

MAXIMISING THE DEGREE OF USER CHOICE. A SIMPLE TOOL TO MEASURE CURRENT LEVELS OF QUALITY OF LIFE IN URBAN ENVIRONMENTS.

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Abstract

In this article, a simple tool based on Max-Neef et al.'s (1991) Human-Scale Development paradigm to measure current levels of Quality of Life (QoL) for urban environments is presented. Fundamental human needs form the study domains. The process of the system definition and the survey creation is explained. Questions are then classified into needs as the outcome of two consecutive processes: a qualitative one involving both local communities and/or expert groups, and a quantitative one involving the definition of question weights. Complementarily, objective indicators are added, allowing a comparison between subjective and objective data towards an integrative result. In summary, this method can be used to define more holistic urban quality indexes in order to improve decision making processes, policies and plans. At the same time it can be seen as a tool to enhance bottom-up approaches and processes of urban analysis in order to create more liveable places for the dwellers.

Keywords

Quality of Life, integrative approach, need satisfaction, Human-Scale Development, urban environments

1. INTRODUCTION: QoL IN URBAN ENVIRONMENTS

Urban environments have traditionally attracted many people as they offer a wide choice of positive stimulations, information and opportunities for housing, work and leisure (Bonnes et al. 2013). This attraction has led to the creation of big urban settlements that accumulate today more than half of earth's total population (United Nations 2014). The present worldwide trend toward urbanization is intimately related to economic development and to profound changes in social organization, land use and patterns of human behaviour (Angel, Sheppard, and Civco 2005). The demographic scale of these changes is unprecedented (Berry and Okulicz-Kozaryn 2009) and will lead to important but still partially understood impacts on the global environment.

An increased number of negative – and potentially occurring – aspects of urban living can be identified. Examples are road traffic noise, poor air quality, high temperature and crowding. These sources of environmental stress have various physical and psychological consequences, including health-related problems, annoyance, negative emotions and diminished cognitive functioning (Bonnes et al. 2013; Bilotta and Evans 2013). In addition, environmental stressors can negatively impact social behaviour (Page 1977; Moser 1988). For example, noise and crowding may increase avoidance reactions and aggression and decrease prosocial behaviour (Regoeczi 2003). It seems clear therefore that the continuous accumulation of the population in big cities worldwide, along with the uncontrolled urban sprawl, is leading to a doubtful, degraded habitat, seriously affecting the emotional and physical state of city dwellers (Costanza et al. 2007; Moro et al. 2008; Veenhoven 2007; Kennedy and Adolphs 2011; Lederbogen et al. 2011).

However, the last few decades have witnessed a mushrooming tendency to reflect theoretically upon the increasing complex spatialities of the globalising world, the spatialities of power and changing identities (Paasi 2008). Both the perception of citizens and the conception of urban planners on space have been changing slowly, mainly due to the increased aforementioned environmental, social and economic problems encountered in urban conurbations. Places are being seen both as progressive (open to the wider world) and regressive (self-enclosing, defensive, inward-looking, and reactionary) (Antonsich 2011) and urban environments are being re-evaluated and reconsidered as valuable for health, social integration and well-being of the individuals (Townsend et al. 2010). At the same time urban space is being seen as a material, constitutive element of daily life, economy, and politics (D. Martin, McCann, and Purcell 2003), an unavoidable social product created from a mix of legal, political, economic, and social practices and structures (Lefebvre 1974). In this sense, Quality of Life (QoL) forms a subject of increasing interest and several empirical studies have been developed in order to characterise, either by means of subjective or objective indicators, the links between QoL and urban societies (see (Delken 2007; O'Brien 2005; Wenz 1977; R. A. Easterlin, Angelescu, and Zweig 2011; Kamp, Leidelmeijer, and Marsman 2003; Marans 2012; Massam 2002; Berry and Okulicz-Kozaryn 2009) and references therein). It is then important to examine the relationships between the characteristics of urban environments and the perceived QoL of the residents. Following this rationale, this paper introduces a method of measurement of QoL for urban environments, based both on the perception of people using the urban space and data on existing objective spatial indicators. To check the levels of QoL per domain, Max-Neef et al.'s (1991) conceptual framework on Human-Scale Development is used.

The paper is organised as follows. Section 2 presents a literature review on human needs, the Human-Scale Development paradigm and QoL. Section 3, research methodology, includes the methodology proposed for the compilation of data and the comparison and measurement of subjective and objective dimensions in order

to achieve an integrative result. In Section 4 our results are discussed and the paper ends with Section 5, conclusions.

2. LITERATURE REVIEW

2.1 HUMAN NEEDS & THE HUMAN-SCALE DEVELOPMENT PARADIGM

The Human-Scale Development (H-SD) notion appeared for the first time in an article published by the Dag Hammarskjöld Foundation in 1986 (Max-Neef, Elizalde, and Hopenhayn 1986; Max-Neef, Elizalde, and Hopenhayn 1989). Within this paradigm it is suggested that the best development process will be the one that enables improvement in people's QoL, allowing people and communities to be coherent within themselves (Max-Neef 1986). The axis of this central thought is that H-SD concentrates on, and is sustained by, the satisfaction of fundamental human needs and the generation of growing levels of self-reliance as well as by the construction of "organic articulations of people with nature and technology, of global processes with local activity, of the personal with the social, of planning with autonomy, and of civil society with the State" (Max-Neef 1992).

