form of corporate governance, with the usual free-riding risks as in private firms.

Rent seeking, timing of decision-making, time incoherence, wasteful competition, collusion, lack of accountability: all of these may provide economic reasons for governance, i.e. for an approach to governing the socio-economic system that takes into account the realities and limits of government.

2.2. The network alternative

We mean by government the institutional dimension of politics, identifying a coherent form of authority following a model of top-down hierarchical control. With respect to this, governance has shifted from an initial stress on process to a new bottom-up style of government. This style is characterised by cooperation and interaction among public and private actors within public-private decision-making networks marked by bargaining and renegotiation. The word "public" takes on a different meaning, shifting from electoral mandate to collective issue. A good general introduction to the issue of governance is Unesco (1998); recently, the themes of public-private partnerships and local development have been deepened in e.g. the papers collected by Chatrie, Uhaldeborde (1995).

Neither State authority nor market competition seem to offer a fully satisfactory problem-solving framework: this presses the economic case for public-private cooperation, or networking. But where is networking superior to both market and State? Can we expect networks to excel in balancing

market power, in creating missing markets, and in redistributing resources and rewards? A theory of network efficiency is needed.

As we shall see, with respect to the market, networks cannot offset market power failures, indeed they may favour new monopolies or collusive oligopolies. They do respond, however, to missing market failures, both of the information and of the externality type, and hold the potential to respond to the market outcome (equity) failure - here, however, a normative choice is needed for them to do so.

With respect to the state, networks tend to offset X-inefficiency and free-riding, especially in a dynamic sense, but not rent-seeking, whose risk indeed increases, and accountability failures.

2.2.1. Network externalities

From the viewpoint of economic theory, this section builds u pon the work of, among others, Capello (1994), which deals with physical network externalities (telecommunications) but can be generalised to immaterial networks.

In a network externality the value of a (physical) network to the user is highly dependent on the numbers of already existing users: the choice to become a user depends on it (Rohlfs, 1974). Notice that what matters is the cost of joining, in terms of organisational changes and learning processes, which derives from the behaviour of other individuals. On the contrary, the cost of equipment (independent of others) does not matter, and is in any case not relevant for immaterial networks. Apart from receiving benefits from the network, new users generate benefits to other users of the network, who may engage in or receive further contacts. This in turn makes the network all the more appealing to outsiders.

While on the demand side willingness-to-pay increases with the number of users, on the supply side costs fall due to economies of scale: contrary to standard analysis, it would pay to wait. Thus, there cannot be an equilibrium outcome; initially, a public subsidy may be needed, until users exceed the self-sustaining threshold (Jonscher, 1983; Allen, 1988).

Thus, according to the literature (see e.g. papers collected by Antonelli, 1992), the value of a network is positively affected by two elements, both accelerating adoption of the network technology (e.g. Saloner, Shepard, 1991). The former is the number of locations it serves ("network" effect, less relevant for immaterial networks), and the second is the number of its users ("production scale" effect).

As usual, congestion may bring negative externalities. In physical networks it can be relieved by costly additional investment in network infrastructure; generally speaking, public planning and coordination may be required in order to ensure maximum growth benefits from physical networks (Schuler, 1992).

Thus, the mechanism of interdependent preferences results in interrelation among decision-making processes of different users. Beyond a threshold, it generates a speedy cumulative process in diffusion of the network technology ("bandwagon" effect): consumption externalities matter. The next step forward (Capello, 1994) is that networks also generate production network externalities affecting the competitiveness of firms. In this way, this approach can be employed in analysing networks between firms and local production systems: network need not be material.

Insofar as networks provide greater benef its to users either for competition (from common assets) or for cooperation (vertical integration), they may be considered akin to public goods or club goods.

More precisely, networks are non-rival, i.e. allow for shared use, at least up to congestion, but they may be excludable, in order to avoid congestion or to achieve competitive advantages over outsiders.

These benefits, in terms of information and of synergic linkages, translate into higher productivity, hence better economic performance for individuals and firms. If linkages are influenced by spatial proximity, as in local spillover effects and in the complementarity between telecommunications and face-to-face contacts, this improved performance extends to regions. Of course, actual benefits depend on a twin assumption about individuals and firms vis-à-vis the network to which they have access (Capello, 1994). First, they know (technical know-how, also on the specific usefulness of the network) and second they are able to appropriate (organisational flexibility, entrepreneurship) its potential benefits.

