

# The Right to Sunlight

*Karla Chebenová*

Daily presence of sunlight is a proved essence for any alive being, not only human. Light from the Sun is supporting a number of biochemical processes in the human body. But the rising size and the density of physical environment is rapidly limiting the access to direct sunlight, mainly in residential spaces. This basic need is named "the right to sunlight." Despite of existing urban strategies in daylighting [including sunlight], the result is mostly inappropriate and unequal. This, together with the social and economic differences in cities, creates groups of disadvantaged. As the pressure to produce a cheap dwelling is rising, private sector, as the major investor, prioritizes rather profit based on rising urban density, than the concept of 'suitable living environment', suggested by Fainstein. In that manner, the theoretical concept of just cities is discussed and further application is developed. The equal implementation of "the right to sunlight" is argued through 'equity, democracy, and diversity'. Based on the fact that sunlight is irreplaceable, appropriate and equal daylight conditions should be a part of the urban planning strategies. The most reasonable way to enforce this equity is to implement "the right to sunlight" into the legislation.

Karla is an architect who is living in Stockholm. She gained her architectural degree in Slovakia and currently is preparing the background thesis research in 'Architectural lighting design' at the Royal Institute of Technology in Stockholm. Her professional career is based on a passion in daylighting in architecture and urban planning.

In this essay "the right to sunlight" in housing is suggested to become a part of urban planning strategies of the just cities. My arguments are based on the conclusion presented in "The Just City": Fainstein in her book used the concept of "equity, democracy, and diversity as the three primary qualities constituting urban justice" (Fainstein, 2010, p.165), what is further developed and applied on the concept of "the right to sunlight."

## **Health and sunlight**

One old saying appears in many countries and says: "Where the sun does not go, the doctor does." Sunlight means health. One can dispute that the sunlight causes cancer. Yes, the long and intense exposition of a specific UV light could raise the risk of getting cancer (Cancer research UK, 2014). But on the other side, a rational exposure of the direct sunlight could supply a necessary production of D vitamin (Harvard medical school, 2005). A human body relies on the exact wavelengths inevitable in a number of biological processes ongoing in the human skin, brain and body itself (Mead, 2008). As a consequence of physical processes also psychological conditions, as the result of hormonal imbalance, are influenced. Appropriate light conditions are responsible for a good sleep and a mental health (Mead, 2008).

Sun emits radiation of all wavelengths. Except the visible light, it is also an infrared spectrum warming up our rooms and an invisible ultraviolet light. However, the daylight became a generalized term for all visible light emitted by the Sun. Based on the direction; daylight is divided into the indirect ambient 'daylight' and the direct 'sunlight' [terms used further]. Both are helping us to see. The ambient daylight is present everywhere as a diffused light from the cloudy sky or reflected from the surroundings and the direct sunlight is what is creating shadows and making us blind.

## **Sunlight and built environment**

Visible light is the reason why we can see, ergo all we see is the light, not objects. The light from any light source is reflected by surfaces and information is through the eyes transformed into the brain. That is how we "see." Light is spread through the environment until some physical obstacle stops it. The obstacles in the cities are buildings. But the built environment is the place where we live. It is an unlimitedly diverse physical surrounding, which directly influences natural lighting conditions. Those conditions rely on the urban structure and density. The urban structures consist of buildings, streets, parks, playgrounds and every other place where we spend our lives. The term 'urban density' can be defined as an amount of the sold floor area per square unit of the city ground area. Higher urban density is reached by creating of the vertical dimension – building the floors. With the rising density of a built environment, there is a decreasing amount of sunlight in the urban space; outdoor and mostly indoor. However, the space where we spend most of the time is an indoor environment, especially residence.



Figure 1

### Sunlight in urban planning

During the history of city planning, different strategies were developed to control urban growth. By rising population, the higher and higher demands are put on cities to provide more and more housing units. This growth, together with the research in on sunlight-dependent human health conditions, caused the development of daylighting strategies [including indirect ambient light and also direct sunlight]. Based on the movements of the Sun, sunlight must be considered as dynamic part of the city. In other words, the mentioned strategies depend on the 'place and time'.

In a daylighting field it's very important, where the 'place' concerned is located. Depending on latitude, Sun has different trajectory on the sky and its high above the horizon is changing during the year and as well during the day. For that reasons the length of shadows is varying as is shown on figures 1 and 2. The question of 'time' is important, if we want to go deeper into the specific evaluation. For example, inhabitants of dwelling unit in the north of Sweden are fully employed people. It would be more useful to place a living room towards the west than east, whereas in the morning a working person mostly occupies the kitchen and the bedroom. On the other hand, the living room is mostly used in the late afternoons, i.e. west orientation. So if we put significance of 'time and place' into relation, we would be able to evaluate this or any other example along the whole year. Applied on the previous example, Sun in the north of Sweden is high enough above the horizon only for limited time (approximately from spring to autumn). The rest of year any urban planning strategy would not be very helpful, because the sun appears already very low above the horizon. On this simple case the meaning of 'time' and 'place' in sunlight planning were explained and how situations can vary.