The H-SD approach differs from other Need Theories popular in previous decades such as Maslow's (1968) during the late '60s, the International Labour Organization's (1976) during the mid '70s and Streeten's (1981) during the early '80s, just to mention a few, mostly because of the utilitarian view observed within them (Cruz, Stahel, and Max-Neef 2009). Utilitarianism is known to be looking only at the individual level, favouring whatever maximises individual happiness as the best choice, and misleading the satisfaction of needs dynamics, implying that more was always better. Put differently, it was promoting selfish decisions rather than collective ones (von Borgstede, Johansson, and Nilsson 2013) and when a large number of people makes selfish choices, negative outcomes accumulate, creating a situation in which everybody would have been better off if they had not acted in their own interest (Dawes 1980). Fundamental human needs take a different appreciation. H-SD acknowledges that due to our common human nature, humans need to satisfy some fundamental needs – common to all – in order to sustain a rich and meaningful life. Those needs indicate deprivations and at the same time individual and collective human potential. They are seen as finite, few and classifiable, changing only in a very slow pace along with the evolution of our kind (Max-Neef, Elizalde, and Hopenhayn 1989; Elizalde 2003), and they can be satisfied according to many criteria.

The fulfilment of all needs is considered equally important as any unsatisfied or not adequately satisfied human need reveals a form of human poverty, hindering happiness and therefore developing potential pathologies (Cruz, Stahel, and Max-Neef 2009). What changes over time and between cultures are the satisfiers of these needs. There is no one-to-one correspondence between needs and satisfiers. One satisfier may contribute simultaneously to the satisfaction of different needs or, conversely, a need may require various satisfiers in order to be met, and these relations are not fixed, they may vary according to time, place and circumstance (Max-Neef, Elizalde, and Hopenhayn 1991). Each economic, social and political system adopts different methods for the satisfaction of the same fundamental human needs. In every system, they are satisfied (or not satisfied) through the generation (or non-generation) of different types of satisfiers.

2.2 HUMAN NEEDS AND QUALITY OF LIFE

How well human needs are met or the extent to which individuals or groups perceive satisfaction or dissatisfaction in various life domains is represented by QoL (Costanza et al. 2007). QoL is commonly expressing the overall assessment of human experience across multiple disciplines including psychology, medicine, economics, environmental science, and sociology. It is a multi-scale, multi-dimensional concept that

contains interactive objective and subjective elements. A search in the Web of Science¹ database on Oct. 2015 revealed more than 530,000 results under the term “quality of life”, of which almost 39,000 under the research areas “sociology”, “social sciences” and “social sciences other topics” and more than 1,800 under the area “urban studies”.

Recent research in QoL has focused on two basic methodologies of measurement. One method uses quantifiable social or economic indicators to reflect the extent to which human needs are met. The other looks to self-reported levels of happiness, pleasure, fulfilment, and the like, and has been termed “subjective well-being” (see (Diener et al. 1999; R. A. Easterlin 2003)). The so-called “objective” measures of QoL generally focus on social, economic, and health indicators (Cummins et al. 2003), employing tools such as the UN’s Human Development Index (HDI) and GDP/capita (Vemuri and Costanza 2006). While these measures may provide a snapshot of how well some physical and social needs are met, they are narrow, opportunity-biased, and cannot incorporate many issues that contribute to QoL such as identity and psychological security (Costanza et al. 2008). “Objective” measures are actually proxies for experience identified through “subjective” associations of decision-makers; hence the distribution between objective and subjective indicators is somewhat illusory. More “subjective” measurement tools typically focus on personal reports of life experience that complement social, economic, and health indicators, such as the degree to which a perceived need is being met and the importance of that “perceived need” to one’s overall QoL. By integrating the “objective” and the “subjective” assessments of QoL and combining them with measures of human needs, as suggested by Costanza et al. (2007), it is possible to get a more complete and useful picture of QoL at multiple spatial and temporal scales. QoL can then be related to the opportunities that are provided to meet human needs in the forms of built, human, social and natural capital (in addition to time) and the policy options that are available to enhance these opportunities.

3. RESEARCH METHODOLOGY

3.1 USING HUMAN NEEDS AS DOMAINS OF STUDY

Following the previous section’s rationale, in this study we build on the H-SD paradigm (Max-Neef, Elizalde, and Hopenhayn 1991) taking into consideration the suggestions made by Costanza et al. (2007) on measuring QoL. The axiological needs category is used, with domains corresponding to Subsistence, Protection, Affection, Understanding, Participation, Leisure, Creation, Identity and Freedom. Protection is changed by Security, as suggested by Costanza et al. (2007), and Subsistence is considered within Reproduction, being the latter understood as a part of the former. Spirituality or Transcendence is also included because of its importance in the assessment as a need (see (Van Dierendonck 2011; O’Brien 2005)). As mentioned previously (see 2.1), what changes over time and between cultures are not the needs, but rather the way in which they are or are not satisfied at the existential level (i.e. concerned with the meaning and purpose that those relationships have for a person) according to different ways of being, having, doing, and interacting.

