New Communication Infrastructures Promoting New Criteria for Compact Cities

1. Introduction

The early industrial age of dumb devices is over; things now tirelessly, twenty-four/seven, think and link (Mitchell, 1999). Our society's modalities of communication are rapidly changing. Large panel displays and screens are being installed in many public and private spaces, ranging from open plazas to private houses. Computation and sensing are moving from computers and devices into the environment itself. The space around us is instrumented with sensors and displays, and it tends to reflect a diffused need to combine together "the information landscape of the Internet – *infoscape* (Ratti et Baker, 2003) - with the urban landscape of the city" (Sparacino, 2002).The world's first *ubiquitous city* in which all information systems -virtually everything- is linked through technologies such as wireless networking and RFID[1] tags, is being promoted in New Songdo, South Korea and will be completed by 2014 (Block, 2005). Still this is just a start and several others are yet to come.

According to the Independent Commission for Worldwide Telecommunications Development, recently, use of *information and communication technology* (ICT) has been exponentially increased all over the world (Yamaguchi, 2006).This global digital network is not just a delivery system for e-mail, web pages, and digital television. It is a whole new urban infrastructure - one that will change the forms of our cities as dramatically as railroads, highways, electric power supply, and telephone networks did in the past. It's an old script replayed with new actors. Silicon is the new steel, and the internet is the new railroad (Mitchell, 1999).

2. Purpose of study

Previous revolutions -*urban* and *industrial revolution*- created macroscopic transformation in our social structures and architectural environments often without much foresight. The *information revolution* is no less dramatic. We shall be in serious trouble, if we do not take seriously the fact that we are constructing the new environment that will be inhabited by future generations (Greco & Floridi, 2004).

Although Neo-luddities[2] are firmly convinced that we all have far more to loose than to gain anyway, so we should just resist, but the important point is that these new infrastructures are creating new opportunities and closing off some old ones. Their effects will not be as advertised by the cheerleaders, they will not be wholly positive, and they will not be uniformly distributed but they can not be ignored. Since new technological systems are complex social constructions, we must understand our emerging options, choose our end carefully, and build well.

With the emergence of such fluid, responsive, kinetic, data-driven worlds of infoscape and its combination with urban landscape, architecture faces a radical reshuffling of a number of its principal underpinnings such as context, place, orientation, boundary, space, adjacency, contiguity, connectivity, and materiality. In other words, we propose that principals of *city images* have been roughly influenced by the new Toffler's *third wave*. For this very reason, many researchers like Mitchell believe these legacies of the industrial era, and of ever earlier times, will require *transformation*[3] in order to function effectively in the future. Cities that can respond grow and prosper, while many that can not will reach their deadlines. Architecture that can parametrically and in real-time "respond to remote data through kinetic tectonics holds the most promise" (Senagala, 2002).

Our job is to design the future we want, not to blindly follow its predetermined path. Therefore; we believe contemporary architects and urban designers are facing two major challenges: first, "to reshape the physical environment in order to respond to the major structural changes in society caused by the emerging *Information Age*" (Voutchkov, 2002), and second, more importantly, to try to understand how the new technologies will change people's activities and interactions and therefore urban design criteria and then try to be ready for those *evolutions*. In other words, architects and urban designers might have to deal with both the physical and the virtual aspects of the living environments, and should seek answers to "one of the most interesting questions for twenty-first-century urban designers," as William Mitchell has put it: "How should virtual and physical public space relate to one another?"(Mitchell, 1999)

Much research and experimentation needs to be done in that direction in order to give us the vision for not to be shocked suddenly by facing such an era where everything is *re-ontologized*[4] according to ICT, emergence of *ITentities*[5] (Floridi, 2006) and media enhanced technologies. For this reason, in recent years, theorists from all areas of science and technology have been trying to come up with a logical projection of what the future *Information Age* would look like. Most scientific interest has focused on the virtual aspect of the future - including theories of *Noosphere* (Vernadsky, 1926), *Bitsphere* (Mitchell, 1995), *Cyber City* (Boyer, 1996), *E-topia* (Mitchell, 1999), *Cybiont*[6] (De Rosnay, 2000), *Information Marketplace* (Dertouzos, 1997), *Infosphere* (Floridi, 2006) and others. With most theories, the virtual world of the future is referred to as an immaterial and dimensionless environment (e.g. the Internet) that has little to do with the existing physical space. While this paper will attempt to look at the future cities as physical representations of virtual spaces affected by *data wind (*Vande Moere, 2006). In this sense, one goal of the paper is to investigate whether information age can bring digital qualities to the physical domain. To check this hypothesis, we have focused on the *evolution* of physical elements of *city images* in *information age.*