Based on the example, diverse approaches in daylighting were developed all around the world. Present situation is that daylighting laws, rules or guidelines depend on legislative of every country. It means that within few kilometers (the same

latitude and climate) could appear different legislation. Despite of the existence of guidelines or rules for daylighting, most of them consider only ambient daylighting and only a few of them also direct sunlight.

Australia – "Sunlight: Class 2 dwellings - 3 hours min of sunlight to the living rooms and private open spaces of 70% of dwellings between 9am and 3pm. In very high density areas reduced sunlight hours to be supported by modelling" (New South Wales Government, 2014)

Slovakia – All apartments for permanent living have to have direct sunlight at least on 1/3 of habitable floor area between 1st March and 1st October; 1,5 hour for one-room apartment and 3 hours for two-room and bigger apartments. In historical areas can be in special cases can duration of direct sunlight decreased to 1 hour. (Slovenská Technická Norma, 2005)

Sweden – A desired value of sunlight in a living environment is at least 5 hours of between the hours of 9:00 to 17:00, at the spring and autumn equinoxes. Student housing is not counted as a living environment. (Boverket, 1991)

Overall, since the local conditions vary, also climate varies and the additional passive gains in some warmer countries must be also considered

### Disadvantaged groups in cities

One of the signs of democracy is a society divided into groups. The main division from economical point of view is into those well-off and those that aren't. The economic criterion is used also by Fainstein. She compares well-off and disadvantaged groups within urban planning and urban policy and defines disadvantage as a subjective and usually categorized according to social group affiliation (Fainstein, 2010). We can consider groups with lower income as disadvantaged.

Population growth requires adequate response and provide appropriate amount of housing units for everyone, including the mentioned disadvantaged groups. The prices are the main