In this sense, every system of needs is either satisfied, or not, by different types of satisfiers. These, whether of an individual or collective nature, include all things that, by representing forms of being, having, doing and interacting, contribute to the realisation of human needs (Max-Neef, Elizalde, and Hopenhayn 1989). *Being* refers to personal or collective attributes (usually expressed as nouns related to the subject’s intrinsic attributes as our biological constitution, character and values); *having* registers institutions, norms, mechanisms, tools that can be expressed in one or more words (like exosomatic tools, laws and information);

¹ <https://www.webofknowledge.com/>

doing has to do with actions, personal or collective, that can be expressed as verbs. And *interacting* refers to locations and milieus (as times and spaces) and the way people relate to and articulate their environment (Max-Neef 1992).

Needs and satisfiers interrelate within a matrix, according to existential and axiological characteristics, where a larger description of their conceptual structure is explained (see Table 1 for an example). The matrix represents a fundamental tool of H-SD and can be used for multiple purposes as it helps communities and individuals to gain self-awareness about their preferences in a given set of satisfiers and, moreover, the way these preferences interrelate and affect each other systemically. The processes of identification and classification of satisfiers considering how each one affects the different dimensions of well-being, helps to highlighting the way specific social and cultural settings and development patterns enhance or inhibit personal freedom, autonomy and well-being. It helps to highlight how people satisfy their needs in terms of themselves and their own coherence, with respect to others and the community and respecting their environment (Max-Neef, Elizalde, and Hopenhayn 1989).

TABLE 1: EXAMPLE OF SATISFIERS FOR SPIRITUALITY / TRANSCENDENCE PERFORMED BY RESEARCHERS OF THE SUSTAINABILITY MEASUREMENT AND MODELING LAB AND THE INSTITUTE OF RESEARCH IN SUSTAINABILITY SCIENCE OF THE UNIVERSITAT POLITÈCNICA DE CATALUNYA – BARCELONA TECH.

	<i>Being</i>	<i>Having</i>	<i>Doing</i>	<i>Interacting</i>
<i>Spirituality / Transcendence</i>	Conscious	Nothing	Curiosity and conviction	Environment
	Balanced	Fortress	Make love	Contact with the nature
	Emotionally imbalanced	Contact with the universe	Help	Be calm
	Daily	Space	Share	Be still
	Detached	Guide	Understand	Peace of mind
	Tolerance	Inspiration	Reflection (processes)	Emotional peace
	Peaceful	Confidence	Think	Athenaeum
	Reflective	Ethics	Introspection	Church
	Tranquil	Consciousness	Meditation	Social place
	Explorer	Compassion	Study philosophy	Meditative environment
	Curious	Knowledge	Pray	Be silent
	Convicted	Feelings	Tantric sex	Depending on belief system
	Believer	Values	Dialogic learning	...
	...	Beliefs	Climb	...
		Time for the contemplative life	Look at	
		...	Observe	
			Pass (the ideas)	
		...		

3.2 SURVEY AND CASE STUDY

At the beginning of the assessment, we suggest to start defining one's (urban) system (time, space, culture, history, etc.) in order to proceed to the definition of the satisfiers (see section 3.1). That system corresponds to the place or environment constituting the case study. According to the socioeconomic and geographical characteristics of the chosen place, a first draft of a survey should be edited by the authors. All possible subjects assumed to affect individual and group QoL and well-being should be taken into consideration in order to capture the perceptions of the dwellers and in relation to the selected place. The survey answers directly to the subjective dimension of QoL. An example of questions (and groups of questions) associated to satisfiers before being weighted into needs can be found in the Appendix (Table A1). The first column corresponds to the satisfiers, the second one to the groups of questions, the third one to the questions and the last one to the response range.

Afterwards, questions are classified into the ten aforementioned needs or study domains through their satisfiers. The matching of the questions to one or more needs is a subjective choice related to personal understanding and interpretation. As it is considered a complex task but still important for the interpretation of the results, the authors suggest two ways that may help during the process. The first includes working on the draft with experts and the second along with the community of the area under study. A mixed method may also be an option. The selected study group will have to review the questionnaire draft and the satisfiers list for lacking of important issues. When an agreement on the final satisfiers and questions is achieved, the procedure may continue and they should be asked to individually match the questions to each need. The easiest way here would be to classify each question only to one need, but it is recommended to give the freedom of selection to each individual, as questions may belong to more than one need according to their personal point of view (see section 3.1). The collection of all individual classifications of the study group must be then weighted. The result will be similar to the process and relations represented in Figure 1, where, e.g., considering Need 1, the three people of the study group believe that it is assessed by Q1 while only two of them believe that it is also assessed by Q2. The Question weight is the ratio between the number of people selecting that need and the total number of people in selections. In this case, the Question weights for this specific need (N1) would be 3/5 for Q1 and 2/5 for Q2. If the number of questions is large, the study group may use the groups of questions or even directly the need satisfiers (see Appendix, Table A1) for the classification.

