

REDUCTIONISM AND HOLISM IN THE STUDY OF LANDSCAPE- CULTURAL MOSAIC

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IPSAPA/ISPALEM conference of 2013 was devoted to Utopias and Dystopias in Landscape and Cultural Mosaic. This article explains the conceptual reasons why a selection of papers connected with the conference and not yet published, is collected under this suggestive title that highlights two conceptual frameworks where utopia plunges its roots. Like previous ones the conference aimed to stimulate critical reflection and debate, by drawing not only on the dreams of beautiful projects but also on the disappointment of unrealised ones and on the distortions that rise when different tendencies clash. Greater attention was given to the ever so important issue of assessment, which is in a way an exaltation of critical reflection: how much is what we know about “worth”? How much is it worth for *whom*? How *long* will be worth for?

A key suggestion in the call for papers was Friedman’s definition “*utopian thinking: the capacity to imagine a future that departs significantly from what we know to be a general condition of the present....In the peculiar form of dystopias, utopian thinking may alert us to certain tendencies in the present, which, if allowed to continue unchecked and carried to a logical extreme, would result in a world we would find abhorrent*”. The authors were suggested to avoid too general models and theories, and start from actual scenarios. They were invited to discuss the conflicts arising from different utopias and particularly between utopias and the real world, so as to consider spatial forms in their temporal evolution and not only as finishing points, neglecting those intermediate phases that are often concealed by the saying “the ends justify the means”.

The age-old dystopia between city and countryside must be overcome. Border areas have never been unambiguously defined and are formed by the combination of numerous tesserae that, at times, are juxtaposed like proper mosaic tesserae, and at times represent mixed areas where the single components become blurred and indistinguishable. Mathematics supplies some consistent conceptual schemes of interpretation, more or less sharp, but the real world is merged in history and cannot be easily reduced to theoretical (and thus utopian) frameworks. One’s desire to classify and separate must give way to the analysis of merging, dissolution and enlargement of borders, just like Gottman did in his much praised (but also criticised) *Megalopolis*. Conceptually the same

no man's land between city and countryside may be applied to structural webs, loosing thus the dimensional constraints and enriching the study with new, powerful structures, such as Barabasi presented in his celebrated book (A.L. Barabasi (2002) *Linked, the new Science of Networks*). World Wide Web is nowadays the fundamental example, but also multidimensional communication nets (airlines, telecommunications) and webs of knowledge, both classical and technological are fundamental examples. What is the "city", what is the "countryside"? Where do borders lie? These questions are not explicitly dealt with in this volume, but the fourth section does not ignore them.

Gluing together inconsistent sections of reality is one of the simplest forms of utopia, and was widely explored since the ancient poems and fables, achieving astonishing results in the pictorial representation of the Last Judgement, that, starting from Middle Age, developed into the most oneiric paintings of Bosch and Bruegel. Surrealism is one of the modern forms of utopia founded on inconsistency and absurd, as was shown by De Chirico and in particular by Magritte.

Utopia implies reductionism? Dystopia implies holism? Or rather, is reductionism utopian? Is holism dystopia? Utopia should start from scratch, requiring thus that every new element be defined and described. Hence it cannot be realistic in itself. In order to fill the gap between a utopia and a sound fantastic but realistic image a mnestic effort is required. The capability of the utopian thinker requires that the fantasy of the interpreter be directed in a suitable way (realistic or antirealistic, it depends) by the use of references and comparisons. The gaps are thus filled as it happens in movies derived from novels, where, as any director knows, you cannot have, say, colourless grass, while in novels, but not in pictures, undescribed hence colourless things exist. An amodal completion is continuously performed, and sometimes completion cancels the effect of utopia, while, when utopia is successful, the imaginary background is consistent with the global effect.