The concept of *city images,* first has introduced by psychologists who worked on acquisition of spatial knowledge. They described this process as leading to the formation of an internal representation of space, which is indispensable to allow interaction with the external world. The term "*cognitive map*" or "*mind's eye*" (Tolman, 1984) was introduced to refer to this internal representation (Downs& Stea, 1973). The research of urban designers focusing on spatial orientation is also aligned with the work of the above mentioned psychologists. Perhaps most influential is the work of Kevin Lynch (Lynch, 1960). Lynch identifies five elements to be essential in the construction of the *cognitive map* of an urban environment[7]. But surprisingly nearly fifty years after the publication of Kevin Lynch's landmark volume, urban designers still grapple with ways to measure and nurture "good city form" (Lynch, 1981) with the same criteria. However, city imaging increasingly is supplemented and constructed by exposure to visual media, rather than by direct sense experience of urban realms. In the *hyper-visual contemporary city* (Boyer, 1996) where new technology is called as an *extension of man* (McLuhan, 1964) and with emergence of *Bodynet* (Mitchell, 2003), the whole question of city image and city imaging warrants renewed scrutiny.

> "*It's finally flat lining. The city - as understood by urban theorists from Plato and Aristotle to Lewis Mumford and Jane Jacobs - can no longer hang together and function as it could in earlier times. It's due to bits; they've done it in*" (Mitchell, 1999).

In recent years, psychologists one more time has shown their priority in this subject and in their field you can find a growing acknowledgment of the ways that the media and the built environment work together to shape and alter public perceptions of places (Vale, 1995).In the other hand, although for decades, urban sociologists have noted how community identity is socially constructed not only by local residents but also by a wide variety of outsiders, including newspaper reporters and editors (Janowitz, 1952), civic boosters, developers, realtors (Suttles, 1972), marketing firms, and city officials (Weiss, 1987) but the effects of the new outsiders[8] on Lynch's elements are absent in most of current researches. This is while through his analysis of the constitutive elements of the image of the city, Lynch has not only transmitted a lesson to urban designers, but also to the virtual reality designers of our generation. Lynch's city image theory has applied to the design of several virtual cities (Itzhak et al., 2005) and its efficiency for enhancing *wayfinding* and navigation enhancement has been proved in many other VE[9] studies (Ingram & Benford, 1995) or (Ruddle et al., 1997). His theory has been found to help users structure their spatial representation in differing scales (Vinson, 1999; Darken & Sibert, 1996). While these studies do not involve real large-scale VE, Al-Kodmany used Lynch's theory as a framework when combining web-based multimedia technology to assist residents and planners in visualizing a community in Chicago (Al-Kodmany, 2001). Despite a large body of research over a number of years into applications of Lynch's theory in VE studies there is hardly any research analyzing the vice versa- effects of VE and *digital evolution* on Lynch's urban images-.

3. Objectives

It seems that once again we need to evolve or in better words to *re-ontologize* concepts of *city images* for twenty-first century. One of our main goals, here, is not to define the characteristics of the evolved city images of future cities with neither *digiphile* nor *digiphobe* approaches. For this reason we have focused on *landmarks* because many researches have stressed their importance as organizers which cluster spatial information of city images (Golledge, 1992). Hence; in this paper we try to elucidate the current *evolution* of this specific Lynch's city image element. But as we can not predict and comprehend the specific ontology of a product while we have not any exact clue about its process it seems it will not go amiss if in the first step we analyze the history of *evolution* and its major characteristics.

