Towards advancements of a knowledge-based economy: Suggestions from the Gaza Phoenix strategic plan

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Abstract

Knowledge-based economies appear to have strong relations with tradition and identities in social organizations. Complex settlements coming from varieties of language and stories and of special relations between human agents and space are knowledge-based fabrics for intensive knowledge-based economies. This paper explores the potential for Gaza's reconstruction through an endogenous development strategy rooted in regional science research, focusing on traditional sectors, youth engagement, symbolic places, and human capital development as pillars for building a resilient knowledge-intensive economy.

Keywords

Knowledge-based economies, Regional development, Endogenous growth, Youth engagement, Human capital, Gaza reconstruction

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Introduction

Intensive knowledge-based economies are current protagonists of intensive growth. Knowledge-based economies appear to have strong relations with tradition and identities in social organizations. Cities as concentrated settlement spaces of agents and knowledge production are now seen in critical relation with empty spaces as producers of ideas. Complex settlements coming from varieties of language and stories and of special relations between human agents and space are knowledge-based fabrics for intensive knowledge-based economies. Ontological models can be useful to reason on these dilemmas and to avoid abandonment of important social organizations of space at the crossroad of concentration and dispersion in knowledge production.

Intensive knowledge-based economies

Intensive knowledge-based economies are credited today with growth rates much higher than what happens for others. We refer here to economies performed by agents and multi-agents who for some reason are able to do things or activate production processes that are uncommon in the markets because of their creativity complexity.
The assumption above is of course in line with the mainstream classic and neo-classic economic theory: goods that are uncommon because of their difficult generation or conservation are priced much more than those that are abundant because of their easy life. Intensive knowledge-based economies in the vein of our discourse can relate to both 'internal' and 'external' features of their space-based systems (Borri et al. 1996; Lichfield et al. 1998). Of course, our discourse refers to static-discrete or dynamic-continuous

constitutive situations. Intensive and uncommon bases of knowledge are in general created by specialization, which means by the recurrent and resolute use in a specific way by agents and/or multi-agents of cognitive resources that are easily available to them because of their local (i.e. in the agent's and/or multi-agent's circle) abundancy (Friedmann 1987). The multi-agent production of a well-tailored knowledge-based mixed trade economy by the Lubeck circle or industrialists-merchants in the Baltic sea corridor environment could be modeled in abstract way as the type of a dynamic-continuous specialization in a multi-good market fabric: a situation whose persistence-of-existence today with the society living there is probably unclear. The multi-agent production of a well-tailored olive oil soap-based economy by the Palestinian circle of peasants-industrialists-merchants along the Mediterranean coast could be modeled in abstract way as the type of a static-discrete specialization in an individual good regional space market: a situation still existent.

Both the Baltic coast and the Mediterranean coast in the Middle East with their cities need cognitive and commercial corridors: the sea with its ports cannot but be complemented by land - a problem which is technical and political. Concentrated and/or disperse spaces where knowledge is cultivated, with their typical scenes (schools, labs, communities, etc.), are potential powerful generators of knowledge-based productions.

Ontologies of knowledge interaction

Memories of interaction with the environment are fundamental pieces of knowledge for living agents who continuously create images of the reality in which they are functioning, by senses as detectors and brain as a central

machine for elaboration of its physical and virtual interaction sceneries, in which the non-living agents are also fundamental (Anderson, 1983). All this exists in fertile and also fragile situations where specialization-construction and generalization-abstraction of the interaction among agents by reinforcement mechanisms (Anderson) is the key of an ambiguous 'door' which is also essential transient between 'life and death'. Where there are limitations to interaction capacities hierarchies are introduced as generalization-abstraction mechanisms to reduce the amount of interactions: now artificial machines with increasingly massive repositories of memories and speed of computation seem to promise the elimination of the fallacies of hierarchization.

Sceneries

Cities are natural and artificial spaces-sceneries crowded of objects and processes which are illusory places where powerful knowledge and intelligence creation machines are located. Cities and now increasingly megacities are plenty of objects and processes and interactions and repetitions so that they seem to be able to cultivate knowledge and intelligence without particular efforts even if they structurally lack of the death side of reality which is the existence and functioning in isolation. Spaces without cities able to put a living agent in direct contact with its generation ground are probably more fundamental means for cultivating deep knowledge and intelligence being far from massive artificial sets with their inclination to construction. Spaces with or without settlements can present impressive sceneries of integration between human beings and nature still fully operational for contemporary life: impressive because of their impressive histories and identities with their impressive

remains and still operational agentivities, impressive because of their sustainable coexistence with the 'natural' environment. Here, we define the above sketchly described spaces of human life as Sustainable Settlements. Sustainable Settlements today are not abundant because of human behaviors characterized by a detachment between humanity fundamentals and context fundamentals and can be cultivated as powerful agentivities for sustainable economies.