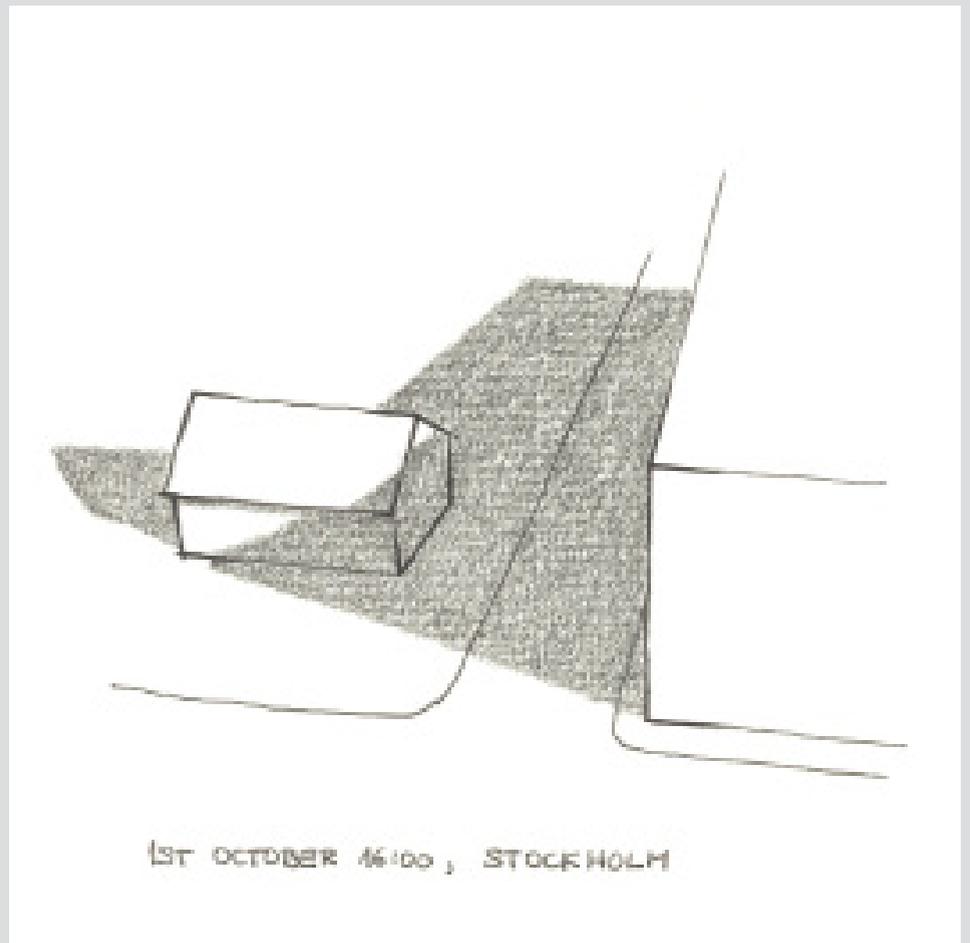


Figure 2

parameter for self-provided housing, so regarding to Fainstein (2010, p.172) that "...crises of housing availability lead to pressure for building at higher densities." As the result, prices of housing are pushed down by raising level of urban density. Fainstein further continues (Fainstein, 2010, p.172) and I have to agree that "all new developments should provide units for households with incomes below the median, either on-site or elsewhere, with the goal of providing a decent home and suitable living environment for everyone." Satisfying health supporting conditions should be a part of 'suitable living'.

Fainstein stated a main problem of disadvantaged groups by stating "What we do know is that groups [disadvantaged] most lacking in political and financial power and most subject to disrespect are least likely to be included in deliberation or to prevail in the outcome. A commitment to justice technical efficiency is evaluating the content of policy would shift the balance in their favor" (Fainstein, 2010, p.56). Based on this statement could even appear a risk that a less fortunate people are disadvantaged even twice; not only by not having financial strength but also by higher probability of being excluded from the deliberation process. She suggests reconsidering policy to favor them.

#### "The right to sunlight"

"The right to sunlight" in this essay means a general approach that every human being should have guaranteed appropriate lighting conditions supporting health, not opposite. Based on the fact that sunlight is irreplaceable in human biochemistry, appropriate and equal sunlight conditions should become part of urban planning strategies.

#### Justice in "the right to sunlight"

Justice is a very wide term, which can be defined in a number of contexts. In the case of sunlighting it means that conditions supporting health are available for everyone equally. It does not mean that everyone's circumstances will be equal. It basically

means that the result should be as just as possible, depending on time and place.

In practice, two neighbours should be treated the same and none of them in harmful way. The outcome should be as equal as is possible within the existing general conditions. The environment in the old city center cannot be compared and judged the same way as a newly built area on a greenfield.

Further, urban structures, as general conditions, are not homogenous so an appropriate result cannot be either. "The particular policies that best satisfy the criteria will vary according to the 'time and place', but the fact that we cannot specify ex ante the most progressive policies does not mean that we cannot establish bases of judgment" (Fainstein, 2010, p.85). As a professional, I have experienced almost unlimited number of specific situations that can occur and in some cases, even the clearest and precise policy cannot be fully applied. But it does not mean that in those situations that any policy cannot be applied. To put it differently, equality in sunlighting must be the main intention and cannot be reached absolutely equally across the board.

To raise the justice in cities, Fainstein proposed from sociological point of view, implementing of three values of 'equity, diversity, and democracy'. And I have to agree; equity was already discussed, the social diversity can help to implement "the right to sunlight" and importance of democracy is obvious. The deliberative democracy together with diversity can support implementing equity. As was mentioned earlier, politically and economically stronger groups have stronger influence in deliberative democracy and by the diverse mixing well-off or privileged groups and the others can be moved favor towards the disadvantaged. That means more even spread voices within the cities to implement "the right to sunlight".

#### Discussion

Built environment is the place where we live. We define urban structure by the way how we live and then the same urban

structure defines us. We depend on what is around us; we are living close where we work, we walk where the pavement is, we park where the parking place is located and our children play where safe places are. What is built is almost impossible to change and natural changes mostly come only in time, within generations. Hence, the only thing possible to influence is our future.

All changes in cities depend on number of decisions done a couple of months, years or dozens of years ago. In a democracy decisions are done by planners, politicians and private subjects, or by variety of combination of all three. Urban planners are professionals in field of urban development, government is representing the public interests and private subjects represent mostly just their own benefits with the main aim to create profit. And, "only three forms of constructions have the potential to generate big profits for private developers: luxury residences and hotels, large-footprints office towers, and shopping malls" (Fainstein, 2010, p.179). But, the places where we spend majority of our lives are residential buildings and that is precisely the less interesting sphere for private sector. Based on facts mentioned before, prices depend on a density of the urban structure; ergo higher density means higher profit. Consequently, rising density is in an opposition to enforcing "the right to sunlight". Under those circumstances, dwelling is not considered enough profitable. Thus, how could we expect that private sector would build housing rather satisfying criteria of 'suitable living environment' then criteria of making profit?