As for the distributive issue, benefits are distributed, broadly speaking, according to this knowledge and ability, but, at least in the case of physical networks, the owners of the network might extract benefits from the users, in the form of rents. This may possibly take place to the point of making the position of users only marginally better than the position of non-users, and not related to the contribution they make. Alternatively, and with the same effects, first-comers may limit the rewards of newcomers to their advantage. Finally, if access to the network may be excluded by insiders claiming congestion, this may amount to unfair competition, which is normally forbidden.

On a more fundamental level, in all these cases the distributive issue turns into the issue of the inefficiency of egoism. Since egoism may be destructive, altruists should not disappear: relative payoffs from interaction determine the equilibrium share of altruists where expecte d payoffs are the same. If they are never the same, a corner equilibrium occurs – but if egoist/altruist identification is possible, the result is reversed for co-operators: the lower the cost of identification, the better the outcome. This is a new variant of prisoners' dilemma: a story of lack of trust, rather than lack of communication, resulting in poorer outcomes unless credible commitments are made.

Up to this point, we considered networks in a general sense, referring implicitly to individual and firms in economic space. However, an essential dimension of networks is that they are local: they are local, by definition, in a topological sense, but they can be local in a geographical sense as well (see Section 3). In so far as it implies repeated exchanges, a network implies trust and therefore an environment endowed with social capital, strong institutions and shared values – which is indeed the case for local, intra-urban networks.

2.2.2. From government to governance: urban networks

Following prior US experience, also in Europe downsizing of the nation state and fragmentation of local authorities give birth to a sort of entrepreneurial local government. This is spurred by competition for public funds, private investment and highly skilled workforce (Le Galès, 1995 and 1998). At the same time, between the 1970s and the 1990s, regional and urban policies shifted from hierarchical (institutions), normative (constraints) and sectoral approaches to strategic, consensus and integrated approaches. The shift of approach by policies strengthened local networks and their inter-organisational forms ("governance"), for example in the shape of urban public-private partnerships (Camagni and Gibelli, 1994; Camagni, 1995). In particular, strategic planning is an arena of competition for the most favourable representation, but it is also a catalyst of cooperation and relationships, where reciprocal learning and viewpoint sharing occur: learning implies communication (Le Galès, 1997).

A central condition for success in this context is the adequate local supply of social capital, as an untradeable resource located neither in individuals (human capital) nor in means of production (economic capital), but in the structure, density and stability of social relationships (Ercole, 2000). Through it, information and trust become available and make individual goals attainable, although it

is a necessary, but not sufficient condition for local development (Trigilia, 1999). Even in depressed areas, a combination of symbolic capital of external investment with parts of local networks of social capital can reinvigorate the regional economy (Uhlir, 1998). However, opening local networks to external actors may make the network strive for excellence, bur weaken its trust relationships.

Urban governance networks may provide several advantages over traditional government modes:
- from wasteful competition and strategic rent seeking among private decision-makers for scarce public resources to truthful cooperation among stakeholders to achieve the most efficient and productive use of those resources;
- greater effectiveness, in so far as integration means many actions all aiming at one joint public goal, also thanks to a public guarantee of equitable distribution of benefits and/or costs;
- better timing of decision-making (work by objectives is more efficient than work by procedures), longer policy horizons (short run political rewards come from the network operation itself), greater flexibility over time ("what the law does not forbid it allows" is more efficient than "what the law does not allow it forbids"), lower risk of time incoherence (the network is a repeated game);
- cross control between principals in the name of the agents' interest improves accountability ex ante; indeed, preferences may be better known through these multiple channels.

The cost, in terms both of learning and of organisational change and above all of transaction cost, of joining an urban governance network is low, whereas in inter-city networks it is high, as we shall see. Therefore, the public subsidy needed to set up the network until it goes beyond the self-sustaining threshold may be very small and short -lived: a low-cost and high-efficiency way to signal a credible commitment by the public sector. Moreover, since the number of urban actors is generally limited, urban governance networks do not run a risk of congestion if too many join, in contrast to private networks.

Nevertheless, urban governance networks do seem to perpetuate some government problems and add new ones:
- the distribution of benefits and costs may take the well-known form of private benefits and public costs, leaving to the public sector only benefits of the symbolic, "image" type;
- internalisation of strategic behaviour may in fact worsen the timeliness of decisions, let alone block them, even though it should help in the implementation phase;
- as usual in strategic contexts, networks have a problem of actors' credibility in commitments; more precisely, whereas commitments to act can easily be monitored, commitments not to act are indeed problematic;
- principals in one single network may favour collusion against the agents, in an exchange between private capture of the public regulator and cooperation as a way to avoid being accountable to the ultimate agent, the citizenry.