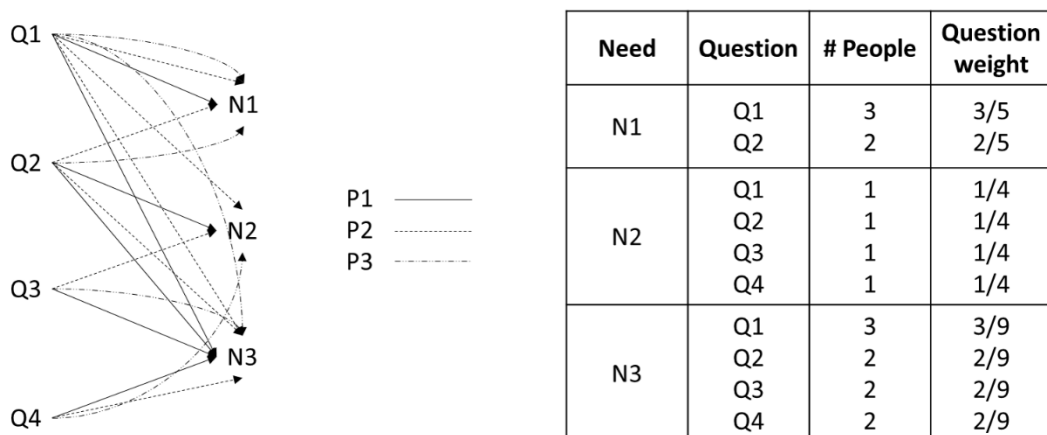


FIGURE 1: EXAMPLE OF CORRESPONDENCE OF QUESTIONS (QI) TO NEEDS (NI) ACCORDING TO THE PERCEPTIONS OF THE DIFFERENT PEOPLE (PI) INCLUDED IN THE STUDY GROUP. IN THIS CASE, THE STUDY GROUP CONSISTS OF 3 PEOPLE (P1 – P3), EACH OF THEM EXPRESSING HER PERCEPTIONS ON THE CLASSIFICATION OF QUESTIONS PER NEEDS. FOR EXAMPLE, CONSIDERING N1, ALL OF THEM BELIEVE THAT IT IS ASSESSED BY Q1 WHILE P2 AND P3 BELIEVE THAT IT IS ALSO ASSESSED BY Q2. THE QUESTION WEIGHTS FOR THIS SPECIFIC NEED ARE 3/5 FOR Q1 AND 2/5 FOR Q2, WHERE 5 IS THE SUM OF THE SELECTIONS PEOPLE MADE FOR THE NEED.

Table 2 represents a real example where questions are satisfied and weighted within the corresponding needs. For Question Q7 (related to satisfaction with one’s health) we observe that 5 people out of 6 of the study group classified it inside Subsistence, resulting in a weighting score of 2.75% for that need. At the same time, 4 of them classified it in Freedom, resulting in a weighting score of 1.72% for that need.

TABLE 2: CLASSIFICATION AND WEIGHTING EXAMPLE.

NEED	ID	QUESTION	# PEOPLE	QUESTION WEIGHT
SUBSISTENCE	Q7	How satisfied are you with your health?	5	2,75%
FREEDOM	Q7	How satisfied are you with your health?	4	1,72%
SECURITY	Q41	How safe do you feel at your neighbourhood?	6	3,02%
CREATIVITY	Q73	How often do you experience stress?	4	3,05%

The survey should be answered by a random sample of the target population related to the study case. It should be anonymous and may be completed both online and in person. The web survey mode is proposed because it has several advantages. It does not suffer from interviewer bias, and responders may feel more comfortable answering sensitive questions or moving through a survey at their own pace (Pearce and Ozdemiroglu 2002). Moreover, a vast improvement in response speed over traditional mail surveys is widely reported and the financial expenditure (Wolfgang 2002) and environmental impact of surveys on the Internet is smaller due to the elimination of postage, printing and data entry (Dillman and Bowker 2002). The lack of any clarification of questions (MacKerron and Mourato 2009) and the over-participation of responders with degrees in higher education, that tend to belong mainly to middle class and be more liberal (Brenner 2002; Wolfgang 2002) can also be catalogued as some of the disadvantages of web surveys. Using only online surveys thus can cause some bias and may considered as non-representative. This is why the use of in-person surveys is also suggested by the authors.

3.3 COMPARISON BETWEEN SUBJECTIVE AND OBJECTIVE DIMENSIONS OF QOL

Once the subjective approach is completed, the objective one should be added. Generalised thresholds and norms do not always function for all urban environments, and should be adjusted to the selected space and its residents’ culture, habits, customs and traditions. Even so, subjective perceptions and thresholds do not always coincide with the objective reality, where thresholds are usually quantified under unbiased assumptions. This fact might influence QoL and the perception that people obtain from their surrounding space and environment, curtailing initiatives that would be otherwise beneficial. Consequently, objective and subjective indicators and their thresholds should be compared in order to detect possible deviations.