Apart the "official" utopian writers, an English reader can find a pregnant experience of space utopia in Gulliver's Travels, while for an Italian reader the most accomplished utopia is described by Dante in his Comedia. Like the classical poets (Vergilius in particular) the underlying completion is suggested rather explicitly by means of systems of comparisons, and the main frame is the geography of Italy and Mediterranean world of thirteenth century. Utopian is the inconsistency of distances: for example it takes only three days to reach the centre of the earth, and much less to emerge on the opposite side. When it comes to Paradise, where no more earth reference is available, almost all references are taken from physics and geometry. The effect is much more refined but perhaps boring in comparison with the terrestrial scenarios of Hell and Purgatory. Also the description of utopian actions spread over time is different. For example the transformations of the thieves in 25th canto of Hell were founded on

superimposition of different systems of reference, and was well summarised by the cry

“Alas! Alas! Agnello, how you change!
Already you are neither two nor one!”

Hell, 25, 65-66 (Translation by J. Ciardi),

while an exemplar Paradise scene of leave is Piccarda’s vanishing:

... and singing, sank from view

Like a weight into deep water, plummeting

Out of my sight ... Par. III, 122-124 (Translation by J. Ciardi),

Two extreme forms of utopia are at hand: a utopia that refers to an existing world that is strained, changed, somehow twisted, and an abstract utopia, where only scientific images and conceptual models are at hand, and no material reference is any longer available. Pure utopia is founded on order and uses theoretical models that allow drawing an abstract synthesis of the leading structure of phenomena. Of course this scientists’ scheme is exceedingly reductionist, hence is not fit to represent the complexity of the actual world: it allows only a *lectio facilior* suitable to simulate extreme cases that cannot happen in the real world. Probability calculus with its underlying theory, fusion of different models, addition of parameters allow tailoring better representations, but unfortunately they lose explicative and provisional power. Thus a situation of logical dystopia arises from the search of perfection.

Holism finds its roots in unstable phenomena, where bifurcations arise so that any small perturbation, even much far away, might contribute to the choice. Thom’s Theory of catastrophes (*Stabilité structurelle et morphogénèse*, 1972) must be kept in mind. Of course according to system theory a signal amplifier is required, hence there must be a non vanishing chain that connects the bifurcation with the far away cause. Mostly in holistic representations of utopia this chain does not exist, hence from a logical point of view this is a conceptual dystopia. History gives examples of cumbersome connected sequences, but as it is well known they have a (near)-zero probability of being renewed, so that the models can be used only if they are studied in their depth. A case study cannot simply be copied following all inessential detail and forgetting, or not understanding, some structuring laws. Very often the repetition of a phenomenon loses strength because the participants are no longer inexperienced, and there may be also a saturation effect. Anyhow the problem of defining the equality of two temporal paths or the equality of two complex abstract structures, such as nets, is by no means trivial, since perfect equality does not exist, hence some distance function, and some thresholds must be established. Again mathematics supplies consistent systems of valuation, and moreover

makes it clear which features are highlighted and which features are left in the background. A further hindrance lies in the lack of completeness of the original measures of phenomena, hence a fuzzy system of distances must arise. Fuzziness stimulates fantasy, but leads to dystopia.

There are two ways of viewing spatial utopias: one perceives order as separation, seclusion, destructuring into distinct layers, the other considers totality in terms of access, holism, polymorphism. The utopian dream of totality often causes a loss of roots and identity, creates a vast indefinite area where each individual becomes interchangeable, while the opposite dream of order prevents from seeing the bigger picture because focus is placed on the intricacy of tiny details.

According to some scholars of psychology the definition of spatial utopia should not be used, since utopia means “in no place”; but for practical purposes it seems that the definition fits well ranging between the two extreme poles of destructuring and polymorphism. After all, the works of contemporary great architects show that a theoretical, mathematical structure can be transformed into giant images where space and light seem to violate the physical laws, first of all gravity. Utopia becomes real, but is still recognisable as utopia; the boundaries between utopia and reality are not so sharp that cannot be crossed, as can be checked reading science fiction or watching sketches and plans by painters and architects. Comparing with the present not everything became reality, but most of what was envisaged has already become, or may become true.

