

Industrial production and temporary development after the Emilian Earthquake

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ABSTRACT

The earthquake that on the 20th of May hit Emilia has not been one of the most disastrous in modern Italian history, but it has highlighted the problem of preservation of industrial activities during a reconstruction process. In addition, precisely this system, characterized by great vitality and productivity but also by large seismic vulnerability, was the most affected.

Through an analysis of the damages suffered by the industrial facilities, not so much as single buildings but precisely as a system, we want to highlight the challenges imposed by the earthquake: on the one hand, the urgent need to provide for delocalizations and temporary structures to avoid a stop in production in the short-term, and on the other, the re-design and anti-seismic re-planning of productive areas.

A proposal was put forward to create temporary zones adjacent to the

damaged areas, on which temporary structures should be installed. The latter would allow to limit relocations of medium-long range, which are negative for the territory, and at the same time it would allow the flexibility necessary to re-organize the supply chains.

However, in Italy, the management of temporary solutions is seen as a practice too much linked to the emergency and too little to the reconstruction process.

The first measures put into place by both the State and the Regions, however, do not seem to show a true understanding of the importance of management and regulations of temporary solutions in the medium-long term.

INTRODUCTION

This paper takes into consideration the area called "Piana Emiliana", hit by a series of strong earthquakes from the 20th of May 2012, and focuses on the relationship between the resurgence of productive activities and the use of temporary solutions. This text presents part of a study carried out by the working group "seismic vulnerability and urban planning" of INU (National Institute of Urban Planning), which includes a document with the comments to the L. Decree 74/20124, in the four months following the first destructive earthquake. The first part is an analysis derived from interviews, documents and reports about the main issues which characterised this specific case we had to deal with. The second part takes into account some specific proposals about the relationship between production and temporary solutions.

The challenges addressed are twofold: on the one hand, the need to re-start producing in those sectors that were seriously damaged by the earthquakes and, on the other hand, the need to prevent the relocation of economic activities outside the damaged Zone in the transition to reconstruction.

In this case, as in previous reconstruction processes in Italy, actors might not be able to understand how important it is to regulate and plan temporary spaces especially in the medium to long term perspective. In addition, the experts of urban planning and local administrations might see temporariness as an external practice or solution. They might connect this concept to

emergency shelters and Civil Defence, rather than to a socio-economic development of the territory.

In Italy, there is neither a national law, nor a real debate on the subject of temporary solutions. However, both in Italy and abroad, similar experiences have been made and perhaps they can prevent us from considering these temporary zones as simple "parking areas" where people just wait for things to go back to a post-reconstruction "normality".

Yet, temporariness needs to be considered not only as a short-term measure determined by the contingency of the disaster, but as a potential opportunity to help the transition from emergency to "normality". We must not forget that the decisions we take in the early stages of a reconstruction process have consequences in the medium and long term and mark the future of the territory. The "race" to reconstruction cannot sacrifice the regenerative capacity of the Zone struck by the earthquake. To start a proper reconstruction, administrators and politicians need to re-imagine the territory in a shared and balanced way, and to include local communities and local actors, in this case, entrepreneurs, trade associations and unions. And in order to do so, the various local actors need both the help of local experts and resources, and time and opportunities to re-plan their territory. During this process of transition, the socio-economic system must be preserved. This is why management and project-making of temporariness are fundamental. Consequently, this proposal should be seen as mostly focused on a regenerative approach in the medium and long-term perspective, rather than as an emergency response to a shock.

FEATURES OF THE AFFECTED AREA AND TYPE OF DAMAGE

The area affected by the earthquake has the shape of a peculiar quadrilateral, enclosed by highways on three sides, the A1 on the southern border, the A13 on the eastern and the A22 on the western, and by the River Po on the northern border. At its vertexes, we find the cities of Mantova, Ferrara, Bologna, Modena and Reggio Emilia. Within the quadrilateral, the most affected area, there are three major systems: industrial, rural and urban.