Table 3 shows an example of comparison between subjective and objective approaches. The first and second columns contain the Need and the question respectively. The following three columns correspond to the subjective dimension of QoL measurement: higher satisfaction percentage related to the answer, threshold and satisfaction related to the threshold. The next three columns correspond to the objective dimension of QoL measurement: actual value of the item, threshold and threshold satisfaction respectively. Although it is sometimes difficult for the researcher to obtain data on the local scale, depending on the available data source, actual values should be obtained in decreasing order from the local to the regional scale. Objective thresholds come also in decreasing order from established local, regional or world legal limits and regulations. The Final check column evaluates whether the final value of the comparison between the two types of measurements is positive, negative or neutral. When positive (i.e., both “Yes”) the result is equal to 1 unit. When negative (i.e., both “No”), the result is equal to 0 units. When there is a “Yes” and a “No”, the result is

equal to 0.5 units. The Question weight column incorporates the weight of the classification from the weighting process on behalf of the study group composed by the experts and/or the community (see section 3.2). The last column gives us the Total score, the product of the Final check and the Question weight column.

TABLE 3: EXAMPLE OF COMPARISON BETWEEN SUBJECTIVE AND OBJECTIVE INDICATORS OF QOL. RESULTS EXTRACTED FROM A STUDY FOR A NEIGHBOURHOOD OF BARCELONA.

NEED	QUESTION	SUBJECTIVE			OBJECTIVE			FINAL CHECK	QUESTION WEIGHT	TOTAL SCORE
		ANSWER	THRESHOLD	SATISFACTION	VALUE	THRESHOLD	SATISFACTION			
SUBSISTENCE	How satisfied are you with the air quality?	4-5: 9,20%	4-5 > 50%	No	ICQA average (2010) = 52 ¹	50<ICQA<75 ²	Yes	0.5	1.65%	0.83%
SECURITY	How satisfied are you with the air quality?	4-5: 9,20%	4-5 > 50%	No	ICQA average (2010) = 52 ¹	50<ICQA<75 ²	Yes	0.5	2.01%	1.01%
SUBSISTENCE	How satisfied are you with the green spaces?	4-5: 8.62%	4-5 > 50%	No	Urban green: 6,55 m ² /hab ³	WHO optimum: 14m ² / hab Minimum: 10m ² / hab ⁴	No	0	1.65%	0%

¹ Air quality index (ICQA) for Barcelona (Idescat 2013).

² (Generalitat de Catalunya 2012).

³ (Ajuntament de Barcelona 2008).

⁴ (WHO 2015).

3.4 INTEGRATIVE QOL

In order to obtain an integrative value for QoL, both subjective and objective dimensions of QoL should be measured per need according to every question's satisfaction inside each need ("Yes" values can be translated to 1s and "No" to 0s) multiplied by the Question weight (see example of Table 3). Final numerical values are expressed as percentages to facilitate comparison. Integrative QoL should be then quantified in the same way but by means of the Total score (as explained in section 3.3). The result will be similar to Table 4 and Figure 2. Totals above 50% are considered as strong satisfaction of the corresponding need and those below 50% as weak satisfaction. In this specific example, for subjective QoL it is calculated a strong satisfaction of all needs but of Spirituality / Transcendence (40%) and Creativity (50%). The objective scores seem all lower than the subjective ones except for Leisure and Creativity needs. Freedom and Spirituality were not counted in this case, because there were found no objective indicators corresponding to them for the selected urban environment. When it comes to the integrative score, needs for Leisure, Participation and Identity seem rather satisfied. Subsistence, Security, Affection, Understanding and Creativity have a middle score of 50%, while there is no weak satisfaction of any need. Freedom and Spirituality / Transcendence were again not counted due to the absence of objective indicators. To obtain the Totals (last row of Table 4), the mean of the result

for each Need was calculated. We observe a significant difference between objective and subjective scores in average terms, with the objective score below the subjective one. This integrative total result stands in between subjective and objective scores, balancing the results of these two. Each result depends on the quantifiable items used during the calculation. In some cases the number of items used for the objective or subjective dimension is not the same as the one used to obtain the integrative numerical result.

TABLE 4: EXAMPLE OF A QOL ASSESSMENT FOR A SPECIFIC PLACE, INDICATING PERCENTAGES PER NEED AND PER QOL CATEGORY (SUBJECTIVE, OBJECTIVE AND INTEGRATIVE) AND TOTAL AVERAGES. RESULTS SHOW A SIGNIFICANT DIFFERENCE BETWEEN OBJECTIVE AND SUBJECTIVE SCORES IN AVERAGE TERMS, WITH THE OBJECTIVE SCORE BELOW THE SUBJECTIVE ONE. THE FINAL INTEGRATIVE RESULT STANDS IN BETWEEN SUBJECTIVE AND OBJECTIVE SCORES, BALANCING THE RESULTS OF THESE TWO.

