Cultural Commons and Cultural Communities

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Abstract

 "Cultural Commons" refer to cultures located in time and space –
either physical or virtual - and shared and expressed by a socially
cohesive community. A Cultural Common is a system of
intellectual resources available on a given geographical or virtual
area and could be thought as the evolution of the more traditional
concept of cultural district or cultural cluster.
Ideas , creativity and styles of a community, traditional knowledge,
credence, rites and customs, shared and participated productive
techniques define a Cultural Commons. Some examples are: the
image of a city, a local language, the brand of Barolo wine, an
artistic movement, user generated contents on the web, traditional
knowledge held by indigenous communities, and the creativity
expressed by designers' and artist's communities.
In the first part the paper will propose a definition of what Cultural
Commons are. In the second part evolutionary paths will be
discussed highlighting the different effects that these different
paths may have on the performance of the individuals agents who
are part of the community.

Keywords: Culture, Commons, Community

1.   INTRODUCTION

Cultural Commons refer to cultures located in time and space –
either physical or virtual - and shared and expressed by a
community. A Cultural Common is a system of intellectual
resources available on a given geographical or virtual area. A
Cultural Commons could be thought as the evolution of the more
traditional concept of cultural district or cultural cluster.

Cultural Commons matter. They matter increasingly as the
globalised world takes the command along with the new
technologies of the information and communication. They matter
because culture and creativity play an increasing role in the
rationale of the economic, social and environmental development

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centred on human beings, their life and implementation of their expectations.

Ideas, creativity and styles of a community, knowledge, beliefs, rites and customs, shared and participated productive techniques contribute to the making of a Cultural Commons. Some examples are: the image of a city, a local language, the brand of Barolo wine, an artistic movement, traditional knowledge held by indigenous communities, and the creativity expressed by designers' and artist's communities. The emergence of ICTs is expanding the scope of Cultural Commons in virtual and digital environments by reducing the cost of interaction and promoting new forms of participation. Examples are user generated contents on the web and Open Source software projects.

In this paper we will tackle the problem of Cultural Commons from two points of view. First of all it will be proposed a definition of Cultural Commons. Secondly the social dilemma embodied in the rationale of cultural commons will be analyzed.

2. DEFINING CULTURAL COMMONS

A Cultural Commons is a cultural resource shared by a group, which can generate one or more social dilemmas. A Cultural Commons is defined by the confluence of three dimensions: culture, space and community.

In the first place, it is important to stress that Cultural Commons are different from Common-pool resources, concept usually evoked with reference to the "tragedy of the commons" (Hardin, 1968). The notion of common-pool resource refers to a class of goods defined by two characteristics: a difficult exclusion of potential beneficiaries and a high degree of subtractability (i.e. rivalry of consumption) (Ostrom et al. 1994). The common-pool resources share hence characters both with private goods — namely a high subtractability — and public goods — namely a low possibility of exclusion. This makes the management of common-pool resources especially complex. As in the private good case, the subtraction of resource units from the commons by one user (e.g. timber from a forest, water from a basin, etc.) reduces the amount of units that other users can consume. As in the public good case, individuals have little incentives, as potential free riders, to contribute to the provision or maintenance of the resource.

The expected outcome of this model is the over-exploitation of the common-pool resource through the negative externalities deriving from individual behaviour. Private interests and open access are phenomena that do not take into account their external negative effects on the resilience of the commons. This calls for a government ownership regulating the economic activities, for private property or for self-organized resource governance

(Ostrom,1990, Marshall, 2005).

On the contrary, being essentially made of information, Cultural Commons do not suffer from limited *carrying capacity*. Their carrying capacity, as public goods, is infinite: consuming culture does not reduce its total amount for the others. Unlike typical common-pool resources, characterized by exhaustion problems due to limited carrying capacity (Hardin, 1968; Ostrom, 1990), Cultural Commons are non-rival in consumption. A cultural tradition or a music or a poem can be consumed, played and listened without any limit.