Despite these difficulties, in the real world there appears to be no governance failure: which theoretical mechanisms are at work in preventing network failure to be the positive end result?

An empirical outcome is that success tends to occur only in presence of a leader: this implies a sunk commitment, but not in a threat sense. Investing in something and disinvesting in something else, means that reverting to the "start box" is costly: this actor has an incentive to step forward, other actors are signalled that this actor does have such a credible incentive. The difficulty lies in starting the mechanism, since afterwards it is a cumulative path: here is a role for government institutions.

Alternatively, benefits are so large that cooperation, and not tit for tat, is the dominant strategy, although distribution conflicts might take place. If actors are already specialised, then comparative advantage is apparent to each and every one, and equally obvious is the division of labour to be agreed upon, with the ensuing distribution of most, if not all, benefits and compensatory cross-payments.

Local networks and their inter-organisational forms ("governance") were strengthened to the point of "governing without government", thus raising issues of democratic accountability of decision-makers (Rhodes, 1996), especially if one adheres to the idea of democracy as formality and rules (Kelsen). In the end, the question is whether public-private governance is the freedom of cities or the victory of the market mechanism even in the public realm. On one hand, firms are increasingly part of and dependent on a governance action, from which their behaviour cannot be separately evaluated. On the other, most individuals feel little represented in the decision-making arena and cannot vote with their feet: they may simply give up voting, leading to elitism/technocracy (Perulli, 2000).

In fact, within a principal-agent approach (Arrow, 1985; Hart and Holmstrom, 1987; Levinthal, 1988; Tirole, 1994), the local population, i.e. citizens, taxpayers, employees, and self-employed, can be seen as the principal in a model where private and public decision-makers, i.e. employers, landowners, developers, local authority politicians and bureaucrats, are the agents (Pompili, 1996).

The population decentralises decision-making because of specialisation advantages: these increase with city size, also because of the increasing complexity of collective urban problems. At the same time, though, the information problem arises in the city/region: the population is not as fully informed as its decision-makers. This is a problem because the latter cannot be relied upon as having the same goals as the population, thus raising the issue of the correct (for principals) incentives to agents.

The traditional approach assumed, first, that only public decision-making is relevant to the population and, second, that a rigid control on public decision-makers ("accountability") was feasible and carried credible penalties or at least that public ethics, i.e. the internalisation of control, was widespread among decision-makers. Such assumptions can be invalidated, e.g. by electoral systems inhibiting clear-cut and stable majorities and by hardening public finance constraints. The theo retical problem is made more serious by the fact that such agents both have a wide scope for decision-making and are very difficult to control. Thus, both a partnership and a principal-agent approach may have limited effect when public ethics is low (public: not just public sector!).

3. CITIES AS (COLLECTIVE) ECONOMIC ACTORS

Viewing cities as unitary, albeit collective, actors in a network is not an obvious step in economics, since this discipline is grounded in methodological individualism. This means that it is perfectly reasonable to accept organisations, be they firms or institutions, as actors or decision-makers, in that they are characterised by a decision-making body which has the authority to see its decisions implemented. Economic analysis has questioned the assumption of the effectiveness of command-and-control, delving into the internal workings of organisations. Yet, to many purposes the assumption is reasonable. What seems far less reasonable is to assume that a collective entity without even a governing body with accepted authority may be a decision-making actor. Therefore, it has to be shown that cities are indeed unitary entities before their networking activities can be analysed.

A preliminary difficulty to be dispelled is that different meanings of cities are implied in the debate. Physical definitions of the city as built-up area, of course, have no meaning in terms of decision-making analysis: they set the scene for actions but do not provide an actor. In the same vein, if the city is just a locationally-based aggregate of individual actors, than it is no decision-maker in itself: what outcomes we relate to the city are just a convenient sum total of individually determined outcomes.

If there is to be something to the idea of the city as a unitary economic actor, local individual actors, i.e. citizens, taxpayers, employees, and self-employed, may at best be the principals, whereas private

and public decision-makers qualifying as strategic agents (Pompili, 1996) remain to be identified: public administration, social institutions, stakeholders, …: in any case aggregate collective actors.

