Material and non-material Colour for the City: Analysis of the novel Twin and Hints to a combined Master Plan

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ABSTRACT

The contemporary cityscape is worldwide dramatically changing into a pulsating multi-colour organism that portrays our new 21st century technological achievements, values and biorhythms where material colour is enhanced or substituted by light colour. However, with regard to urban ecology, environmental aesthetics, privacy and health, both material and light colour cannot be randomly applied but must be planned at the first stages of town planning or rehabilitation as dynamic systems. The colour design requires an overall concept to be meaningful and aesthetically pleasing and the lighting design must exclude offensive sources and colours (with regard to quality, quantity, angle of incidence and animation of light). Prevention of pollution and energy conservation, finally, can ensure well-balanced interacting light-colour schemes.

1. INTRODUCTION

To cope with the unsatisfactoriness of the contemporary westernalized cityscape (spatio-cultural discontinuity, unreadability, complexity, repetitiveness, aesthetic deprivation, lack of identity, unsafety) eminent colour designers have so far very skilfully and artistically used colour as a means of restructuring the built environment which is steadily supplanting nature. Our Workgroup has, also, researched this possibility in the more difficult case of cityscapes with practically no traditional parts in them (Old Cities, etc.) that emerged after World War II as high-rise sprawls to accommodate the enormous number of refugees from the crumbling eastern countries. In our projects [1] we postulated that it was possible to more or less eliminate the above deficiencies through the use of colour palettes and schemes based on the residents' preferences, the climatic (sun and sky) conditions and the built and natural surroundings (colours, distances, surfaces and volumes). More importantly, we attempted to build colour master plans for the unification of an entire city (or settlement) over the diversification of minor areas (neighbourhoods) within it, based on the colour palette of the public or historical building situated in each [2,1].

However, things continue to change as overpopulation leads to further complexi-fication of today's cityscapes and the energy crisis imposes new construction and maintenance methods based on the progress of technology. Therefore, new construction scales and materials, as well as new architectural forms and layouts have appeared that render necessary a new approach to urban colour design.

On the other hand, the need to make more interactive the lifeless super organisms that surround us (give them life, appeal and rythm) drove some enlightened lighting designers to enliven them with light after dark. The gradual addition of colour and animation to light transfigured the night cityscape into an unprecedented thrill which seems to gain in people's appreciation and even change their daytime-night-time ratios. Additionally, light proved a cheaper, faster and far more flexible way of colouring the environment.

2. CITYSCAPE COLOUR AS A CREATOR OF OPEN SYMPOIETIC SYSTEMS

From an ecological point of view, both material and light colour have an enormous physiological and psychological impact on the living beings inside a city. Misused, they can lead to discomfort through glare and light spill, to destabilization and even death through circadian rhythm disruption [3] and psychedelic conditioning [4]. Besides, the luminous night sky effect is detrimental to nocturnal animals, interferes with astronomy activities and endangers piloting.

In order for light colour to be more effective colourless architecture tends to be preferred and the cityscape is gradually sliding back to daytime greyness. Greyness is "coldness" and uninterestingness (absence of the information components of colour variat-ion) [5] but, also, a break from surrounding pollution (visual and sound). Detail increases through the use of glass and semi-transparent tensile fabrics but for colour designers these are materials that elude design.

So do the new coating materials (titanium, special glazing) for public and high-rise buildings which change colour depending on the intensity, angle and colour of the incident light. The invasion of the cityscape by skyscrapers, on the other hand, creates new larger scale shadows, highlights and reflections in the cityscape which must be alleviated by careful colour and lighting design. Furthermore, non-permanent constructions (exhibitions, etc.) create new poles of attraction in squares and other public spaces, especially at night.

Based on the theory of complexity, an analysis of the contemporary westernalized cityscape, viewed as a dynamic collection of interconnected parts, would give 4 types of semi-stable states (attractors) prevailing in it:

- Class I: (static attractor) Land uses (building blocks, neighbourhoods, streets, eventual green areas, etc.) established of old.
- Class II: (cyclic attractor) Contextually determined uses (car parking in pedestrian areas or on sidewalks, street markets, seasonal festivals, etc.). Absence of much choice.
- Class III: (chaotic attractor) Traffic congestion, political rallies, street fighting, construction works, vandalism, graffiti. Unconstrained freedom of choice.
- Class III: (transient attractor) Emergent land uses of higher complexity (public spaces in the interior of buildings, buildings on top around or in-between existing buildings, continuation of open spaces up floor, etc.), uncanny architecture, virtual vistas added to or substituting natural vistas, etc. Surprise, innovation, higher orders of consensus, grounding of new values.

The role of the colour designer being to orchestrate the built environment rather than add sensational notes here and there, the evolving situation calls for higher order planning in order for the poetry to prevail again in the city. Except that the new planning must be an "open sympoiesis" [6] at the two levels of the colour and the lighting design viewed as autonomous and interacting entities.

3. MATERIAL COLOUR MASTER PLAN

In earlier studies we proposed that a cityscape be divided in zones of degrading colour influence from core landmarks grouped in free-flow shapes that interact at their borders; assuming, of course, that these landmarks have colours. Otherwise, we may provide some for them based on colour preference inquiries with samples of the population or treat them as such (metal and glass constructions). The population in contemporary cityscapes is constantly shifting and the pseudo folk colour palette so resulting maybe subject to perpetual change. Also, façade renovation and building replacement occasionally take place generating further inherent diversity.