## Conclusion

Furthermore, some questions appear; would it be possible to motivate potential private investors or at least control the quality of production of affordable dwelling and if, how? With this in mind, Fainstein is suggesting that "Planners should take an active role in deliberative settings in pressing for egalitarian solution and blocking ones that disproportionately benefit the already well-off" (Fainstein, 2010, p.173) we can optionally exclude every group following only own profit. In order to excluding private groups, in the decision making process would stay only representatives of democracy and planners. But the other option could be also based on regulated cooperation of government and private sector. As Fainstein is also suggesting, private subjects could be motivated by benefits from side of government, which would be guarantee to have a control. This system of cooperation already exists in many countries (Fainstein, 2010).

Likewise a very similar solution can be applied also in case of enforcing "the right to sunlight". Government would take a control of implementation any strategies formed by planners. Planers in this case must be objective and independent. As a step between the need [of sunlight] and the decision, should be developed a strategy including the objective rules created by specialists. In case of "the right to sunlight", being closer to balanced policy could be done by considering it as a basic right, transforming it into legislation, what would be more effective in aggregative democracy. In any type of strategy would be useful to "...develop an investigation and critique of present urban institutions and policies, especially as they apply to urban redevelopment; and concludes with a discussion of institutional and policy approaches to achieve greater social justice within cities" (Fainstein, 2010, p.6). Investigation and critique must be a part of any change within an environment permanently inhabited by people. Even if the legislation for daylighting exists, the discussion must be a part of urban planning. This can be applied easier in case of deliberative democracy.

Fainstein further quotes Healey that "The concept of communicative planning thus starts with the preposition that decisions should be reached 'by an intersubjective effort at mutual understanding'" (Fainstein, 2010, p.26). So obviously, urban planners are not the only specialists participating on the development of urban planning strategies. As I mentioned at the beginning, "the right to sunlight" is an interdisciplinary issue.

So further should take a part also economists, spatial planners, statisticians, daylight specialists and architects. Thus, the risk of unfair decision is in this case minimal as the results can be empirically measured. The complexity of problematic would additionally need also support from e.g. the computer and software specialists to develop appropriate computer programs and propose precise future plans in relatively short time to decrease expenses.

As we can see, implementing of "the right to sunlight" would be a very complex interdisciplinary issue requiring very an effective cooperation and a long period of planning process. Additionally, the political will is also an extremely important part in decision making processes. Everyone should be treated evenly and never in harmful way. "If people are moved against their will, then democracy and equity are not served" (Fainstein, 2010, p.73).

## References

BOVERKET (16 September 2014): *Hälsa och miljö i byggnader: Ljus i byggnader - Solljus*, (Online). Available on: <http://www.boverket.se/sv/byggande/halsa-och-inomhusmiljo/ljussolljus/solljus/> (Accessed on 08/12/2015)

CANCER RESEARCH UK (23th September 2014): *Skin cancer risks and causes. Skin cancer and the sun*, (Online). Available on: <http://www.cancerresearchuk.org/about-cancer/type/skin-cancer/about/skin-cancer-risks-and-causes> (Accessed on 26/11/2015)

FAINSTEIN SUSAN S. (2010): *The Just City*. 1st Ed. Ithaca: Cornell University Press.

HARVARD MEDICAL SCHOOL (September 2005, modified May 2006): *Harvard Health Publications. Vitamin D: Enjoying its day in the sun*, (Online). Available on: [http://www.health.harvard.edu/family\\_health\\_guide/vitamin-d-enjoying-its-day-in-the-sun](http://www.health.harvard.edu/family_health_guide/vitamin-d-enjoying-its-day-in-the-sun) (Accessed on 26/11/2015)

MEAD NATHANIEL M. (April 2008, modified May 2008): *Benefits of Sunlight: A Bright Spot for Human Health*, (Online). Environ Health Prospect. Available at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2290997/#!po=4.1666> (Accessed on 26/11/2015)

NEW SOUTH WALES GOVERNMENT (2014): *NSW Land and housing corporation: Design Standards 2014*, (Online). NSW Family & Housing services. Available at: <http://www.housing.nsw.gov.au/NR/rdonlyres/8F0943B7-7DE4-4518-BE40-972CB8C2924C/0/DesignStandards2014Revision1.pdf> (Accessed on 08/12/2015)

SLOVENSKÁ TECHNICKÁ NORMA (2005): *STN 73 4301: Budovy na bývanie (Dwelling buildings)*. Bratislava: Slovenský ústav technickej normalizácie.