A more complex utopia regards the dimensional jump, where a transition from reductionism to holism can arise. The leap between two and three dimensional space reflects the most ancient aspiration to conquer landscapes with the erection of taller and taller towers, with daring and challenging climbing, with flying machines closer and closer to the freedom of birds. Equally important is the transition from one to two dimensions, when exploration paths are no longer sequential and imposed – reductionism – and become free like random walks and labyrinths – holism - just like in the high seas, or in some parks or indeed in playing fields. Borders, as is pointed in the fourth section of the book, lie in an intermediate dimension between the line and the surface. Mathematics has provided a framework for understanding these phenomena long before Mandelbrot published his fractals. Nonetheless, uncertainty about dimension is always deeply felt along sandy coastlines, in lagoons, on cliffs, and along the alleys of medieval towns. Panoramic roads that have been constructed to create bi-dimensional penetrations through a tool that is by nature one-dimensional represent an interesting specimen. Today they seem no longer to be fashionable – due to their invasive, hence dystopic nature – and are replaced by less impacting tracks dedicated to bikes, horses, carts, which try to achieve bi-dimensionality by networks rather than by involved curves.

In the book (just like during the conference) the balance between reductionism and holism is divided in four sections and time evolution receives a special stress; the four sections are

Revisiting or re-living the landscape-cultural mosaic?
Changes of scale between project and perception
Contingent and secular changes of value
Different levels, different players, different scales.

Revisiting or re-living the landscape-cultural mosaic?

The first section is strictly connected both with time and with space. It highlights the fundamental problem of re-using the structures that come from the past. Once the problem was easily solved, since both pulling down and building were highly expensive, hence all what survived from the past was to be adapted and re-used, with changes so little as possible. In modern world the foundations of Venice palaces and houses represent a rare example of conservation due not only to archeological and historical reasons but also aimed at reducing costs and (especially) avoiding risks. In general the choice is between the museification of the ancient structure, leaving it essentially to cultural purposes, provided it is economically sustainable, or the formal conservation of the envelopes with radical changes in the interior structures in order to adapt them to a completely different use. The cases of continuity or analogy of use are not so rare, but are very specific: many churches have an uninterrupted history, with some holes when they were used as depots or refuges, or became art exhibitions or libraries – art, culture and science are always felt as a part of a religion. Similarly monasteries and convents, when they survived, are often used as schools, public offices, barracks, and when they are away from the city, as hotels and convention centers: a substantial continuity of use and also of typology prevents the decay of the institution. Industrial Archeology, especially when it must deal with entire ghost industrial cities, is much more problematic, because of the dimensions of the sites and the usual lack of economic sustainability.

In some case the conflict must emerge, when integral conservation prevents modern evolution of infrastructures: where does dystopia lie, in the philological stubbornness or in the greedy need for underground or other modern connections? Is mitigation a solution, or is it better a strong landmark that symbolically reassumes past and future?

In this section the reader can find 6 papers.

1. **Federica Arman** (*Parma*)
Restoration of disused railway sidings in the landscape of the near future

2. **Daniela Cinti** (*Firenze*)
The restoration and the improvement of the via Ariminensis: roman consular road between Arezzo and Rimini
3. **Rossana Netti** (*Torino*)
Urban archeology in Kos (Greece): a project for the hellenistic Agora
4. **Andrea Pirinu**, Giovanni Sistu (*Cagliari*)
Landscape design – analysis of the territorial dynamics as a tool for urban planning. An application to the coastal context of Planargia (Sardinia, Italy)
5. **Elvira Reggiani** (*Roma*)
Infrastructures and archeology: new metropolitan subways within a historical context
6. **Riccardo Rudiero** (*Torino*)
Factories and industrial cities: in utopian planning, the utopia of conservation