HUMAN NEEDS (DOMAINS)	Subjective QoL	Objective QoL	Integrative QoL
	%	%	%
1. SUBSISTENCE	73.3	66.7	66.7
2. SECURITY	58.3	55.6	50.0
3. AFFECTION	80.0	0.0	50.0
4. UNDERSTANDING	100.0	0.0	50.0
5. PARTICIPATION	75.0	50.0	75.0
6. LEISURE	60.0	100.0	100.0
7. CREATIVITY	50.0	60.0	50.0
8. IDENTITY	93.3	87.5	87.5
9. FREEDOM	100.0	-	-
10. SPIRITUALITY/ TRANSCENDENCE	40.0	-	-
TOTAL	73.0	52.5	66.2

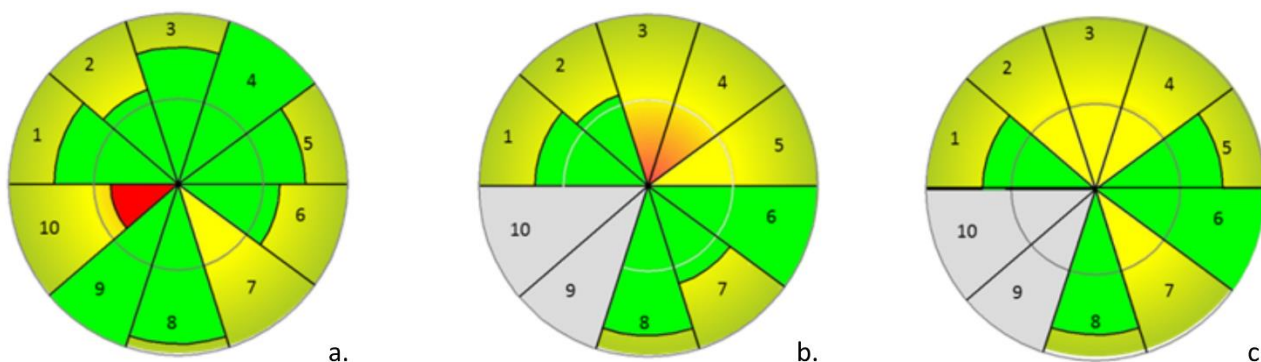


FIGURE 2: EXAMPLE OF A GRAPHIC REPRESENTATION OF A QOL ASSESSMENT FOR A SPECIFIC PLACE. PUNCTUATION FOR EACH NEED IS REPRESENTED GRAPHICALLY FOR (A) SUBJECTIVE QOL, (B) OBJECTIVE QOL AND (C) INTEGRATIVE QOL. NEEDS HAVE BEEN NUMBERED AS FOLLOWS: 1- SUBSISTENCE, 2- SECURITY, 3- AFFECTION, 4- UNDERSTANDING, 5- PARTICIPATION, 6- LEISURE, 7- CREATIVITY, 8- IDENTITY, 9- FREEDOM AND 10- SPIRITUALITY/ TRANSCENDENCE. STRONG SCORES (>50%) ARE REPRESENTED IN GREEN, NEUTRAL (50%) IN YELLOW AND WEAK (<50%) IN RED COLOURS. THE INNER CIRCLE INDICATES THE AVERAGE VALUE OF 50%. GREY COLOUR REFLECTS NEEDS THAT WERE JUDGED AS NON-QUANTIFIABLE FOR THE SPECIFIC CASE OF STUDY (NO CORRESPONDING OBJECTIVE INDICATORS WERE FOUND FOR THE SELECTED URBAN ENVIRONMENT).

4. DISCUSSION

The present worldwide trend toward urbanisation is not only leading to significant impacts on the global environment but also seriously affecting the emotional and physical state of city dwellers. How benevolent, unfriendly, creative or unproductive can we expect a city to be, depends essentially on how its citizens behave, work and live and, complementary, on how the physical environment receives them and accommodates their daily demands. Although urban planners, architects and sociologists among others tend to evaluate city dwellers' demands in order to define the best possible urban context to apply their theories, they usually rely on either objective measures and indexes or subjective ones, only partially addressing the polyhedral urban

dweller reality. Adding the possibility of expression of citizen voices to policy processes would deliver the much sought after openness, transparency and inclusive dialogue missing in regular institutional and political practice (Carvalho, Pinto-Coelho, and Seixas 2016). The subjective perception and feelings that a city dweller obtains from its surroundings is usually more than the mere sum of its isolated, and objectivised, forming parts. Thus an integrative assessment is needed to conflate objective and subjective spheres in order to evaluate QoL in the particular case of the urban environment, keeping always in mind that as society–nature relationships are characterised by complexity, uncertainty and political contentiousness, a complete and impartial view is rarely, if ever, possible (Scrase and Sheate 2002). Following this rationale, the methodology presented in this paper allows the aforementioned integrative approach considering both aspects and incorporating different questions into axiological domains, in order to evaluate it under the Human-Scale Development frame of reference (Max-Neef, Elizalde, and Hopenhayn 1991). By these means, it favours a small-scale, human-oriented, democratic approach, potentially leading to a more social design of urban space (Gifford and McCunn 2013), respecting the urban environment.