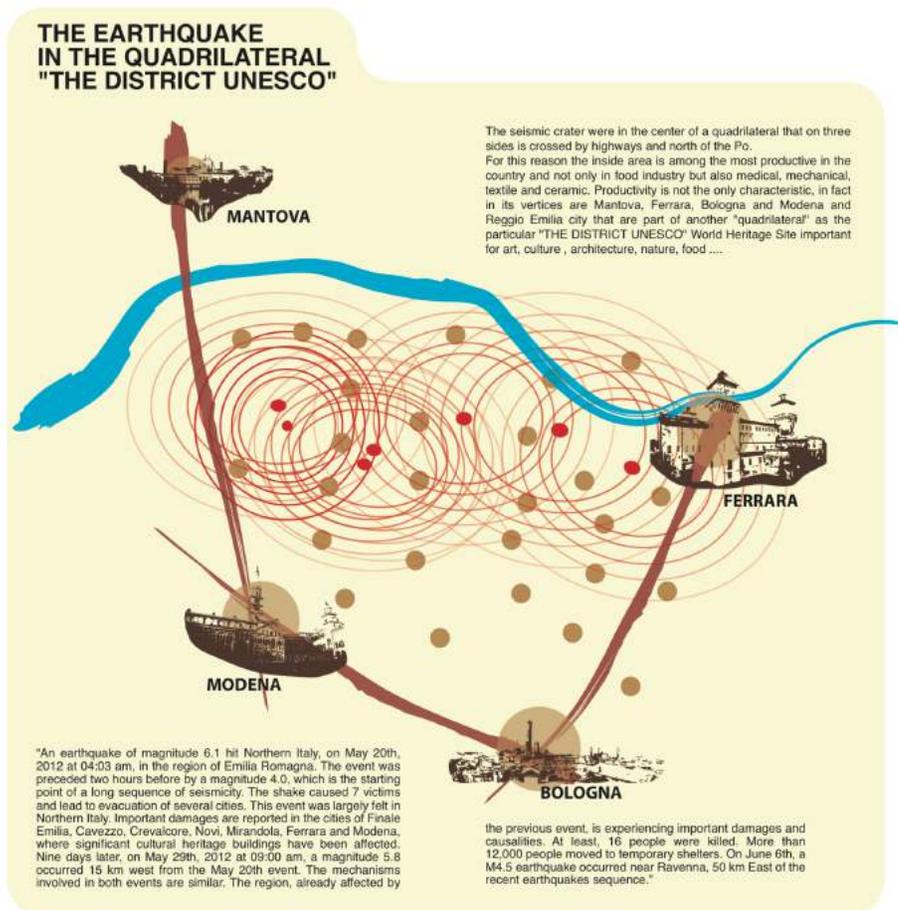


Figure 1 – Diagram of the Quadrilateral hit by Earthquake with its main features. Highlights the relationship between heritage and production.

The industrial productive system in the area is vital. It is among the most important ones in Italy and not only in the agro-industrial sector, but also in the medical, mechanical, manufacturing and ceramic sector.

The rural system is historically organised in “Cascine a corte”, small settlements connected as a network and spreading throughout the Pianura Padana. In recent years, this system has gone through many changes, since not only has it started a process of mechanisation and extensive cultivation, but it has involved more and more farming, thus changing from a pure agricultural system to agribusiness.

The urban settlement system is characterised by both small to medium sized

villages, often located very close to productive areas, and scattered houses. Together with the old Cascinas, the latter create an urban sprawl¹, a “widespread city” intertwined with the other two systems in a way that is often chaotic. It is therefore impossible to deal with the reconstruction and rehabilitation of the productive system without taking into account the other two systems and the “sprawl phenomenon”.

The earthquake, or rather the seismic swarm, hit an area characterized by a strong urban / rural / industrial mix, in which functions, flows and different structures are so interwoven that they almost merge into each other. The damages, however, did not affect the three systems homogeneously, as the industrial system was the most affected. With regard to the rural system, the structures used for production, agro-food processing and animal shelters were damaged the most, whereas rural houses, with the exception of those already in a state of neglect and decay, were only partially hit. Within the urban settlement system, functional structures such as schools, public administration offices and historical buildings like churches, theaters and museums were hit the most. Private houses, and thus the housing system, suffered definitely less in comparison.

If we consider the official data released by the region Emilia-Romagna² related to the inspections carried out in August 2012, we notice that the productive sector had the highest number of unsafe structures. 23% of houses were declared unsafe compared to 52% of productive structures. If we consider the partial unavailability, we have a percentage of 25% compared to 23% of private houses. This is a truly unique aspect in the history of Italian reconstructions. Indeed, never were the damages in industrial system higher than in the housing system.