4. Evolutionary tree

In the first decades of 20th century and along with invention -and wide distribution- of the term *industrial revolution* (Engels, 1845), many scholars tried to describe the current situation of their time and predict next world's possible developments. These approaches have continued till recent years and many competing terms have been proposed to define world's transformations such as '*Revolution'* (Bernal, 1939), '*Evolution'* (Vernadsky, 1926), '*Wave'* (Toffler, 1980). Recently even in architecture the term '*Trend'* has been introduced in Charles Jencks ground-breaking book "Architecture 2000" (Jencks, 1971) –although that is a specifically architecture-oriented theory which is not dealing with the entire world development-. In fact, what is interesting about Jencks' *Evolutionary Tree* is Jencks' system of classification. What he calls prediction makes it very clear that a *trend* is a "framework of continuities" that we can identify for comprehensibility. His notion is almost applicable for all of those mentioned theories. The importance of these theories cannot be overrated since, besides affecting our future lives, they underlie our assumptions and actions in a very basic way. "If trends did not exist we would have to invent them, because, to a large extent, they constitute that common framework of continuities on which we speculate and act" (Jencks, 1971).

Among these theories, Teilhard de Chardin (Teilhard, 1955), presented a coherent and captivating framework of various world's evolution. In many ways, what we are proposing is both an extension and a revision of his evolutionary system. Bringing together a series of other theories of the same field, we propose that there is an emerging trend with specific and identifiable set of characteristics which is missing in his theory. We would like to group them under the rubric of what we call "Infosphere"[10].

In Teilhard's theory of how the earth develops, the *Noosphere* is the third stage in a succession of phases of development of the earth, after the *Geosphere* (inanimate matter) and the *Biosphere* (biological life). In the present paper, we will outline the birth –emergence- of another phase i.e., *Infosphere,* before entering Teilhard's *Noosphere.*

As the entire world is made up of materials our theory for world evolution is mostly based on importance of each kind of materials on the specific era. In fact, all materials are categorized in three main groups: *Harderials*, *Softerials* and *Minderials*[11] (Senagala, 2001a) that we believe each one plays a major role in human's history.

First are *harderials*. They are whatever made of atoms. For long time after invention of the word *material,* many considered both -*materials* and *harderials*- as the same concept however Senagala for the first time has revealed its paradox. Second, there are *Softerials*. Those are the materials which flicker between zeros and ones. Softerials are made of *bits* instead of *atoms*. Minderials are the third and so the last category. Minderials are the materials of your mind. Looking backward to the world's history, reveals our world was dominated by harderials' impacts for long time from its beginning and that's why we name the first era as "*Harderial Dominance era"*.

4.1. Harderial Dominance Era

Geosphere, Biosphere

At the beginning was the space of earth itself with its unanimated matters. Earth was populated by rough *atoms*. This phase of earth development was called *Geosphere*. *Emergence of life* fundamentally transformed the Geosphere. The first evolution i.e., *biological evolution* (Vernadsky, 1926), which had lead to the formation of biological life was occurred and *Biosphere* as the next phase was loaded. We had a shift in the main particles of existence. *Geosphere atoms* were replaced by *Biosphere genes*.

- *(10,000 BC to 1400 AD) Somatic Space (2MPH-30MPH)*

The metaphysics of theory of *Relativity* explicates the interdependence of *space*, *time*, and *speed* in an uneven field of forces. In the language of Relativity, where movement is relatively less, events become "space-like." Where movement takes precedence over stillness and approaches speed of light, events become "space-time-like" and "time-like" (Born, 1962). As speed increases, space contracts and time expands. Therefore; *speed* is the distinguishing factor in reading between these three kinds of events. Senagala cutely noticed the role of speed in formation of Architectural spaces (Senagala, 2003). He called those kinds of initial spaces produced by speed of a walking man -2mph- as the *Somatic Space*. Movement of knowledge was synchronous with the movement of the body in that era. While "*networking of creatures"* make it possible to enter biosphere, "*networking of humans*" caused *urban revolution*. The first *citizens* were borne and Bergson's *human consciousness* (Bergson, 1911) found its way to become more complicated trough ages to reach its final *complexity*.

- *(1400 AD 1900 AD) Textual Space (2MPH-1000MPH)*

As Senagala put it, not until the advent of printed text did the grip of somatic space loosen on the human civilizations (Senagala, 2003). As Victor Hugo exclaimed, *word killed stone*. Knowledge could now move by itself through the virtual medium of printed text with the human messenger being only an infrastructural carrier relegated to a marginal status. Knowledge was, for the first time in human history, liberated from being embodied in architecture and human body (Senagala, 2003).However; still the architecture of stone and brick that embodied a sense of timelessness, namely the architecture of atoms was the dominant sphere of life.