Sustainable settlements and knowledge-based economies

Fostering traditions and local identities in urban and regions and nets and poles of innovative knowledge exchange and production based on those traditions as keys of advanced and resilient knowledge-based economies. Keeping dialogues between spatial concentration and spatial dispersion as models of sustainable settlements and as generators of knowledge innovations. In Bengaluru the Indian Institute of Technology, as a multiagent innovative knowledge production pole, hosts intriguing dialogues among agents coming from the traditional villages of the surrounding rural India of the Karnataka region and agents living in a forefront research and teaching pole of world: I remember students in mathematics and informatics arguing defense there in favour of empty spaces against the proliferation of cities and megacities. Suggestions coming from the splendid visibility of the stars in the night presumably foster emotions and curiosities and from these the spreading of abstract cognitive abilities: think of the Newton confessions on the point regarding what happened to him when working to his Principia Mathematica, early XVII century.

In the Bengaluru IIT, credited as the best in the Indian circle of five, the Ganesh God can be near to these extremely skilled cognitive agents, to help them in their crises from daily life failures. Rana Dasgupta (2014) in his Capital: The Eruption of Delhi, in analyzing the recent economic booming of the city, end of XXI century, makes evident how this megacity is coming back to the Gods of its constitutive environment by correcting the errors made by the British planners in the XIX century in the enlargement and reconstruction of the original system of villages because of their fighting again the spirits of the place. The concept of an innovative milieu is well established in applied economics and regional science (Camagni, 1985, 1995; Camagni, Capello, 2005): it postulates the importance of networking of socioeconomic agentivities and of learning activities and learning organizations (Schon, 1983; Schon, Rein, 1994). Now individual and multiple agents, natural and/or artificial, with their indispensable relations, populate the scene of new types of knowledge-based economy.

Rationale integration in knowledge-based social processes

In the current vein of studies on natural and artificial intelligence knowledge-based processes in both individual and multiple agentivities are credited with complex and frequently powerful problem solving abilities when they integrate different rationales, let's say for example calculus and emotion (Minsky 2006). For future situations of advanced knowledge-based economies in a variety of sophisticated technological domains the careful conservation of cultures, computational and emotional creativities and interaction abilities, languages, organizations, productions, traditions, to cite only of a few of the resource

set offered by cities and regions still not destroyed by routine simulation models.

Rebuilding the public space

The post-war economic reconstruction of Gaza could be grounded in a comprehensive and ambitious infrastructure plan. Immediate priority the rebuilding of essential public and private facilities, including social housing, schools, healthcare centers, and civic spaces, to restore the conditions necessary for a dignified and functional daily life for all the inhabitants.

Tradition pillars for the endogenous development strategy

A revitalized regional economy should draw upon and reinvigorate the area's traditional productive sectors: namely, the maritime economy, commerce, and agriculture. These sectors should constitute the foundational pillars for reducing the region's alarming unemployment rate and represent the core drivers of an export-oriented development model based on endogenous resources. However, sustainable economic recovery requires more than sectoral investment: it necessitates the articulation of a long-term endogenous development strategy that combines robust public investment with dynamic private sector initiatives.

Recent regional science studies show that local economies rebuilt on endogenous foundations are more resilient when rooted in the historical competencies of their territories. According to Urban Science, traditional sectors can evolve into a "smart heritage economy", capable of integrating

ancestral knowledge with contemporary technologies. The International Journal of Cultural Economics reaches similar conclusions, recognizing traditional productions as strategic assets for attracting cultural investment and triggering high-quality economic regeneration. AISRe research highlights that strengthening rooted competences—from fisheries to light manufacturing—helps consolidate community ties and territorial cohesion, prerequisites for reactivating development spirals. For Gaza, this means transforming traditional sectors into knowledge platforms that connect local expertise, productive innovation, and regional logistics networks.

Focusing on youth

At the center of this vision, we propose the creation of an innovative territorial milieu: an enabling environment that fosters social cohesion, knowledge creation, and sustainable opportunity, particularly for the younger generations. The youth of Gaza have borne the brunt of the war's devastation and trauma. Thus, a cornerstone of the recovery strategy must be the implementation of a comprehensive program of mental health and psycho**-**social support to address the profound psychological wounds inflicted upon this generation.