The use of human needs as domains of study aims at understanding the category in which a problem may be concentrated. Needs indicate deprivations and at the same time individual and collective human potential. Each economic, social and political system adopts different methods for the satisfaction of the same fundamental human needs. In every system, they are either satisfied or not through the generation or non-generation of different types of satisfiers. As a consequence, the method here presented may also be of great help when having to decide the focus of a decision making process, concerning future policies, plans and measures of improvement. At the same time and keeping in mind that the fulfilment of all needs is considered equally important as any unsatisfied or not adequately satisfied human need reveals a form of human poverty, this methodology can be considered as a useful tool both to evaluate and to improve the current urban environment, concentrating our efforts on the QoL of the dwellers.

In the example presented in section 3.4, results show a significant difference between objective and subjective scores in average terms, with the objective score below the subjective one, indicating that either people have answered trying to appear more satisfied than they really are, or objectively established thresholds are really strict related to the reality and they do not correspond to what people truly need or feel. The final integrative result stands in between subjective and objective scores, balancing the results of these two, pointing out the significance of the integrative methodology. Not all individual needs' results follow the same pattern, as in the case of Leisure or Subsistence. This is because each result depends on the quantifiable items used during the calculation. In some cases the number of quantifiable items used for the objective or the subjective dimension is not the same as that used for the integrative one, an outcome which depends on the available data.

Concerning the objective thresholds, the scale of reference is considered of great importance. It is true that researchers often encounter difficulties in finding legal limits and regulations or data at a local scale. However, it is recommended to always concentrate their inquest from the local to the regional and the global in order to maintain the same reference scale and to enable a comparison with the subjective data. At the same time, caution should be taken during the selection of the objective indicators as they cannot be based in subjective perceptions.

It must be stated here that this type of measurements represent a snapshot in time. Urban environments are dynamic (Batty 1971) and open systems (Sennett 2006) and should be studied as such. The desire to explain the world in terms of simple cause-and-effect relationships is a fundamental characteristic of human beings (Orrell 2007). But, although a higher predictive power is possible in theory, such performance requires an

homogeneous system and perfect ex-ante knowledge of it (T. Martin et al. 2016). Any measurement data used for predictive purposes related to the QoL in our system would need to be collected over sufficiently long time periods and samples to successfully capture or model the co-evolution of humans with their environment or place and develop an effective knowledge base (Costanza et al. 2007) and improvement scenarios.

5. CONCLUSIONS

This paper defines a simple tool to quantify and evaluate current levels of QoL for urban environments. It can be used to define more useful urban quality indexes in order to improve decision making processes, policies and plans. It is based on the accomplishment of the fundamental human needs according to the Human-Scale Development framework. QoL is interpreted as something complex and multidimensional. It depends on the chosen spatial and temporal scales, methodology, the inclusion or exclusion of the different factors and indicators, the target group, etc. It is mandatory to try to incorporate all the different options and aspects that may affect a person's or group's QoL, and the fulfilment of his or their needs. A good interpretation of the accumulated data may lead to the creation of a visual representative image of the sample and foresee in it what is missing, what goes wrong and what is affecting personal QoL. By incorporating the objective dimension and comparing it with the subjective one, more holistic results can be obtained.

Urban design and planning must be focused on the making of places for people and precisely on the process of making better places for people than would otherwise be produced. To achieve QoL, there is a need for a more democratic and enriching environment to maximise the degree of user choice, giving emphasis on the correlation between designed space, activities and use. We hope this methodology could help scholars, researchers, decision makers and citizens to finally understand that urban planning should be about planning for people who live in the city rather than planning for the city.

6. ACKNOWLEDGEMENTS

We would like to thank the researchers of the Sustainability Measurement and Modeling lab and the Institute of Research in Sustainability Science of the Universitat Politècnica de Catalunya – Barcelona Tech that contributed in the production of Table 1.

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APPENDIX

TABLE A1: EXAMPLE OF QUESTIONS (AND GROUPS OF QUESTIONS) ASSOCIATED TO SATISFIERS BEFORE BEING WEIGHTED INTO NEEDS.