Humans started to extend their *primitive body* via making and though complicating manmade-machines to improve his speed. Invention of the s*econd generation of machines* and "*networking of machines"* lead to the formation of *industrial revolution*.

- *(1900 AD to 1946 AD) Broadcast Space (186,000MPH)*

The more complicated machines like radio, telegraph, telephone and television transformed the composition of how societies built themselves. While text was still rooted in the physicality of paper, with the electronic media one did not have to move a thing in order to communicate. “While print media undercut the *epistemological contiguity* of the built world, electronic media undercut the *ontological contiguity* of experience and context.” (Senagala, 2003) Political debates and propaganda could take place and reach millions of people without moving a thing all happening in simultaneous time. As Marshall McLuhan noted, *there would have been no Hitler without radio*. While books and bodies could be banned, exiled, and locked up in buildings, electromagnetic waves could not be. Many contemporary researchers believe that traditional architecture lost their meaning as knowledge and communication could not be organized, controlled, or prohibited through conventional architectural means. The traditional notions of wall, enclosure, perspective, horizon, etc., which were based upon somatic space, became meaningless in the light of *televisionic space*. “Solar day held little meaning in the televisionic day, which came to structure new rhythms of the cities in technological societies” (Senagala, 2003).

We are on the verge of moving from the outmoded notions of space and time to the post-spatial notion of space-time. Jacques Ellul have repeatedly pointed out the shift in technological societies from space-centered institutions to time-centered institutions, from material-based economies to information-based economies and from fixed, coherent belief systems to fluid, fragmented worldviews (Ellul, 1964). The *space-time like architecture* of modernist era seems to be evolved soon in a world that temporal matters plays more important role than spatial matters. Interestingly, printed media and electronic analogous media both contain within them traces of space they travel. A letter from your friend in other part of the world would contain the traces of its trajectory. A radio reception fades away as you move away from the transmitter (Senagala, 2003). However, with digital environment, space and distance bear no effect on its content. They are all symptoms of another evolution in which harderials with their spatial characteristics plays less and less roles.

4.2. Softerial Dominance Era
Infosphere

Nicholas Negroponte has made a very cute observation when he noted that the world is being increasingly concerned with the movement of *bits* than the movement of *unwieldy atoms* (Negroponte, 1995). Another dramatic shift has occurred in the main particles of existence. While *Geosphere atoms* were replaced by *Biosphere genes*, the third wave replaced the biosphere genes with *bits*. Nowadays bits are atoms and vectors are molecules of a new world. The famous notion of “it from bit” (Wheeler, 1990) seems to be much more considerable nowadays. Ten thousand years after we first built with brick, Louis Kahn had to ask a *hard* question: what does a brick want to be? “Well Louis, things are not so simple now. Thirty years after that, we must ask a *soft* question: what does a bit want to be” (Senagala, 2001).

Necessary in such a world, *softerials* play a more major role than do harderials. In such a world, Architecture of bites will definitely outplay architecture of bricks. There is no need to go bank, offices, and libraries anymore. Buildings are leftover after IT impacts. Only 2% of the US economy is paper-based (Zach, 1999) and the rest is in an electronic, non-spatial form, flowing through the non-spatial channels that are not designed by architects. They are due to bits rather than unwieldy atoms. As Senagala noted: “we live in a post-spatial world” (Senagala, 2001c).

The softerials have been confined to the status of mere virtual world. It is time to recognize them as legitimate materials out of which very important politico-economic virtual environments are constructed. It is believed that in less than a decade, more than one billion people all over the world will be spending half as many hours in front of the computer screen as they will in physical space (Kerckhove, 2001). As the physical world's power structures migrate into virtual domains, virtual worlds become the powerhouses. Senagala pointed out how imagining, defining and constructing (or in his word communicating) with softerials becomes definitely more exciting, rewarding and lucrative activity (Senagala, 2001c).