Recent literature shows that young people represent the strategic core of reconstruction in territories affected by deep crises. Urban Science identifies that territories investing in learning spaces generate "youth-driven innovation cycles", crucial in post-conflict contexts. The International Journal of Cultural Economics notes that youth engagement in cultural, creative, and community processes significantly increases resilience and long-term productivity. AISRe studies further demonstrate that young people, when

equipped with relational capital and educational opportunities, act as "multiplying agents" in building cooperative territorial networks. For Gaza, this requires integrated programs of psychological support, advanced training, entrepreneurial incubation, and civic participation, designed to activate the transformative potential of the new generation.

The fundamental role of symbolic places

We also propose the establishment of a symbolic «Place of Peace and Memory»: an open and inclusive public space dedicated not to revenge but to remembrance, reconciliation, and renewal. This site should serve as a powerful emblem of Gaza's resilience and its aspiration for a peaceful future in the broader Middle East. In tandem a robust strategy for institutional development is required, aimed at strengthening democratic governance, civic engagement, and local leadership. The consolidation of transparent and participatory local institutions is essential to ensuring long-term peace, legitimacy, and social stability.
Regional science gives increasing weight to symbolic places as catalysts of social cohesion in reconstructed territories. Urban Science indicates that public spaces designed as cognitive infrastructures facilitate reconciliation and collective learning, activating "place-based healing" dynamics. The International Journal of Cultural Economics shows that memorials and civic spaces can function both as cultural and economic devices, stimulating creative microenterprises and reinforcing community identity. AISRe research stresses that these spaces gain strategic value when integrated into inclusive, transparent, multilevel governance processes. For Gaza, developing a "Place of Peace and Memory" and a system of participatory local institutions

would provide a foundational infrastructure for anchoring reconstruction to a renewed social contract.

Human capital, education, and innovation: Pillars of endogenous growth

The most strategic investment for Gaza's future lies in the domain of human capital. This knowledge-based development approach is essential to curbing the brain drain and cultivating a new generation of local leaders, entrepreneurs, and scholars capable of steering Gaza toward a resilient and prosperous future. In this regard, we strongly advocate for the launch of a comprehensive scholarship program to support thousands of young Gazans with full access to higher education, both locally and abroad. Such an initiative would represent not only an investment in the region's economic regeneration but also a profound commitment to peace-building and inter-generational justice. Priority must be given to the reconstruction and modernization of the educational system, including: rehabilitation and expansion of primary and secondary schools, universities, and research centers; investment in teacher training, curricula development, and the provision of adequate learning materials and infrastructure; establishment of innovation hubs, technological incubators, and international academic partnerships; promotion of gender equality and universal access to education.

Recent regional science literature agrees that endogenous growth in post-crisis territories depends on the quality of educational institutions and the ability to generate advanced human capital. Urban Science demonstrates that territories investing in schools, universities, and research centers develop "knowledge-intensive recovery paths". The International Journal of Cultural Economics highlights the

role of cultural and creative industries as bridges connecting education, talent attraction, and productive diversification. AISRe studies confirm that regions capable of linking vocational training, businesses, public administration, and civil society consolidate collaborative ecosystems generating high-value development. For Gaza, this means building an integrated educational infrastructure—schools, universities, research centers—supported by scholarship programs, innovation hubs, and international partnerships to reduce brain drain and cultivate a new generation of professionals and researchers.

Recent regional science research shows that territorial reconstruction succeeds only when the spatial dimension of development integrates with the cognitive one. Studies published in Urban Science indicate that territories hit by acute crises can reactivate growth trajectories only if physical reconstruction is accompanied by the creation of new "knowledge nodes" capable of attracting skilled human capital and generating collective learning. Similarly, work in the International Journal of Cultural Economics highlights the role of local identities as intangible assets that, when recognized and enhanced, strengthen socio-economic resilience and the capacity of territories to absorb innovation. Recent AISRe contributions confirm that the quality of interactions among communities, institutions, and productive spaces is crucial for transforming fragile areas into development ecosystems. For Gaza, this means designing reconstruction not only as infrastructure rebuilding but as the creation of an open and collaborative cognitive milieu able to sustain a knowledge-intensive economy.

Conclusions

Rehabilitation and/or reconstruction of built spaces of urban and regional spaces as occasions to promote insights on complex spatio- and socio-environmental equilibria and dialogues created by culture, tradition, and history building and to create on them sustainable economies and settlements and sophisticated knowledge fundamentals and ontologies in the vein of the uncommon legacies social and environmental legacies

Fostering cognitive poles based on both existing and new situations as tools and ways of strength for the new socio-environmental challenge

Investing in youth and in new integrated rationales made of calculus and vision, of computation and emotion in intensive knowledge-based sustainable settlements

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