During the previous earthquake, in Abruzzo, no disaggregated data based on the function of the structures were collected, a direct comparison is therefore not possible. Nevertheless, we can observe that in Abruzzo both sheds and productive structures resisted much more than dwellings. This is confirmed by many case studies about the use of productive facilities for other

1 *PTR Emilia Romagna* <http://territorio.regione.emilia-romagna.it/programmazione-territoriale/piano-territoriale-regionale>

2 <http://www.regione.emilia-romagna.it/notizie/2012/agosto/terremoto-oltre-39000-sopralluoghi-di-agibilita>

functions: the university was temporarily relocated in a productive structure only a few months after the earthquake; shopping centers with structures similar to those of industrial buildings were immediately declared safe and became new meeting places; many ex-productive structures were immediately allocated for both logistics and storage of activities related to relief and reconstruction. It was immediately clear that the housing system was the most affected, since more than 70,000 people were initially displaced and almost other 25,000 in the three years following the earthquake.

Temporally, Abruzzo and Emilia are very similar, but they seem to be at the polar opposites with regard to both the sectors and the types of structures affected. Actually, they are two sides of the same coin: the lack of a central idea addressing reconstruction in Italy. Abruzzo and Emilia face the same problem: the need of a reconciliation of the local socio-economic development with the rebuilding process.

On its side, Emilia has positive socio-economic trends and a solid and innovative political and planning milieu. For this reason, the reconstruction process must not only take into account the needs and issues related to the earthquake, but also the way which Emilia-Romagna³ chose to take in relation to the reorganization of the Ecologically Equipped Productive Areas (APEA) together with the European Community with the Fund “POR FESR 2007-2013”. The provinces of Reggio-Emilia⁴, Modena⁵ and Bologna⁶ incorporated standards and guidelines for the design of APEA in their Provincial Plans. The Province of Ferrara⁷ did that just before the earthquake.

The reconstruction can then become an opportunity not only to reorganize, but also to renovate productive districts. Avoiding to consider this or providing a simple reproduction of the plans created before the earthquake would surely have a negative impact in the medium to long-term environmental and socio-economic development.

But, if wrong strategic choices and policies weakened production, through

3 ATLANTE AREE PRODUTTIVE ATTREZZATE, Programma regionale aree ecologicamente attrezzate (APEA) at the internet Site: http://atlante.ervet.it/apa/main_login_page.php

4 <http://www.provincia.re.it/page.asp?IDCategoria=701&IDSezione=20467>

5 <http://www.economia.provincia.modena.it/page.asp?IDCategoria=228&IDSezione=4501>

6 <http://www.provincia.bologna.it/impres/Engine/RAServePG.php/P/251911360504>

7 <http://www.provincia.fe.it/sito?doc=6DCC208196F70FCCC1257824004ED99B>

an inefficient reconstruction, the socio-economic issues related to reconstruction which afflict Abruzzo might occur anyway, even if at the moment they seem so distant.

THE RECOVERY OF INDUSTRIAL ACTIVITIES BETWEEN TEMPORARINESS AND DELOCALIZATIONS.

Administrators and politicians, in parallel with the reconstruction of the historical and functional public heritage, identified an immediate goal: the preservation of substantially damaged industrial facilities. Consequently, immediately after the earthquake, trade associations and entrepreneurs themselves requested both a certain flexibility in the reconstruction process, in order to attract and encourage investments to preserve their productive systems, and the possibility to install temporary structures to enable a continuity of production.

Short-term issues are linked to the presence of a continuous seismic activity which hinders the continuity of production. The goal is an immediate recovery in productivity.

Straight after the first shock of the 20th of May –magnitude 5.8 – people realized that the productive system had suffered the most and, indeed, five of the seven victims were workers from industrial warehouses. Local companies decided to re-start producing immediately, in order to avoid losing job orders and to fulfil their commitments. A break within production would have been tantamount to an exit from the dynamic and competitive global market, where many of these enterprises were on top, and thus to benefiting national and international competitors.