Nevertheless, being shared by a group of individuals, culture still represents a common resource and at least its provision involves a social dilemma. This fits nicely with the definition of commons provided by Hess (2008): " A commons is a resource shared by a group where the resource is vulnerable to enclosure, overuse and social dilemmas. Unlike a public good, it requires management and protection in order to sustain it."
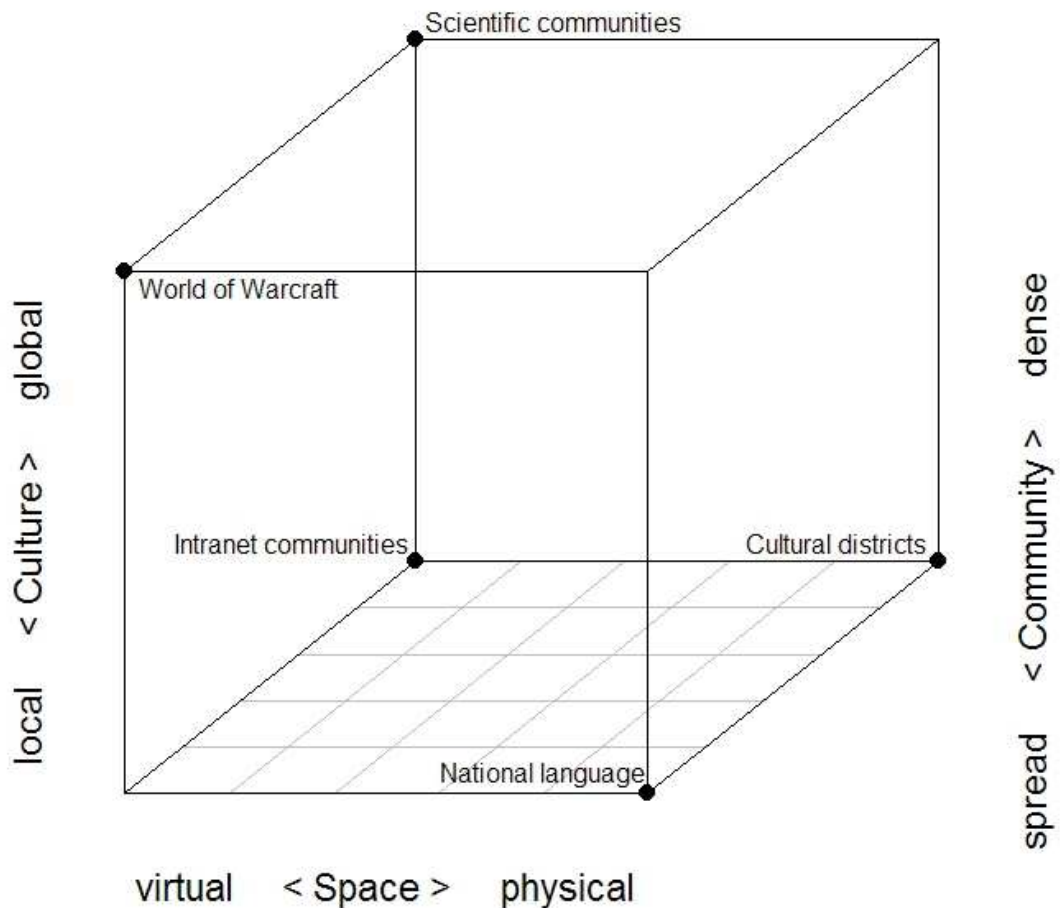
As it will be discussed below, Cultural Commons involves two classes of social dilemmas. The first one deals with the free riding problem, as individuals can try to take the benefits arising from the commons, without contributing to its maintenance. The second dilemma refers to the reproduction of the cultural resource, creating uncertainty in the transmission of the commons to the next generation. The fading of new ideas nurturing the cultural community can make the culture of the commons stationary, or a language can die, an artists community can dissolve. Moreover, conflicts may arise when subgroups develop with different views about the future development of the common culture.