The first meaning is the city as one political or administrative institution: political leaders and the bodies where they sit might be taken as the city's decision-maker. After all, being democratically elected by the resident population, they do have legitimacy, but they do not have the power to direct individual private decisions and actions, except in few well-delimited fields.

A second meaning is the city as a structured society: civic leaders and the circles where they meet might then be taken as the city's decision-maker. Such leaders have a functional legitimacy, and their individual decisions, or lack thereof, are very influential in terms of impa cts. However, they have no democratic legitimacy and in fact no power at all to direct individual decisions and actions.

A third, broader meaning is based on the concept of stakeholders. It has the advantage of stressing that the resident population endowed with voting rights is not the only group with an interest in the city, the only principal, as employees, firms, and city users in general also have a legitimate interest. However, this may blur the distinction between principals and agents, the latter being the ones directly responsible for those decisions with far-reaching, city-wide consequences.

It is generally accepted that individual welfare depends on both individual decisions and the fallout of actions of other, independent individuals; additionally, here we argue that they depend also on decisions and actions of representative private and public institutions whose leaders are somehow chosen by individuals themselves.

If the city is merely an aggregate of individual decision-makers, then it may not need an analysis specifically centred on this aggregate, unless the end result of atomistic individual actions is inferior to the optimal result the city might obtain. This gap between the " market" outcome and the " social" outcome may be viewed as the value added by the city as an entity in itself.

This gap may or may not occur depending on the existence and functioning of intra -urban networks: the city's value added is a positive externality to each individual decision-maker – and might be produced in the optimal amount only after a commitment of resources by individual decision-makers. Because of the high transaction costs in an atomistic city, this commitment is unlikely to occur.

Prospects may be better in the case of a city including both individuals and private and public institutions. Strategic, influential decisions are taken by these institutions, and their limited numbers allow for much lower transaction costs. Urban networks are likely to be in place. However, even if the city is just a byword for its public and private institutions, the individual organisational objectives that guide the actions of these institutions may still differ from the "common good". This may happen either because institutions prefer to behave in an atomistic, un-coordinated way, due to negligible benefits of cooperation net of costs, or because institutions are unable to agree on joint action, due to conflicting goals i.e. distributional issues.

Thus, intra-urban networking activity is a necessary condition for the identification of the city as a purposeful actor and decision-maker. But this activity requires significant payoffs both on the aggregate and in distributive terms.

3.1. Collective actors as individual actors

We believe that cities can be analysed as unita ry economic decision-makers in so far as they can be shown:
- to share collective interests,
- to exploit collective resources, and

- to undertake collective actions.

In all of these instances, the term collective is taken to mean that it cannot be derived simply as aggregate outcomes of individual interests, resources and actions.

First, cities, and individual decision-makers within them, do have collective interests and goals, as reflected in a collective welfare function. To design this function they elicit the revelation of collective preferences, via electoral competition but also via networking among local institutions and stakeholders. In a positive sense, decision makers do have in mind a collective welfare function when they undertake competitiveness policies and "foreign" policy.

These collective interests do not simply depend on individual interests because individual interests may be in reciprocal conflict and cancel out, either because of competition or because being on different sides of the market. General, common collective interests are external to individual interests in that they set the context: rules of the game (locally, the game of using local resources), extent of the market, certainty of future purchasing power, … (Camagni, 1989). On the other hand, these are not the sole goals of public institutions, which may have their own organisational interests and therefore be agents for their principal: the distinction seems necessary to justify a network approach.

Traditionally, welfare is measured by utility and/or profit; refinements may include measurement over a longer run and by capital values (for ownership) instead of current values (for use). However, if collective welfare is more than the sum total of individual welfare levels, we need an additional measure for it, complementary to utility / profit. This measure may equate with measures of:

- attractiveness for people and firms, hence the direction of absolute dynamics, but also its cumulated size, by any indicator; the latter is also valuable as a proxy of the diversification of opportunities;
- stability of its patterns of change (e.g. growth without fluctuations) i.e. with a low degree of uncertainty about the future; here again aggregate uncertainty is not the sum of micro-level uncertainties, because these often cancel each other out .

Second, cities may draw from collective resources, apart from and in addition to individual resources. Their difference from the pool of individual resources lies in both their common use or joint use and/or in their origin from interaction.