After the Agricultural Revolution, human beings considered as productive while they produced more agricultural corps. By emergence of Industrial Revolution it seems that the more men produced machine products made them more productive. However; it reveals that the analogous for current era doesn't work. Nowadays the more you produce information the more productive you are. Digital ICT's are re-ontologizing the very nature of our sphere. It is due to Information. Every single bit makes changes. Information revolution as the third wave along with third generation of machines let Softerials to dominate the world. The earth has experienced another evolution -digital evolution- and entered its third phase that we call as "infosphere". Floridi who claimed to coin the word, noted we are all become "connected informational organisms" or in his term "Inforg". He mentioned that if you spend more time connected than sleeping, you are an Inforg (Floridi, 2006). As an example, a research has revealed on average, Britons already spend more time online than watching TV.[12] Nowadays, it seems we are much more similar to Floridi's *Inforg* rather than Clynes' *Cyborg*. "Networking of computers" influenced its users. We are not any more citizens but instead *Netizens* of current world.

However; still various discourses of architecture have so far revolved around static formations of physical space. Although theoretician like Hays rightly pointed out that we have moved from Sigfried Giedian's modernist notion of space-time to Henri Lefebvre's Marxian production of space to a Foucaldian linking of space, knowledge, and power (Hays, 1998) but still our urban designs are far behind what happened in the infosphere. We are bound by the laws and limitations of being embodied in corporeal buildings very similar to Marc-Antoine Laugier's *primitive hut* (Laugier, 1977). As Toyo Ito pointed out one of the reasons is that we are still bounded to our body and its limitations that he called as *primitive body*[1]. This is while many philosophers noted the new technologies and media as the *extension of body* (McLuhan, 1964) and insisted that we should use all our capabilities of these extensions of our body or as they put it, '*bodynet'* (Mitchell, 2003) to improve our physical surroundings. Almost a century ago Bergson forecasted such an era which *human consciousness* will evolve to *post-human consciousness* (Bergson, 1911).

Through various digital communication and transportation technologies, we have moved far beyond the 2MPH speed of a walking human being to 186,000MPH speed of radio waves and telecommunications. "We have moved from populating space to populating time. In the process, space-like architecture has lost most of its social, political, cultural and existential significance" (Senagala, 2001b). Most recently, Senagala coined the term *time-like architecture* to describe the current situation of architecture we need and we are preceding towards in our contemporary architecture trends. In a radical departure from the locational metaphysic, *time-like architectures* forward a *temporal* metaphysic. Instead of or in addition to responding to local parameters such as sun and wind, architecture begins to respond to the non-local parameters of "data wind" (Senagala, 2001b). The same spirit could be found in a speculative project, *The Muscle*, by Kas Oosterhuis and Ole Bauman.[13]

Instead of putting together *spaces*, connecting them, transforming them and configuring them, the new architectures put together *space-times*, transforming them and configuring them. "Such architecture can be transmitted, remotely accessed, published, projected, compressed, encoded, licensed, rebooted, archived, upgraded, evolved, interfaced, compiled, flexed and folded" (Senagala, 2002). Nowadays we will characterize cities of the twenty-first century as systems of interlinked, interacting, silicon- and software-saturated smart, attentive, and responsive places. This is what we call '*infospherization'* of cities.

4.3. Minderial Dominance Era
Noosphere

Nearly five decades ago, much before the computer became a popular machine, Teilhard de Chardin prophetically proclaimed that the human evolution is heading toward a global coalition of an interconnected world. He called such a world *Noosphere*- the sphere of interconnected human beings-. He predicted that such a coalition would happen at a point in time called *Omega Point*. Not in a too distant future, we can easily envision people being connected with the invisible threads of digital communication where Harderial space will not have much meaning. As an example Karinthy's hypothesis of "*Six degrees of separation"* refers to the idea that, if a person is one step away from each person he or she knows and two steps away from each person who is known by one of the people he or she knows, then everyone is an average of almost six "steps" away from each person on Earth has been proved (Sanderson, 2008).

Due to technological advances in communications networks could grow larger and span even greater distances. We propose that it is not just about *networking of computers* but instead it is opt to "*networking of minds"*. In particular, we can believe that the modern world was '*shrinking*' due to this ever-increasing connectedness of human beings. In fact, despite great physical distances between the globe's individuals, the growing density of human networks made the actual social distance far smaller. We are moving towards "*Shrinking World"*.

We will be influenced by another world evolution. We call that "*Memetic evolution"* as the main world's particle will be changed one more time. The same as how importance of *unwieldy atom* (Negroponte, 1995) and *the selfish gene* (Dawkins, 1976) has shifted to *bits,* the *late bits* will offer their turn to fresh *memes.* A *meme* consists of any unit of cultural information, such as a practice or idea, that gets transmitted verbally or by repeated action from one mind to another. Then it is due to *Minderials* rather than *Softerials*. In the *Memetic age, noospherization* of everything in real-time, will lead to the emergence of *trans-human consciousness*.