A Cultural Commons can be analyzed and defined along three main dimensions: Culture, Space and Community. These dimensions are useful to understand Cultural Commons as a new category, which encompasses different forms of cultural expression produced by various communities and in several contexts. Culture represents the resource that is produced and managed in a commons-like framework. It can assume different meanings according to its local or global nature (e.g. a local language vs a global piece of scientific knowledge).

The spatial dimension reflects the environmental characteristics wherein interactions take place between community members (e.g. a discussion arena in an indigenous community or a web based virtual platform).

The community, built upon an identity and symbolic dimension (Richerson and Boyd, 2007), takes into account the cohesiveness of its members and their involvement in the cultural process. The community can be described along the density dimension, starting from a close-knit indigenous group to a loosely spread community of players on massive multiplayer online games.

Figure n.1 *The main frame for Cultural Commons space*

The three dimensions of culture, space, and community can be combined to define the space of all the possible states of cultural commons. Figure 1 presents some paradigmatic cases of cultural commons that mix the three dimensions.

One case is when the community is spread and cover the entire world, the space is virtual, mostly created on line, and the culture is global crossing races and continents. To produce and communicate a cultural commons on the internet, like *World of Warcraft*, a sophisticated technology is needed: ICTs, pc, software, as well as creativity and innovations. This technology makes the space virtual and the community globally spread with

few links among its members outside the virtual arena. In this kind of cultural commons returns are increasing as each node of the network adds to the whole system a potential multiplied connection.

At the opposite vertex stand cultural districts (Santagata, 2006), where the community is dense and cohesive, space is physical, identified on a specific geographic area, and culture is local. More generally, each type of Cultural Commons can be pointed out using the Figure. For instance, the culture expressed by a scientific community is based today on virtual spaces of interaction, but it is the outcome of a cohesive community and has a global nature and diffusion. By contrast, national languages are clearly defined by country boundaries, have local cultural nature and are expressed by communities not necessarily close-knit. Further, intranet communities expressing corporate culture are defined by local cultures and dense webs of community interaction on a virtual space.

3. THE SPATIAL AND COMMUNITY DIMENSION: FROM CULTURAL DISTRICTS TO CULTURAL COMMONS

As culture is considered an idiosyncratic good, the spatial dimension and the structure of the community are crucial to understand how the environmental conditions and the members' interaction affect the cultural commons. Moreover, no sustainable use of a commons is possible without the definition of boundaries, including limits of its users' group (Ostrom 1990).

Traditionally, such boundaries have been strongly rooted in the physical space and the geography of places. In particular, Cultural commons expressed by rural and traditional communities often rely on natural resources of specific places. Because life and activities of the members is strictly interwoven with the availability and use of specific natural resources, cultures represent the stock of knowledge and practices developed by communities to adapt to the environment and manage natural resources. As a result, the risk of degradation of traditional cultures as Cultural Commons not only might depend on the loss of cultural traits, but also on the exhaustion of or loss of access to the natural resources upon which the traditional culture is based.

Cultural Districts is a concept that is particularly suited to express Cultural Commons located in circumscribed geographic areas and based on natural resources. A cultural district is indeed the geographic repository of a specific cultural expression or product. The origin of a localized and idiosyncratic culture often depends on the local tangible (mines, clay grounds, climate, water, etc.) and intangible (universities, cultural centers, monasteries, etc) resources of a given area.

A cultural districts may be defined at the confluence of two concepts: that of the positive externalities arising in localized industries, as described by Alfred Marshall's classic works (Marshall, 1890), and that of the idyosincratic nature of cultural goods (Santagata, 2006). Shortly, a cultural district is based on a community cohesive in its traditions, able to produce trust and cooperation among its members, and on the free circulation of ideas and knowledge.