One way to look at them is as localised assets, meaning specific resources: both physical resources, valuable as specific production inputs, and accumulated human resources (know-how), giving specific comparative advantage to locally active producers as a group (Camagni, 1999). Another way to look at collective resources is as "espace de soutien" (Ratti), meaning common goods yielding externalities: common infrastructure, needed as general production inputs, and general human resources. Here, again, the network concept comes to mind.

The existence of such resources provides an opportunity to put them to use, through a technology transforming these resources into means to the achievement of objectives. The city as such is responsible for their creation, maintenance and development, together with the general willingness and ability to exploit them (Vazquez Barquero, 1999). Public institutions are an important actor in this respect, but by no means the only one, unl ess we assume a perfect ability both to know what the city's interests are and to harness resources to pursue those interests.

Third, in order to move from preferences to actions, cities, and individual decision-makers within them, do undertake collective actions, apart from the actions of local public institutions, for public goods, also via networking (Malecki, 2002).

Within firms, operatives implement the managers' decisions; likewise, strategic decision-makers (especially public ones) might wish to see their choices to be followed through. But the city as network has no hierarchical authority, nor binding contracts, nor credible sanctions, neither among

decision-makers nor between institutions and individuals. In so far as they provide positive externalities, these actions may not provide sufficient incentives for individual or organisational action.

Therefore, whereas we may hold a general presumption that the market mechanism does work, no market mechanism can work in the context we are dealing with, if decisions are not sequential. Then both a credibility and a free-riding problem arise, and in order to offset both, public institutions may play a decisive role as the first to commit resources for credibility.

In this sense a city is a unitary decision-maker: co-ordinated action is unthinkable merely as a set of individual actions. Collective action may therefore be thought of as a non-market mechanism for microeconomic agents' coordination.

3.2. Mobile and immobile actors

Under these conditions of effective internal networking, then, every city can be viewed as a unitary decision-maker in the market for global locational choices. In this market, territories, i.e. networks of localised decision-makers, supply localised resources to mobile decision-makers (Head, Ries, 1996).

Mobile actors are willing and able to pursue their objectives also by making locational choices that increase their competitiveness and therefore their rewards. Instances of such actors are multi-localised firms, up to trans-national corporations, international or global organizations and institutions, but also individual owners of significant amounts of human capital.

On the contrary, the above description of the market implies that communities are local and immobile. It is not established whether this is a positive issue, depending on the cost of moving (not just monetary cost), or a normative one. In so far as most individuals do not consider mobility an attractive option for themselves, they have an interest in local externalities attracting opportunities to their location, and therefore they share an interest in organising into urban networks in order to create, develop or maintain those externalities.

From a different viewpoint, positive (non-policy) economic analysis of the system of cities provides different interpretive models to explain system patterns as hierarchical, diversified or complementary (Pumain, 1992). Against the background of classical urban system models, we stress the novelty of the "reticolo" paradigm, developed in both economic geography and urban economics in the 1980s (Dematteis, 1980s; Camagni and Salone, 1993). The aim of this paradigm was to find territorial competitive advantages not linked to size and scale (cfr. Christaller): network externalities, spurring synergy networks, and division of labour, spurring complementarity networks.

All these models, however, view the city as one economic decision-maker competing with other cities, choosing economic specialisations and urban functions (Camagni, DeBlasio, 1993). Nevertheless, within this approach cities self-organise – but also the system of cities self-organises, apparently without the need of purposeful action; as a partial exception, innovative milieux theory does stress the purposeful aspect more than other theories.

As a matter of fact, purposeful inter-city/regional competition for private and public resources is the basis of competition for urban functions. As such it highlights the role of markets as the efficient choice institution for allocating scarce non-local resources within and between regional/city ranks at both the national/regional and the international/continental level. Nevertheless, since markets are risky ventures, under specific conditions cities may also purposefully choose to cooperate in order to increase their own welfare or to reduce future risks concerning it.

4. EFFICIENCY OF INTER-CITY NETWORKS

Internationalised economic competition and new communication technologies are often thought to lead, if unfettered, to excess concentration (Graham, 1999). Rather, they seem to change the organization of production both in manufacturing-technological cities and in service-diversified cities (Buisson, Rosier, 1998). In fact, urban structure is increasingly characterised by multiple centres, where the interplay of agglomerative and dispersive forces leads to multiple and path-dependent equilibria – with persistent inefficiencies (Anas et al., 1998). In particular, the historical and current role of the nation state in providing rules and physical networks has an impact on the system of cities (Cattan, 1995).