Nine days after the first big shock, there was another one of 5.8 magnitude. Since production had re-started in many facilities, but without the necessary safety measures and without any risk assessment, many buildings which had resisted the first shake were severely damaged. Twelve of the twenty victims of the second shock were working in buildings that had withstood the first one. At this point, it was clear that a recovery of production within the original structures would be very difficult. Not only collapsed or severely-damaged productive facilities were obviously unsafe, but also those buildings, slightly damaged, that had been built before 2003 *(year in which

the anti-seismic law was conformed) thus making nearly 75% of the structures unsafe.

From INGV⁸, ENEA (Paolini, 2012) and the historical studies of Guodoboni (2012), it is possible to notice that, historically, the earthquakes affecting the area have always been followed by long and strong* earthquake swarms. The ongoing aftershocks of medium intensity which followed the earthquake of the 20th of May confirm this trend.

Companies had mainly two choices: relocate out of the area affected by the earthquake or provide light and safer temporary structures while waiting for an assessment of viability and the potential reconstruction of the original buildings. Obviously, public administrators, associations and local politicians had every interest in avoiding a relocation of local companies, because they guarantee workplaces to the population still living in the territory (the housing system suffered few damages) and they represent the driving force for a socio-economic recovery. All efforts had to focus on preserving production within the affected area. The issue was mainly how to do things rather than what to do.

The DL 74/2012 of the 6th of June, after less than a month from the first shake, Article 3 and paragraph 1, provides financial help for both damages and potential relocations. According to the same article, paragraph 11, the Mayors, after a consultation with both the Civil Defence and the Regions, can choose the areas to be occupied for relocation. Faster procedures for the release of certifications and simplified bureaucratic procedures were put into place and the time required for the release of the Environmental Impact Assessment was reduced by half. Any acquisition of soil was to be made through emergency occupation - Presidential Decree no. 327 2001 TU in the field of expropriation for public use – even though the decree does not clarify whether this was intended before the expropriation. According to paragraph 12, municipalities could provide a possible further increase of 20% of the usable surface during the reconstruction of the structure. The goal of this Legislative Decree was to discourage the relocation of companies by giving flexible criteria for the localization of temporary structures. The decree also gives companies the chance, in perspective, to

8 Istituto Nazionale di Geofisica e Vulcanologia. <http://terremoti.ingv.it/it/ultimi-eventi/842-terremoti-in-pianura-padana-emiliana.html>

expand their surface.

The future use of temporary structures is not specified. Although they are built with the funds destined to reconstruction, in most cases these structures are still private property, therefore some owners could expect land rights. This is precisely what is happening in Abruzzo, where owners of damaged houses were given the opportunity to build temporary shelters within their own property, while waiting for the reconstruction of their houses. These temporary structures had a concession of 36 months, at the end of which the municipality decided to grant the owners an extension of one year. This nurtured their hope to see their land rights recognized, although in a speculative perspective.

Context and scenario are certainly different in the two cases. In Emilia, already affected by the problem of urban sprawl, this issue could alter the complex territorial structure and make things worse.

The decree chose a certain flexibility to encourage companies to stay. However, this decree was not accompanied by a comprehensive legislation, nor by guidelines for the planning and programming of temporary areas. It actually left companies and municipalities a lot of discretion, possibly too much. Therefore, many companies decided to relocate their production in tensile structures within their properties or in areas nearby their previous lots. Others moved into available structures within the affected area, others chose to relocate the production out of the crater, while leaving the administrative headquarter inside it.

The law recognizes the need to provide temporary solutions for production. However, the Legislative Decree 74/2012 sees this need as more connected to an emergency rather than to a stage of reconstruction, even if this is just another very delicate passage of a post-disaster process.

A POSSIBLE WAY: THE TEMPORARY ZONE

In Emilia, emergency measures are already in place. Camps and temporary structures for production have already been set up.

The aim of this analysis is to propose a stage of reconstruction based on temporariness. The goal is to keep the productive system within the Emergency Zone and to make it compatible with the potential exposure to

more seismic activity. Temporary Zones must be immediately available and should not require too much initial planning, since it could take too long. If we consider the characteristics of the settlements in Piana Emiliana, we could think of using a buffer, either around the industrial production area or around company buildings. This would allow the installation of temporary industrial facilities. A buffer creates a "Sector" that includes both the previous and the new, temporary, productive areas. Temporary buffers can be considered as a way to reduce the costs of urbanization and to favour the re-inclusion of damaged companies in their original industrial areas. The creation of sectors, thanks to the buffer, allows the prevention of temporary sprawls that might worsen the problem of urban sprawl already existing in the territory. Companies could also share structures more easily, since they would be able to relocate freely, even if temporarily, within the sectors. Undamaged and damaged companies could therefore work at the same time within the sector, in a more compatible way, thus avoiding the imbalances that new off-site locations or tax-free zones would create.