In addition to Cultural Commons rooted in the physical space, new spatial conditions are emerging, which make physical proximity or direct interaction no longer necessary conditions for a community to develop a cultural commons. In this case, space losses its physical dimension and the linkages between members and the characteristics of the community become the relevant framework for understanding the cultural commons dynamics.

Firstly, transnational and international communities are emerging as new relational structures in the globalized world. These communities emerge in different contexts, such as in businesses, political activism and scientific knowledge and their cohesive power tend to be the identity of their members over certain interests and views rather than the physical proximity.

Secondly, Internet and the Web, with the creation of online platforms and social networks, have favored the formation of online communities of thousands or millions members in several fields of cultural expression and knowledge production. As major technological breakthroughs in the ICT field have contributed to a radical decline in the costs of information production, communication and coordination, commons-based peer production systems are becoming quite widespread on the Internet (Benkler, 2006). For example, Wikipedia or Open Source Software development projects represent new creative and innovative output obtained by the interacting activity of a community of Internet users who share a certain identity, interests and cultural views.

As a result, in several contexts physical space and the environmental conditions are no longer the only conditions for having communities generating cultural expressions. More relevant are becoming the linkages and interaction of the members of loosely connected and more widespread communities. These communities are no longer static structures, but become relational constructs constantly in progress. On this perspective, it will be necessary to differentiate between a community and a simple network of agents. Therefore, the constitutive dimensions of a community in these new forms of cultural commons would be identified in the mutual orientation of members, the shared identity around common interests or projects, a sense of reciprocal dependence and the active involvement from at least a minority of members who indirectly lead the activities of the community.

4. CULTURE AS A SHARED RESOURCE AND THE SOCIAL DILEMMAS IN CULTURAL COMMONS

Being the resource at stake, culture is at the core of the elaboration of cultural commons. However, defining and identifying culture as a resource may be difficult, mainly because of the many facets of its expression.

First, culture may be considered in an anthropological sense as a form of social expression, referring to the set of attitudes, practices and beliefs that are fundamental to the functioning of different societies and groups defined in geographical, political, religious, or ethnical terms. Culture thus finds its expression in a particular society's knowledge, values and customs, which evolve over time as they are transmitted from one generation to the next. Such a definition may be also extended to include the attitudes, practices and beliefs of working communities, which lead to organization and corporate cultures.

Second, culture may be considered in a functional sense meaning the activities and practices of arts. In this case, culture refers to the output of artistic expression and of production of symbolic, aesthetic and spiritual values embodied in both tangible and intangible forms.

Albeit this complexity, culture is by all means a shared resource because it is always the product of a group of people or a community. In every form, culture requires at least some degree of human interaction or transmission in order to be produced and used. At the same time, any culture acquires a value for the people who share and adopt it. Any form of culture thus helps expressing the identity of groups and communities. This may be the classical case of language, customs and traditions, which define the cultural space of every society.

As highlighted in the general definition, being shared resources cultural commons involve social dilemmas. However, the expression social dilemma refers to a class of situations encompassing a large number of different interaction structures. Our argument is that two different, although strictly interlinked, social dilemmas derive from the shared nature of a cultural commons. The first one is the classical public good problem deriving from the cost of contributing to the maintenance of a given culture. The second one is linked instead with cultural dynamics and individual preferences over alternative cultures and takes the form of a "battle of the sexes" game, implying a struggle between innovators and traditionalists inside a given culture.

To contribute to a given culture, individuals need to spend time and money to acquire the relevant knowledge. However, individuals can free-ride on a well established culture by mimicking

the relevant cultural traits, without being committed to the maintenance of the cultural core. This means producing cultural products that fake the original traits, creating benefits for free-riders who do not bear the full costs related to the provision of the common good. Formally, this is a public good production problem. Each player can choose whether to contribute to the production of the culture or to free-ride. To contribute implies a cost greater than zero, while the public good provides a benefit that increases with the number of contributors. The public good game has only one equilibrium, with all players choosing to free-ride.