The colour scheme (general palette versus detail palettes) adopted resulted from inquiry-based research, the harmony principle being that of contrast rather than analogy for greek populations. As for the colour elements, they coincided with the structural elements of the facades, as is customary for traditional buildings. We also, took care to differentiate the uniform blocks of flats by subdividing the main wall surfaces for increased interestingness and form-reproportioning on the corresponding scales of the building, the street, the neighbourhood, the entire settlement, in compliance with the laws of gravity. Differentiation of colour hue, lightness and chromaticity, also, motioned surfaces in and out for a 3dimensional effect. Finally, by approximating here and there the sky colour we tried to vary the uniform building skyline.

However plausible this approach may be, it proved unpractical for two main reasons: pigments do not resist pollution and weather fast and, façade renovations are made by individual horizontal flat owners. Yet, this is a holistic approach and requires skill, knowledge and overall control; more so, because it aims to creating a unifying image (the only contemporary substitute for a spiritual context) and to raise in significance the hitherto neglected private sector with regard to the public.

Newer approaches [7] convinced us that nothing can be done without synergetic activity; unless, new more efficient structures gradually replace the previous for which colour design will go step by

step with architectural and urban design, in view of making the whole greater than the parts while benefiting them. From a technical point of view, also, well maintained cladding materials, where coating is required, are a better option than pigments.

4. LIGHT COLOUR MASTER PLAN

Alex Villar in *Upward Mobility* incorporated his body into urban architecture in unexpected ways challenging the means by which city planning forces our movement in a particular trajectory [8]. Well, illuminating buildings and their surroundings might be a more accessible way of interacting with them for less sporty people.

And, indeed, brilliant lighting designers around the world and, primarily the U.S., have given us stupendous examples of this new art and science which, in combination with lighting and computer technology, has created a new vision of the man-made world. A big variety of new visualizations of the exterior and interior environments ranging from the realistic to the fictitious, the comforting to the stimulating, the symbolic to the mythical, etc. tends to give man a new confidence in the efficiency of his advanced transformation of nature. More so, because animated lighting adds movement to lifeless matter and voice when combined with sound. Man plays God by reproducing the day-night cycle and the Devil by projecting into the air ghosts and effervescent decorations on surfaces. In most cases he also makes a powerful political statement by showing off symbols of state or financial power.

Our Workgroup's approach is that lighting should not neglect the private sector of a city, especially if this constitutes its biggest part. To this end we support the division of a city (settlement) into three areas of low, medium and high frequency and examine the light-colour qualities appropriate for each.

In their homes (residential, low frequency area) people must be able to rest, work and sleep in quiet and privacy. With the help of colour-lighting design they must be able to enjoy at daytime a harmonious continuity of their built and natural environment and at night time to merge into the latter and the starlit sky. This does not negate the colour identification of neighbourhoods within the broader settlement and possibly of buildings, too, depending on the plan. But it does forbid ever-changing, boisterous lighting after dusk, either on the lower (pedestrian) or on the upper zones. Light sources with minimal UVB emission should be preferred and luminaires with cut-off shields would be best for street lighting. The colour palettes should also, be *eco* (associated with natural elements and substances and with physical connotations), the light colour palette enhancing the underlying material colour palette.

On the other hand, uncanny light colours fit better the chaotic, ever-changing, scarcely-sleeping town centre (high frequency area) featuring high-tech construction or cladding materials. Their palettes may be varied, linked to cultural (symbolical, scientific, artistic) connotations, so can their animation and the accompanying sounds. Although harmonious combinations are desirable here too, some discord should be encouraged in favour of the overall restlessness associated with the contained buildings (office, administrative, commercial, parking, entertainment buildings, hotels, etc.).

We call intermediate (medium frequency) areas, finally, those consisting of governmental, educational, sports, health, transportation, cult buildings and the cor-responding open areas that may edge, surround or intermingle with the other two areas effecting the visual transition between them. Here a careful light intensity, colour palette and animation scheme must allow for the transition from each of the previous areas to the other.

From a technical point of view, lower wattage MH lamps and light bulbs with CRI rating above 50 provide good colour rendition of objects. Lamp fixtures with full optical controls and side shield options, also, minimize uplight, light trespass into buildings, energy waste and glare. Lighting that is well designed and properly maintained can improve the appearance of the public space, encourage people to interact and contribute to a positive sense of safety and security [9].

5. DISCUSSION

Through the close cooperation of architects, urban designers, colour, lighting designers and users it is hoped that a combined colour-lighting master plan for contemporary cityscapes may -

besides defining their specific image (identity) – promote safety and health within them. We do not want to create segregated, frustrated populations, much as we wish them to live in suitably diversified (pleasing, intelligence-promoting) environments that glorify technological progress and their common new values. However, this goal cannot be achieved through static approaches but through a dynamic approach encompassing both the material and the light colour structures carefully related to the underlying plastic structure of the cityscape. A limited number of differences between them may allow the self-organizing process to proceed uninterruptedly, allowing each structure to receive sufficient resources from the system and be defined clearly. It is expected, in this way, that a conditioning of the living beings within the new urbanscape will increase their ability to cope with higher complexity and develop an adjustable mindset in response to environmental balancing through wavelength monitoring, (including sound). System-wide interrelatedness, when coupled with self-interest, is bound to be a visual reminder that working together actually improves our personal fitness rather than reducing it.

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