Very often, local companies do not own the buildings they were using before the earthquake. In this case, the company is in disadvantage and may consider relocation. In such cases, temporary sectors want to be a deterrent to "migration", since they provide the opportunity to continue producing in the area of origin, using facilities at zero cost, and potentially benefiting from subsidies and tax relief. The main advantages of this proposal are:

- It is compatible with year-long seismic swarm, since the structures are temporary and earthquake resistant.
- It allows an immediate return to production through temporary regulation. It avoids unplanned and informal solutions that could be detrimental to the urban setting of Emilia.
- It keeps the manufacturing districts as flexible entities, thanks to the possibility of expansion or contraction and to the internal and external flexibility of the sector, which are based on needs such as sharing facilities with similar or compatible companies.
- It provides the Reconstructive Planning with a real, clear and dynamic frame about production, thanks to the monitoring of the Sectors. It also allows a re-planning of the production within the area,

not according to the scenario prior to the earthquake, radically changed, and not according to projections and estimates, as was done before. Indeed, the latter, in the case of post-earthquake scenarios, have often proved distorted and have led to missed opportunities in the field of socio-economic development (Irpinia is the best example of this).

- Being "stem"⁹, Temporary Zones allow productive rearrangements and territorial reorganizations in a more flexible and dynamic way.
- In the long term, the use of land is reduced, assuming that the areas used for temporary production will be used again as before the earthquake.
- The Temporary Zones are to be considered as an extraordinary element for the strategic planning of large areas in need of reconstruction.



Figure 2 – Example of application of Temporary Zones in Cavezzo, a settlement hard hit by the earthquake. Highlights buffers around industrial damaged areas.

In order to create temporary zones, it is important to identify an appropriate way to manage land use. Expropriation is definitely to be avoided since it is definitive and very expensive. Moreover, while reconstructive processes are

⁹ The use of the word "stem" should be understood in the sense of creating areas ready to re-develop as they wish within the local production system, without predetermined variables and specific production functions.

extremely dynamic, expropriation is inherently static.

In case of emergency, lands are often bought on the ground of "a temporary occupation for the utmost urgency". However, in case of a temporary reconstruction, this utmost urgency is not applicable. The relationship between reconstruction and productive network should not be spoiled by contingency and emergency, but by a shared goal: a return to normality and a collaboration to create a plan for reconstruction.

This is why there is an attempt to evaluate, experimentally, an instrument called *Servitù*¹⁰. The definition according to the Civil Code of *Servitù Prediale* (art. 1027 cc) is: "*servitù prediale* consists of a tax imposed to a fund in order to use another fund which belongs to a different owner". This legal instrument is the only ordinary one regulating the temporary use of a lot for public benefit not included in the TU on expropriation, Presidential Decree 327/2001.

It may seem a stretch, but the goal is to make a distinction between temporary and emergency measures, especially expropriation. A system based on temporariness created using the *Servitù* would connect the occupation of a lot to a regenerative process, reducing the risk of an excessive prolongation of the occupation. The *Servitù* is temporary by definition and cannot be converted into a definitive acquisition, since it is connected to public benefit and more specifically to the reason why it was created: rebuild.

The cost is well below the cost of an expropriation and of an emergency occupation. And, since public money is spent on reconstruction, saving is a priority. This method can be provided for public benefit within the temporary zone and can be required by both the public and the private sector.

The *Servitù* is now used for specific works, such as power lines or aqueducts, and, more commonly, for passages to and from a dominant holding. In our case, it is necessary to consider the damaged industrial area as a site of public interest and the dominant holding, even if privately owned, together with the buffer of Temporary Zone, as an area functional to repairing.

¹⁰ In English, this legal term is translatable by "easement" which refers to the right of a landowner to make limited use of the property owned by another person, usually referring to a right of access.