To better understand free riding behavior it is worth emphasizing the difference between "core" and "peripheral" community in the commons. The production of o a given culture by the agents belonging to the "core" generates positive externalities that increase the value of the collective good. In the peripheral zone, instead, we can observe opportunistic behavior by agents that in the absence of some enforcement mechanism can exploit the collective good, but only marginally contribute to its production.

As an example (developed in Chapter n….) consider the case of the Italian Futurism as a cultural commons. We can distinguish between two groups. First, there is a core group of artists (the signers of the Marinetti's Manifesto), who do not present strategic behavior since they identify the success of the group with their own personal success. For these members the group reputation coincides with their personal one. A second group is made of artists which have a peripheral position, whose contribution to the movement does not bring new ideas, but, on the contrary, tends to repeat standard notions or aesthetic canons. For them the possibility of using the brand "Futurist" is just a way to use and exploit a positive externality. But, by doing this, they reduce the average quality of the whole movement. From the point of view of the production of reputation the final outcome is negative. This behavior accommodate the absence of enforcement against opportunistic behavior. In the case of deviant behavior, the expulsion from the community is the only workable sanction.

However, free riding is not the only social dilemma linked with cultural commons. Culture should not only be produced, but also reproduced. Let us suppose that the public good problem depicted above has been successfully solved. Even without the willingness to free-ride, some individuals may want to change some aspects of the existing culture: a normal process in cultural evolution that is usually labeled innovation. This leads to a completely different game. A simple example involves only two players, one called "traditionalist" while the other is labeled "innovator", who choose simultaneously between the strategies "innovate" (I) and "maintain" (M). Both players are better off if they coordinate on the same strategy than if they use different strategies. This because the failure to coordinate results in the disappearance of their common culture. However, they do not have exactly the same opinion about

all the cultural details: the innovator has a pretence for the I strategy, while the traditionalist prefers M. This results in a battle of the sexes game, that we can here rename the "cultural change game" (Tab. 1).

		Traditionalist	
		Maintain (x)	Innovate (y)
Innovator	Maintain (x)	π_2, π_1	π_3, π_3
	Innovate (y)	π_3, π_3	π_1, π_2

Table 1: The cultural change game, with $\pi_1 > \pi_2 > \pi_3 \geq 0$.

The game in Table 1 has two stable equilibria, where both players coordinate on the same strategy. This can be generalized to a n person situation and in an evolutionary framework.

Let's assume there be one of two mutually exclusive cultural traits (x and y), say a "tradition" and an "innovation", present in each member of a large population. Following Bowles (2004, 69–76) we assume that the members of the population are randomly paired to interact in a symmetrical two-person game in each period. Cultural traits, in our case, mean sharing certain values, having a set of opportunities and possible course of actions; it is important to notice that different cultural traits imply different set of actions and opportunities (not necessarily with a null intersection set).

Their payoffs are denoted by $\pi(i, j)$, the pay-off of playing trait i against a j-playing partner. These depend on the actions of the players but also on the course of actions taken by the other individual which share the same cultural trait. To explain this, imagine two individuals belonging to different tribes; they meet and can choose different actions with different pay-offs. These, in turn will depend not only on the actions taken but also on how much externalities the individuals of the original tribes produce with respect to their own members.

Let's call a_{x_i} the action taken by individual i belonging to cultural trait x, and $a_{x_{-i}}$ those taken by the other individuals who share the same cultural trait.

For any population frequency of the x trait $p \in (0,1)$ the expected

payoffs are thus[1]

$$b_{x_i}(p) = p\left[\pi(a_{x_i}, a_{x_{-i}}, x, x)\right] + (1-p)\left[\pi(a_{x_i}, a_y, x, y) + \pi(a_{y_i}, a_{y_{-i}}, x, y)\right]$$

$$b_{y_i}(p) = p\left[\pi(a_{y_i}, a_x, y, x) + \pi(a_{x_i}, a_{x_{-i}}, y, x)\right] + (1-p)\left[\pi(a_{y_i}, a_{y_{-i}}, y, y)\right]$$

where first element in his expected pay-off function depends on his and his group actions; when he meets other cultural traits, his opportunity set of actions may be different, therefore, with probability *(1-p)* he may choose to continue to play his cultural trait action or adopt the other type opporunity set. In this case, again, his payoff will depend not only on his own course of action but also on that of the other individuals who share a common cultural trait.