Satisfiers	Groups of questions	Questions	Response range
Food, shelter, vital ecological services, healthcare, rest	Caloric intake, access to clean air, water, facilities	Are you satisfied with the quality of water in your area?	1 (no) - 5 (a lot)
		Are you satisfied with the quality of air in your area?	1 (no) - 5 (a lot)
		How satisfied are you of the sanitation facilities in your area?	1 (no) - 5 (a lot)
		How satisfied are you of the green spaces in your area?	1 (no) - 5 (a lot)
		How satisfied are you of the pedestrian areas in your area?	1 (no) - 5 (a lot)
		How satisfied are of the noise in your area?	1 (no) - 5 (a lot)
	Access to health care	How satisfied are you of the traffic in your area?	1 (no) - 5 (a lot)
		How satisfied are you with your health?	1 (no) - 5 (a lot)
		Do you have any long term disabilities, health/mental problems?	Yes/No
		If yes does the long-term disability restrict your activities?	Yes/No
Nurturing of children, pregnant women	Maternity leave/child care	Do you have access to public or private health care?	Yes/No
		If yes, how satisfied are you of your health care?	1 (no) - 5 (a lot)
Transmission of the culture	Family provision for care	Do you have in charge children from 0 to 14 years old?	Yes/No
		Time dedicated to the education of children	1 (no) - 5 (a lot)
Homemaking	Household and child care allocation within the household	Do you think that the time you dedicate to your children's education is adequate?	Yes/No
		Do you own your home?	Yes/No
		Do you believe that your living environment (house / apartment) favours the feeling of home?	Yes/No
Enforced predictable rules of conduct		Do you feel "at home" when you go home?	Yes/No
Safety from violence at home and in public	Interpersonal violence experiences	Do you thing that the existent rules and leys for your safety are sufficient? / Do you feel safe at your area?	1 (no) - 5 (a lot)
Security of subsistence into the future		Have you ever experienced violence in you familiar environment?	Yes/ No
Maintain safe distance from crossing critical ecological thresholds	Environmental practices	Do you think you can make plans for the future?	Yes/ No
Stewardship of nature to ensure subsistence into the future		Do you: recycle, save energy, don't spare water, share your car, share your apartment, use the bicycle, prefer walking to the destinations or use the public transportation?	Yes/ No
Care for the sick and elderly	Who provides care for aged parents etc. / in case of acute, chronic illness	Do you provide care for aged parents/ family or to somebody with a chronic illness?	Yes/ No
Being able to have attachments to things and persons outside ourselves	Level of attachment to significant others	Do you have or planning to form a family?	Yes/ No
		How much do you depend on your family?	1(no) - 5 (a lot)
		Do you have friends?	Yes/ No
		How much do you depend on your friends?	1(no) - 5 (a lot)

Solidarity, respect, tolerance, generosity, passion, receptiveness, ...		How often do you experience compassion, calmness, forgiveness, contentment, generosity, respect, passion, tolerance, solidarity, receptiveness?	1 (occasionally) - 5 (really often)
		How often do you experience selfishness, jealousy, fear, worry, loneliness, anger, stress?	1 (occasionally) - 5 (really often)
		Which of the above do you think that may change in a different urban environment?	
Access to information	Newspaper, radio, TV, internet, usage for news information	How often do you check the news on the newspaper, radio, television, and the internet?	1 (no access) - 5 (continuously)
Intuition and rationality	Education	What is your education level?	no studies - doctoral
To act meaningfully in the world	Volunteering, association memberships	Do you or have you ever worked as a volunteer?	Yes/ No
		Do you participate to any association?	Yes/ No
		Are you a member in any social group?	Yes/ No
Contribute to and have some control over political, community and social life		Do you contribute to and have some control over political, community and social life in your area?	Yes/ No
Being heard		Do you express your opinion or speak publically?	Yes/ No
Meaningful employment		Do you consider your job meaningful?	Yes/ No
Citizenship		Do you participate to the local assemblies of your neighbourhood?	Yes/ No
		Do you vote at the elections?	Yes/ No
Recreation, relaxation, tranquillity, access to nature, travel	Time use, activities pursued, money spent	How satisfied are you of your free time?	1(no) - 5 (a lot)
		How many hours do you work, spend with family/ friends, dedicate to yourself and dedicate to commuting?	0 - >8h
		How happy are you with your time distribution?	1(no) - 5 (a lot)
Play, imagination, inventiveness, artistic expression	Free time use	With what frequency do you: go out, go to an excursion to the nature, go to spiritual or religious celebrations, watch TV, use internet/ computer at home, participate to an artistic activity, do sports, go to the cinema, see your friends, go to a museum, concert, play music, writing, drawing, sculpture?	1 (never) - 5 (every day)
	Sense of play in work, etc.	Do you consider your time spent to work as creative?	Yes/ No
Status, recognition, sense of belonging, differentiation, sense of place	Major statuses, sense of "place"	Specify you relationship with the area	Live there, lived there, live close, work there, visit, etc.
		Specify your gender, age, type of occupation, salary per month.	
		How satisfied are you of your life, work, money, the place you live, family life, social life, social status?	1 (no) - 5 (a lot)
		Do you feel like forming part of the place you live?	Yes/ No
		Do you think that with the money you earn you would live better in a different part of the city?	Yes/ No
Being able to live one's own life and nobody else's.	Personal freedoms in various social contexts (family, work, religion, etc.)	Do you feel free as a person?	Yes/ No
Mobility		Is the connection with work satisfying?	Yes/ No
Engaging in transcendent experiences	Spiritual/ transcendent experiences spiritual organization membership	How spiritual do you consider yourself?	1 (no) - 5 (a lot)
		How often do you meditate/ pray?	1 (no) - 5 (a lot)

Access to nature		Do you have access to the nature?	Yes/ No
		Do you feel the need once in a while to visit nature?	1 (no) - 5 (a lot)
Participation in a community of faith	Time spent on spiritual activities	How much time do you spend in spiritual activities?	1 (1-2 times per year) - 5 (everyday)