The growing extension of urban phenomena and network society leads to opportunities and risks in different territories, which can be viewed as networks of (urban) networks (Shin , Timberlake, 2000). From these opportunities and risks and a dynamic view of territory, while citizens exhibit multi -level and/or shifting loyalties, new territorial models of government develop. These models focus on cooperation among local agents ("governance"), among levels of government, and among cities (Arndt et al., 2000).

4.1. Inter-city competition vs. network cooperation

If cities are unitary decision -makers indeed, then almost by definition they compete, since territories cannot take anything for granted when they face mobile actors making locational choices. As we said above, purposeful inter-city competition for private and public resources is the basis of competition for urban functions. As such it highlights the role of markets as the efficient choice institution for allocating scarce resources.

Nevertheless, it is often lamented that there is a risk of destructive or wasteful competition in the market for global locational choices. More precisely, a short run situation may arise where monopsony is the market form analogy: several competing territories facing one mobile decision-maker. The location decision is then taken at the lowest "price", so that the distribution of surplus / benefits is fully skewed in favour of the mobile decision-maker.

In the short run the main instrument for territorial competition is financial and fiscal incentives to the use of local resources, but also the waiving of rights and rules for newcomers. In the long run, though, we might argue that short run winners would become congested and therefore compensate greater benefits with greater costs: consequently, no policy limiting free competition would seem to be warranted. Different types of mobile decision-makers will find their preferred mix of locational benefits and costs, in a large scale revival of Tiebout's model. However, this shall be true at the margin but, since it will occur after a larger size is cumulatively attained, increasing opportunities and reducing risks, it will just stop a process of increasing collective welfare, not reverse it.

Still, it might be argued that this competition merely shifts benefits among territories, without generating any, and that this comes with a greater cost on immobile actors. Then, the social advantage of competition over cooperation, for the global system of territories, might not materialise, competition being a zero-sum game. This is not the case, if and when competition stimulates territorial efficiency, especially in a dynamic sense, which happens when any measures being taken benefit also local firms. However, the game turns out to be zero-sum, if and when inter-city competition merely diverts choices, which happens when measures benefit only incomers. This creates a positional externality game which is wasteful in that it uses up resources to no aggregate benefit increase.

Once more, the bottom line is the typical liberal call for general rules and transparent actions (e.g. explicit strategic planning) and against specific privileges. This call may be in the genera l interest of

cities, but each city may have an incentive in seeing it heeded by other cities while remaining unbound by it. Therefore, this condition should be set at the "constitutional" level, or by an upper-tier public authority, such as the nation state or the European Union.

Additionally, in the face of short run waste of resources and of purely diversionary (redistributive) effects, cooperation is a superior mode of organisation. The normative conclusion may then be a call for inter-urban diplomacy and commitments, namely inter-city networks, in a bid to avoid "unfair" competition and to support the spatial division of labour. In other words, following the market form analogy, the normative conclusion is to substitute bilateral monopoly for monopsony.

This goal may be achieved either through building complementarity networks or through building synergy networks. In the former case specific mobile decision-makers face only one or very few territories willing to host them, in the latter mobile decision-makers face one unified network of territories. The system, as a regional complementarity network or as a super-regional synergy network, shall supply localised resources to mobile decision-makers. Both these strategies provide additional benefits to cities, in that they work also in favour of the competitiveness of existing, already localised firms and individuals.

In a bilateral monopoly, then, the well-known equilibrium result is indeterminate, both in terms of the number of movements but above all in terms of the price paid for them and the consequent distribution of benefits between mobile and immobile actors. From the territorial viewpoint of immobile actors, this appears as an improvement over the monopsonistic situation, and so does from the general, or social, viewpoint.

4.2. Why the rise of policy networks?

Since the market for global locational choices is a risky allocation venture, and inter-city competition may subject it to monopsony by mobile decision-makers, cities do have an incentive to cooperate in the form of regional complementarity or super-regional synergy networks in order to:
- reduce costs associated with competition to attract mobile decision makers (positional externality);
- increase their own share of non-local resources, as a group (w.r.t. other cities);
- increase their share of the rewards associated with hosting mobile decision-makers (w.r.t. them);
- free resources to be devoted to local decision-makers (as well as to mobile incomers);
- reduce inter-jurisdictional conflicts, by distributing growth and its rewards ex ante more equitably (within the group).