Changes of Scale between Project and Perception

An important source of dystopias lies in the possible inconsistency between project and perception. Project operates on an existing framework that cannot be completely tailored. Hence the project will operate as a re-writing like a palimpsest, not only during its execution but also after its accomplishment. Anachronism and inconsistency may stand out in spite of careful project. Some solutions are easier when new emergencies are founded such as towers and geometrical changes to the skyline, but a thorough landscape planning is much more difficult to be planned especially when it must glue the existing reality with the new envisaged idea and the space of perception is compressed. It happened often that a project was ambitious and rich enough to allow a consistent insertion in the existing landscape, but the lack of money, or the times too long, followed by a change of fashion, prevented the achievement of the original plan, so that only some parts were completed. The intermediate period – that of fractional interventions, of “one lot after the other” – is not to be eternal and must not represent the end. Otherwise a dystopia arises in the very interior of the project, and requires a further work of mitigation in the interstitial spaces, both for perception and for functionality. Uncompleted functionality is actually a main cause of economic, perceptual, and social reject of new projects, and public administration is continuously confronted with these ghost-city scenarios, subject to critic and spiteful remarks, as it is often the case in urban parks. An incomplete utopia is almost always a dystopia because it creates an unfinished environment that will be reused for other purposes that elude project control also in terms of their social impact.

Some plans and problems are discussed in the following 5 papers.

1. **Filippo Angelucci, Michele Di Sivo** (*Chieti-Pescara*)
Resilience and quality of the built environment between vulnerabilities and new values. The role of technological planning
2. **Raffaella Campanella** (*Reggio Calabria*)
The landscape in urban projects. From simulacrum to vicarial entity

3. **Giovanni Battista Cocco** (*Cagliari*)
Docking again. "Landscapes of care" for Buggerru mining centre
4. **Alessandra Pagliano, Angelo Triggianese** (*Napoli*)
Between "visual art" and "land art": poetry and geometry in the anamorphic landscapes of Felice Varini
5. **Severino Romano, Mario Cozzi, Paolo Giglio, Francesco di Napoli** (*Potenza*)
The effects of the new common agricultural policy on the cereal sector in the Basilicata region

Contingent and Secular Changes of Value

The section deals mainly with evolution in time and its inconsistencies, and is less related to spatial considerations, even if some reference the evolution of urban boundaries, their value and their dynamics are dealt with. Both the evolution of the importance of a city and the evolution of the attractiveness of a resort are complex phenomena that depend on global, hence exogenous, facts. The complexity of the scenario cannot reduce the local responsibility, since the higher the capability of resilience is, the greater is the possibility of overcoming stormy periods of economy or fashion. Of course elasticity and capability of innovation are a strong pledge of success, but fortune plays its role, and the evolution of fashion, mostly exogenous or even random directed, can lead to short and middle period ups and downs. Quoting again Dante's *Comedia* we recall two celebrated passages where fortune and fashion are described:

... posted as their minister this high Dame,
The Lady of Permutations. All earth's gear
She changes from nation to nation, from house to house.
Its changeless change through every turning year
Hell, 7, 78-81 (Translation by J. Ciardi)

A breath of wind is all there is to fame
Here upon earth: it blows this way and that
And when it changes quarter it changes name
Purg.11, 100-102(Translation by J. Ciardi)

Game theory cannot be ignored, and positive sum games should be looked for. This is the politic of win-win international interactions, but it can be extended to all levels of competition. Its achievements seldom are found, leading unfortunately even to (open or hidden) war situations where a lose-lose game at the end arises, at least in the short period. The effects in the long period are unpredictable, since resilience can be greater in the "loser" of the war, as it happened with Germany or Japan. Partitioned Bak-Sneppen evolution schemes give a model the phenomenon, since in this case the worst element of the set is compelled to change, and can jump to an high level, while the consolidated, better settings are left unchanged. Collateral random changes happen only in the subset that contained the worst element, hence subsets at an higher level are left

unchanged, but therefore cannot improve and may be overtaken. The Gospel saying that the last are blessed for they shall become the first is not only utopia. The most degraded suburbs in a city are usually avoided, but they are perhaps the places where the new super-modern city will be born (London is a perfect example to learn from). The value mechanisms underlying this phenomenon are well known, but it is not easy to forecast where the phenomenon of resurrection will occur.