It is important to stress the fact that the pay-offs not only on the single individual's course of actions but also on that of the other agents belonging to the same culture.

This allow us the differentiate, for example, between innovative cultures (with contributors agents typical of cultural commons) by setting $\dfrac{\partial \pi_{x_i}}{\partial a_{x_{-i}}} > 0$ and traditional ones (with appropriators of the commonly pooled resources, more present in other type of commons) where $\dfrac{\partial \pi_{x_i}}{\partial a_{x_{-i}}} \leq 0$.

Notice that, in our model, an individual can mimick other types or fully adopt a different cultural trait; indeed, the payoff $\pi(a_{x_i}, a_y, x, y)$ can be interpreted as a payoff of a "conflict" as well as that deriving from opportunistic behaviour (type *x* continuing to adopt his type's set of values and actions in the interactions with type *y* individuals).

Furthermore, the sign and the value of the derivatives can change with the number of individuals belonging to the community; think of congestion or bandwagon effect, so that a positive externality may well become a negative one. The example of imitators in artistic movements is a good example of how individuals may behave in opportunistic way and "tarnish" the reputation of the group.

Furthermore the sign of the above derivatives can differ from individual to individual belonging to the same culture; some being contributors, others appropriators. The payoff will therefore depend with time and on the frequency of contributors and appropriators whithin the group.

Let's, for the moment, assume that each individual acts according to his cultural trait. Further $\pi(x,x) = \pi(y,y) = \pi_s$ (where *s* stands for "same") and $\pi(x,y) = \pi(y,x) = \pi_d$ (*d* stands for "different"), i.e. the payoffs depend only on whether agents meet similar or different players, with no

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[1] Notice that we assume that, until an individual meets a different cultural trait, his actions opportunity set is restricted to that of his cultural type.

differences between the two strategies. The expected payoffs became

$$b_x(p) = p\pi_s + (1-p)\pi_d$$
$$b_y(p) = p\pi_d + (1-p)\pi_s$$

We assume that, at the beginning of each period, some fraction ω of the population may update their trait upon exposure to a "cultural model". The remainder of the population does not update irrespective of their experience. If the cultural model and the individual have the same trait, it is retained by the individual; this will happen with probability p and (1 – p) for the x's and the y's respectively. Given B_x and B_y the payoffs experienced by, respectively, a *x* and a *y* players in a given period[2], The x-player will switch to y with probability $\beta(B_y - B_x)$ only if $B_y > B_x$, otherwise it will maintain his/her own cultural trait. Similarly the y-player will switch to x with probability $\beta(B_x - B_y)$ if $B_x > B_y$. The coefficient β is a positive constant reflecting the reactivity of players to payoff differences. This can vary depending on a number of factors. For "deep" cultural traits acquired during the socialization process occurring in childhood, e.g. a religious belief, its value could be close to zero, while for more mundane traits, e.g. the preferred hair-style, higher values are likely.

With some algebra Bowles (see 2004, 71–73) shows that the change in the proportion of the frequency of x players in each period of the game is given by

$$\Delta p = \omega p(1-p)\beta(\pi_s - \pi_d)(2p-1) \tag{1}$$

Note that the (1) depicts a situation where only two asymptotically stable equilibria exists, where all player share the same cultural traits, while the interior equilibrium for $p = 1/2$ is only neutrally stable, which means that any small perturbation will end up by moving the proportion of x-players to one of the extreme equilibria.