An additional economic justification for the rise of inter-city policy networks is related to the fixity of administrative boundaries and of competence assignments. Over time, the economic boundaries of a city are mobile, responding to changes in transport and communication technologies and infrastructures: the resident population (voters) and city users (stakeholders) do not necessarily coincide. Moreover, de facto public service catchment areas may not adhere to administrative boundaries, generating inter-jurisdictional spillovers, or may be forced into inefficient boundaries to buttress the existence of plural governments.

Internalisation of these externalities via consolidation of local governments into one, or via transfer of competences to the upper tier, is a solution (Mansoorian, Myers, 1996). However, plurality provides incentives to efficiency and to accountability of governments: both properties are supported by the vertical division of competences ("specialisation"), and by the horizontal competition for service users and for funds ("redundancy"). These incentives can be preserved only within a federalist framework.

Short of consolidation and of competence transfer, the solution to these externality problems may lie in cooperation i.e. in the creation of both multi-level and horizontal institutional networks. In the

former case these institutional networks ensure coordination both locally and towards outside pol icy-makers, ensuring several formal independent actions towards the same one goal; in the latter they remedy or compensate spillovers and serve for both advocacy and information purposes.

Thus, by and large, inter-city governance networks may provide several advantages over traditional government modes, although less markedly so than urban networks, and over atomistic city action:
- from wasteful competition and strategic rent seeking among cities for scarce public resources to truthful cooperation to achieve the most efficient and productive use of those resources in a region or in a type of cities;
- greater effectiveness, in so far as network integration means many local actions all aiming at one common goal;
- longer policy horizons (short run political rewards come from visibility of the network operation itself), lower risk of time incoherence (the network is a repeated game);
- cross control among cities in the name of the population's interest improves accountability ex ante.
We assume that benefits are fully gained when public actors exchange feed -back with the rest of the city via public-private partnerships and via strategic territorial planning.

If a condition for network success is that an actor makes a costly sunk commitment and is consequently accepted as a credible leader by other prospective actors, this condition is more difficult in the case of inter-city networks, where no city substantially differs from others (compare with local public institutions vis-à-vis private decision-makers). Here is a likely role for upper-tier government institutions, a point that should be expected to make regional complementarity networks easier to establish (top-down) than synergy networks.

However, the cost, in terms of learning processes and of organisational change, of joining an inter-city network is high, higher than for urban networks. Therefore, a high and persistent top-down public subsidy and commitment by an upper-tier government is needed not only to set up the network, but also to overcome the cos t of joining and to achieve the self -sustaining threshold, unless expected benefits are correspondingly high.

Insofar as networks provide greater competitive advantages to member cities over outsiders, either for competition (from common assets) or for cooperation (vertical integration), they may be considered akin to club goods. These competitive advantages translate into potentially better economic performance for local individuals and firms. Knowledge of and ability to appropriate benefits will also det ermine their distribution among partners sharing use of the network, which will have the incentive and the ability to exclude outsiders from access to it.

In contrast to urban networks, inter-city networks may easily run a risk of congestion if too many join. Even if a network of cities is justified, many potential joiners chase smaller, incremental net benefits: intercity networks should be expected to be more exclusionary because of smaller benefits and higher transaction costs.

Finally, trust is needed for the repeated exchanges occurring within a network, which calls for a common ground and reciprocal knowledge among partners. In this respect, complementary networks are geographically local and synergy networks are topologically local, although in both cases shared values and trust are smaller than for urban networks.

Therefore, the diplomacy of agreements to take and not to take actions suffers from a credibility problem due to the appeal of time incoherence, especially with restraint agreements. Full y voluntary inter-city networks may then prove unsustainable over time. In fact, in the real world we may find:
- implicit agreements, when both final net benefits and initial comparative advantages are obvious to all parties;

- voluntary agreements, when final net benefits are obvious but initial comparative advantages are not;
- enforced or statutory agreements, when no agreement would be reached because neither benefits nor advantages are obvious – in this case an upper-tier government may want to force an agreement – but "picking the winners" is an impossible task.

4.3. The costs of policy networks

Again, governance may suffer pitfalls also at the inter-city level; some of these are related to the efficient and effective functioning of the network, and others are related to the impact of the network on the broader system:
- inter-city policy networks may hinder the goal of competitive assignment of resources;
- networking may not be an efficient decision-making tool;
- cooperation may be a way for decision-makers to collude and avoid being accountable.