5 papers belong to this section.

1. **Francesco Bortot** (*Milano*)

Utopias and dystopias in austerity economics. Values-visions-mission and their global vulnerabilities

2. **Alessio D'Auria, Beatrice Monti** (*Napoli*)

The guardianship of the landscapes between identification and assessment: Ischia and its lost identity

3. **Adriano Dessì** (*Cagliari*)

Distorsions in the relationship between Bidda and Sartu. Rurban landscape principles in Sardinia

4. **Andrea Oldani** (*Milano*)

Urban edges: residual palimpsests, temporal layers and renewed possibilities of coexistence

5. **Mohammed S.M. Yassin, T.F.M. Chang, L. Iseppi** (*Udine*)

Resources grabbing in the Nile basin: misuse, mismanagement and misinvestments

Different Levels, Different Players, Different Scales

The first great player is Nature. Great utopian landscapes have been created through its various geomorphologic movements. Here holism was at work, in a competition of different reductionist schemes that in some period were dominant and in some other periods had to yield to new forces. Sea depths were built up into utopian coral barrier; emerging in the free air sun, rain, wind smoothed the labyrinthine paths and filled holes and caves, but added the light of the sun, forming wonderful mountains such as Dolomites. Amongst the most suggestive phenomena there are the sequences of cylindrical structures and the spiky paraboloids, like the ones that can be admired on Asian mountains. The architects have in some way copied them in their vertical elevations but only a few have managed to reproduce their original natural harmony (let us think about Niemeyer's shapes).

In bi-dimensional space, the appeal of the superfluous can be perceived in the meanders, in the canals of lagoons, in atolls, in the contorted boundaries of fjords or some lakes such as Saimaa in Finland. Nature can explain its cumbersome features by physical laws, though mixed, superimposed, disturbed, so that no whim should be found. Organic urbanism influenced by the roughness of nature can reproduce the effects of a miniature fractal creation, but in this

case the perception is that of a whim. In other cases, utopia is designed purely as a whim, and this belongs rather to the construction of Wonderland, as was discussed in another IPSAPA/ISPALEM conference.

The second great player is Science, in particular Mathematics and Computer Science. Computer Science allows dealing with the total change of dimensions arising from the use of graphs and of nets. Here in principle holism dominates, but a net preserves analytical power, otherwise cannot be explored. The system of key words is actually reductionist, but modern systems allow a certain degree of fuzziness that simplifies the search. The administrator of the web has a great power of selection and of judgment, but his efficiency derives from the analysis of the requests of the clients, especially the big clients. Thus exploration of the web seems to be user driven, hence is no longer deterministic like encyclopedias and thesauri used to be. The hindrance is that a search usually gives at first a *lectio faciliior*, from which the user is supposed to emerge using smart connections of key words. In this section two papers discuss the use of databases and their benefits.

The role of mathematics was pointed out already in some previous passages, here particular stress will be laid on measure theoretical questions, especially connected with fractals and the consequent perceptions of change of dimensions. Also forms of classification of complexity will be supplied that can be used when difference of scales becomes relevant so that granularity is subject to a complete redefinition.

6 papers belong to this final section.

1. **Veronica Brustolon** (*Venezia*)
New technologies for the requalification of the architectural envelope
2. **Nicola Galluzzo** (*Rieti*)
Relationships among rural development actions and agrarian specialization using FADN dataset
3. **Katia Gasparini** (*Venezia*)
Architecture, media and society: form and material developments on new consumer places
4. **Manuela Nistri** (*Parma*)
Utopia and dystopia in Atacama desert. “*Nostalgia de la luz*” by Patricio Guzmán
5. **Livio C. Piccinini, Ting Fa Margherita Chang, Luca Iseppi** (*Udine*)
Boundary and fractals in rural-urban utopia
6. **Maria Rosa Trovato** (*Catania*)
Information and communication technologies (ICTs) and participatory values to support of the territorial governance processes