ANOTHER MISSED OPPORTUNITY TO DRAW UP A STRATEGY FOR A SOCIO-ECONOMIC RECOVERY IN THE TRANSITION TO RECONSTRUCTION THROUGH TEMPORARY SOLUTIONS.

The document presented by INU in July 2012, which includes this study, presented two proposals as first point: the relocation of productive activities nearby previous industrial sites (temporary zones) and the use of the *Servitù*. With the law 122/2012, the Government actually followed the LD 74/2012 and chose to avoid a definition of tools and criteria for relocations and temporary de-localisations. It also left discretion to individuals and local administrations, therefore leaving the current planning as point of reference. According to this law, the Regions, body of Territorial Government, are responsible for potential plans for reconstruction.

Therefore, the Law 122/2012 has not allowed any step forward in the management of temporary solutions so far, it simply lets regional laws prevail. This is logical if we consider that local territories are administered by the Regions in the medium term. However, it is not, if we think that no indications or guidelines are provided and that it would be appropriate to outline some, by using previous experiences combined with the excellent skills of specialized structures and higher institutions.

The Regions know both context and places, but it is the Government that must understand the post-earthquake scenario properly and must suggest an idea-guide. In Italy, unfortunately, there is no national idea-guide providing practices and strategies, and it is contingency, if not improvisation, that rules (Nimis, 2009).

The Region Emilia Romagna, with Lr. 16/2012, should have given precise details about the rules to follow to draw up a plan for reconstruction and to plan the interventions and the management of funds, and even details of temporary solutions, from regulations to management, including the decisions about time and way to remove them.

Article 4, paragraph 14, rightly extends the maximum of 90-day period of those works whose goal is to meet objective emergency and temporary needs. The limit is postponed until these needs are met, and “anyway no later than the date in which the properties destined to production, repaired,

restored or reconstructed, are available again". According to the same article (Art. 4), temporary productive structures will have to be removed permanently, but the owner is given the opportunity to acquire a final permit for his/her temporary structures, only if established by the Reconstruction Plans. Article 4 does not solve the problem, since many owners still potentially expect to obtain a permit for their temporary structures.

In order to define the use of soil, this law once again proposes both expropriation (Art. 14) and temporary employment for the utmost urgency. These solutions are temporary and definitely not flexible. They are more related to the need to create new spaces to cope with an emergency, rather than to an assessment of the effects of these occupations in the medium to long term.

Once again, the region has given priority to temporary solutions implemented in private lots, that cannot be controlled directly, and to rigid temporary solutions such as expropriation, leaving the post-reconstruction fate of expropriated areas unclear. This does not seem to be a very good choice, and neither is the decision to allow relocations if there is a perspective plan in force, but which is not working at the moment of the earthquake. In fact, a dynamic scenario, radically changed during the transition, may not automatically make pre-earthquake predictions appropriate.

The risk is that the reconstruction of productive structures will be completed, while in the meantime companies are relocating elsewhere, thus producing negative effects especially in the medium to long term perspective. In case of food or ceramic companies this risk is low, since the quality and the unique characteristics of the product make it inconvenient to relocate, but it could be very high in case of mechanical or medical companies. Both the crisis and globalization, even before the earthquake, made it particularly convenient to relocate abroad and, once tax incentives and subsidies related to reconstruction are reduced, a temporary or definitive "migration" of companies could be a reality.

Today, six months after the earthquake, it is impossible to assess whether any of these trends is real, we need to see what happens in the next few months. However, it is possible to conclude that, even in a region which is the best example of good governance, with positive socio-economic trends, which did not suffer excessive damages, we failed to put into place a reconstruction process based on strategies, practices and innovative or

regenerative actions that might take into account the period of transition before a future settlement.

In the end it is incomprehensible as it sought immediately to bind the reconstruction of the industrial areas to the principles of APEA. Certainly the ordinary planning contains them, but reaffirm the criteria of rationalization and sustainability of these areas in the laws of reconstruction, would be very useful also in consideration of the phenomenon of sprawl and the need to "rationalize" the Emilian territory.

Reconstruction, once again, was seen as a "black hole" from which we had to get out quickly and informally, not as a useful process, functional to an improvement of the area.

The temporariness and the transition are still conceived as contingencies to standardize and regulate as little as possible in expectation of a return to the "ordinary" government of the territory and planning.

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