More generally, the internal equilibrium is asymptotically stable only if

$$\frac{db_y}{dp} - \frac{db_x}{dp} = \pi(y,x) - \pi(y,y) - \pi(x,x) + \pi(x,y) > 0$$

which implies (for positive payoffs)

$$\pi(x,x) - \pi(x,y) < \pi(y,x) - \pi(y,y)$$

a condition that cannot hold if we assume that players prefer to meet other players sharing the same cultural trait. In other words, if players prefer to meet other players sharing the same cultural trait, as in the battle of the cultures game depicted above, there is no stable equilibrium but the one where all players hold the same trait.

Notice however that frequency *p* includes true types *x* and opportunistic ones. This can give rise to the coexistence of "appropriators" and

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[2] Note that Bx and By may differ from bx and by, which represent the expected average payoff across the whole population.

"contributors" whithin a cultural commons, modifying the over-all externality effects.

The presence of strong externality effects (positive or negative according to the frequency of innovators and traditionalists in the same culture) allows for a better explanation of the real world phenomena and accounts for multiple equilibria.

In the real world, indeed, the public good and the cultural change game are played simultaneously. This leads to a situation where each player chooses whether to contribute to the traditional culture, to contribute to the innovative culture or to free ride on both (as in the previous game, it is not possible to contribute to both cultures at the same time). Assuming that contributing to either cultures is costly, the only equilibrium of the multi-game is full free-riding: we can hence label this multi-game a cultural commons dilemma.

In empirical situations, some individuals will actually free-ride while others will cooperate by contributing to one of the two cultures. As we said above, cooperation is especially likely to arise among members of the community core, while marginal subjects tend to defect.

However, besides controlling free-riding, individuals coping with the cultural commons dilemma should also succeed in coordinating on the same culture. Subjects that do not share the preference for the dominant culture, may switch to free-riding instead of continue to contribute to their second-best culture. Note that this is an effect of the game interplay since, in absence of the public good problem, their best choice would have been to continue with their contribution to the dominant culture.

This interplay between the public good and the cultural change game helps to explain the dynamics of specific cultures observed in the real world. First, cultures that are not actively maintained disappear because of the lack of transmission to the next generation. Moreover, disagreements between innovators and traditionalists explain why, even with highly motivated subjects, cultures can decline. This because one of the two parts, failing to establish its preferred culture, simply stop to contribute for the maintenance to the current dominant culture.

The same process explains also the birth of new cultures. In mixed situations, player can achieve higher payoffs by splitting the group. For instance, in a situation where half of the players are innovators and half traditionalists, it is possible to improve all payoffs by creating two sub-groups, one encompassing all the traditionalists and one all the innovators. The two groups continue to play the same game, but separately. This is equivalent to the birth of a new culture. The intra-group competition for establishing the dominant culture is now transformed in inter-group competition between two cultures.

5.   CONCLUSIONS

This first inquiry on Cultural Commons highlighted the usefulness of taking into account a multifaceted perspective in the study of community-shared cultural resources. Even if cultural commons do not suffer from overuse, still they have to be maintained and protected from "erosion", i.e. the undermining of their internal coherence following uncontrolled changes. The tragedy of Cultural Commons consists in the risk of disappearing either because of lack of new cultural inputs or due to free riding behavior.

The transmission of a culture to the next generation depends on the increase of the accumulated stock of cultural capital. Without reaching an optimal development rate, culture tends to become stationary, without any dynamic force moving it forward to the next generation. As corollary of this issue there is the distinction between stationary and cumulative culture, and the notion or cultural resilience (Levy-Strauss, 1952). In the case of a cultural commons its survival depends on the production of an optimal quantity of culture to aliment the contribution in favor of the next generation. The transmission of a cultural common to the next generation depends on the stock and flow of local culture, i.e. on the increase of the accumulated stock of culture. Without reaching an optimal rate of contributions a culture tends to become in absolute terms stationary, without any dynamic force moving it forward to the next generation. While in the classic case of commons the problem is that of over-production leading to the exhaustion of common pool resources, in the cultural common case the problem is that of under-production of cultural inputs.

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