First, with respect to a competitive market for global locational choices, although inter -city networks respond to monopsony risks, they may favour new monopolies or collusive oligopolies and, far from offsetting it, increase the risk do not offset rent-seeking from upper bodies.

The very existence of a distribution of resources by an upper-tier authority may generate a position externality, a monopoly rent that shall activate the willingness by cities to spend resources to seek it. Thus, the global benefits are wasted either in competition among cities and among networks, wasteful competition being the other face of competition and redundancy, or via adverse selection, e.g. when the equity or the protection motive for aid are directed to the cities (a means) instead of people and their welfare (the end).

By reducing competition among cities, inter-city networks enjoy market power, indeed are a sort of monopolist or cartel in the markets for collective decision-making and collective actions. As such, just like the state they may have poor incentives to efficiency, above all in relation to time issues and on issues of wasteful competition against other networks.

If networks' success depend on cumulative lobbying ability, networks have purely diversionary (redistributive) effects on financial and locational choices, and it is arguable whether network economies of scale or increasing willingness to pay are significant: rather then networks, these may be collusion agreements.

Second, networks may not be an efficient decision-making tool: costs of cooperation are not negligible and coordination failures and strategic behaviour against cooperation may take place within the network.

The cost, in terms both of lea rning and of organisational change and above all of transaction cost, of joining an inter-city policy network is high, starting from a smaller common ground of values and trust. Therefore, the public subsidy needed to set up the network may be significant and permanent: a costly way to signal a credible commitment by the upper-tier government, that may not be worth the benefit of lesser wasteful competition and/or more timely decision-making. Moreover, since the number of cities is not limited a priori, inter-city governance networks quickly run a risk of congestion.

Moreover, partners may have joined for different reasons and expect different outcomes from the network: plurality of goals may result in coordination failures, especially if the number of instruments or actions is too low to accommodate all of them.

Further, network partners may have joined for symbolic reasons without real commitment to its success: active, pushed, hostile partners adopt different strategic behaviours, including rent-seeking, and sabotaging cooperation within the network (Santangelo, 2000; Governa, 1997). Thus, internalisation of strategic behaviour may in fact worsen the timeliness of decisions, let alone block them

Finally, as usual in strategic contexts, networks have a problem of actors' credibility in commitments; more precisely, whereas commitments to act can easily be monitored, commitments not to act are indeed problematic. Each city may have an incentives in breaking agreements while other cities uphold them

Third, cooperation may turn into collusion, a way for decision-making principals to avoid being accountable to their delegating agents.

The accountability issue, already present in a realistic view of government (Pompili, 1996 and 1998), is exacerbated in the case of public-private networks, seen as monopolistic government-dependent agencies with public agency – private firms relationships (Morimort, 1996; Laffont, Morimort, 1998).

In networks, and more so in inter-city networks that are even more removed from the principals' attention, individual interests may take precedence over the common good, capturing the network. The accountability issue thus links with the equity issue, both within cities belonging to the network and between network insiders and outsiders: unfair competition against excluded "lobbies" or legitimate interest-bearers is worse than under traditional government.

5. CONCLUSION: PULLING THE THREADS

We essay to present and briefly discuss the theoretical economic rationale of networks as a p aradigm for urban development and governance (Camagni, 1993). Essentially, networks are the organisational manifestation of cooperative behaviour, as a distinct form from competition (market) and command (hierarchy).

The issue of the network paradigm is a cost-benefit issue: networks are not an all-purpose recipe. The contexts in which cooperative behaviour prevails, and therefore human interaction is organised in networks, are determined by efficiency-based comparative advantage of these forms – the advantage of cooperation depending on the amount of externalities and development opportunities this governance device can ensure. In a positive sense, networks will occur and be productive where stakes are high and individual failure is very likely.

We have discussed the above from the perspective of cities, focusing on intra-urban networks and on inter-city networks; in the latter case, we justified our stance of taking cities as collective actors. We think that this rationale may be a fruitful background to studies aiming at the specific empirical content of networks (Capello, 2000) as well as for designing and evaluating policy initiatives (Batterbury et al., 1999).

From a normative viewpoint, upper-tier public authorities, such as the nation state or the European Union, should:
- set general rules and transparent actions and against specific privileges in inter-city competition;
- require networks only where individual action is likely to fail, rather than to simplify their own decision-making processes;
- supply financial support only under competitive or auction procedures and as partial financing to people for actual implementation, rather than to organisations for planning ability.

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