5. Conclusion

We believe that Kerckhove was right when he pointed out that the "Architecture of intelligence is the architecture of connectivity. It is the architecture that brings together the three main spatial environments that we live in and with today: mind, world and networks" (Kerckhove, 2001). The world has evolved continuously and it will not stop its evolution too. We as designers should take into account these evolution and try to go along with them in order not to be shocked. Each new era offers its special infrastructures that can be used to improve our cities dramatically if they are comprehended properly.

Take for example the infospherization of our world. What if we are able to expand the ways by which we see, hear, touch and sense information in this era? What if we can release more people from the screen for more hours by distributing the interface around the architectural environment? What if the walls, floors, lighting, ventilation and other facets of the architectural environment begin to communicate information to the user? What if architecture, as a whole, becomes a gigantic immersive interface to send and receive information? If, as Heidegger proclaimed, dwelling is the primary *ethical imperative of human beings*, then architecture needs to be brought into the world with a critical mission of connecting, re-spatializing and temporalizing a world that is fast disintegrating into bits of sand.

This is why we believe instead of transformation city images also should *evolve* -and not transform- the same as what Archibald Wheeler has speculated about the laws of physics that may be evolving in a manner analogous to *evolution* by *natural selection* in biology (Wheeler, 2006). We propose that their *evolution* is not only based on *natural selection* but also it is a kind of *creative revolution* that is very analogous to Bergson's idea of *biological creative revolution (*Bergson, 1911). The reason is that our technology -as one of the main factor for world evolution- has not only adapted to, but also educated us as users. Experiencing what had happened in last revolutions, one may find out that the new infrastructures will not demolish what had constructed the same as *order 66*[14] -in *Purge of Jedi*- to re-instruct them. Instead the same as what old tubes, pipes and wires did, the new backbones will remain much of what is familiar to us today. They just will be superimposed on the residues and remnants of the past like neural structure over the old lizard brain as described by Foucault.

In that point the very important thing is that we should not be reoriented so digitally that we neglect other dramatic factors for human beings. We had experienced that kind of reductionism once and we paid for that. Michel Foucault coined the term *medical gaze* (Foucault, 1973) for modernism impacts on mankind to describe those *biological reductionisms* after emergence of Biosphere. We as *digital immigrants* (Floridi, 2006) should be very aware not to be stranded in *digital reductionism -* we coin the neologism *digital gaze* – in this current era to let our children as *digital natives* (Floridi, 2006) enjoy our infosphere .

6. References

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Endnotes

[1] Radio-frequency Identification

[2] For further information look at (Mitchell,1999) or http://en.wikipedia.org/wiki/Neo-Luddite

[3] *L*ater on this paper, we introduce the term ‘*evolution*’ instead of ‘*transformation*’ for such kind of changes

[4] A neologism coined by Floridi (2006) that means re-engineering so dramatically that re-defining their ontology seems to be inevitable

[5] A portmanteau formed by contracting either the word IT with Identity that was coined by Floridi (2006)

[6] "Cybiont" is coined by Joel de Rosnay in his book .The book provides a "biological" perspective on the "evolution of matter, life, and human society on our planet." The term "Cybiont" implies a combination between "cybernetics" and "biology"

[7] paths, edges, districts, nodes, and landmarks

[8] ICT, Wi-Fi and new medias

[9] Virtual Environment

[10] *Infosphere* is a term used since the 1990s -probably for the first time by Steven Vedro in his book "Digital Dharma"-. The term has also been used widely by Luciano Floridi, to denote the whole informational environment (Floridi, 2006)

[11] All three words are neologisms were coined by Senagala (Senagala, 2001a)

[12] http://www.statistics.gov.uk/pdfdir/intacc0702.pdf, (accessed 2008-06-2)

[13] http://www.oosterhuis.nl/quickstart/index.php?id=347, (accessed 2008-06-27)

[14] Order 66 was one of a series of contingency orders to kill all Jedi in Star War series by George Lucas in which almost all of the Jedi were killed. It is an ironic term to describe destruction of all bright parts of anything completely.

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