

Urban density and the case for daylight

It can be hard to understand that in a modernized and wealthy country such as Sweden there exists such a shortage of housing. Accordingly, the topic has become important currency on today's political landscape. It is clear that increasing urban density is a necessary strategy to help remedy this problem. It should not be lost however that increasing density, if not done carefully, has catastrophic effects on daylight levels inside buildings. This problem is already aggravated by the prevailing trend towards reduced window sizes, less transparent glazing, deeper floor plates and thicker exterior walls, all of which are cost effective strategies to help meet increasingly stringent energy targets. Although compromises must be made to provide more people with space of their own, these compromises must be undertaken with the greatest of caution. Such is the case with daylight.

Like the air we breathe, daylight is something that perhaps few of us ever give much direct thought. And like the air we breathe, it is something that we need to function. Daylight has both a strength and spectral distribution unrivaled by common electrical lighting. Exposure to it affects us in many ways. Perhaps most importantly, it is the underlying trigger to our 24 hour sleep and wake cycle. Disruption of this cycle is proven to have negative effects on long term health. Although science is still working to define the full effect of daylight on our bodies, there is compelling evidence that limiting exposure to daylight is detrimental to our wellbeing. Few of us living in Sweden need to be reminded that our access to daylight is severely limited for a good part of the year. Because most of us spend around 90% of our time indoors, legislating a protected minimum daylight level for the rooms where we live, work and play, makes perfectly good sense.

Provision of daylight for occupied rooms is legislated in section 6:322 of the Swedish building code (BBR). This section pertains only to diffuse light from the sky and should not be confused with access to direct sunlight or views which are addressed in sections 6:323 and 6:324 respectively. Over the past number of years, many of us working with building certification have come to realize just how difficult it is to meet the national building code authority's (Boverkets) current requirement for daylight. This is particularly so in urban environments, but is also common in newly built suburbs. Many new buildings have a significant percentage of occupied rooms with daylight below mandated levels. Often daylight is less than one-third of mandated levels. But that is only part of the story. The threshold of the current requirement, a daylight factor of 1% or greater, was originally set by Boverket in the mid-seventies. Though easily remembered and numerically elegant, this critical threshold was never properly tested against existing building stock. An ongoing study financed by SBUF (Svenska Byggbranschens utvecklingsfond) in which the author is a participant indicates that on the lower floors of buildings in urbanized cores of Swedish cities, few rooms comply with the 1% threshold. Yet it must also be understood that with very few exceptions, these same dwelling units are highly desired and sought-after, many coveted for more than a century. It is important not to confuse building codes with 'best practice'. Given the above it appears the regulations have done just that. Daylight regulations should not aspire to be a guarantee of good daylight but rather serve as a safeguard to

ensure that a basic minimum of daylight is available. Realistically, regulations need to be set at a level which is readily attainable.

Adjusting the minimum threshold for daylight factor is only part of the solution however. Both building officials and industry must also take ownership of the issue. As it is today, daylight is given very low priority. While the local authorities' administrative infrastructure to enforce Boverket's energy regulations is relatively well established, daylight regulations are currently less well understood and appreciated. Over the past number of years, the Miljöbyggnad certification system has served to bring some attention to the matter but they have also paid a price for their prudence. Daylight is considered to be the most difficult of the system's certification requirements and the subject has been the source of frustration for many. Few realize however that the problem originated at Boverket and that only Boverket can properly correct the problem. Indeed, over the past two years Boverket has started to take the necessary steps to modernize its regulations for daylight and has also started to get the word out to the building industry. Unfortunately, Sweden Green Building Council (those responsible for Miljöbyggnad) finds itself under great pressure from the industry to drop the requirement. Not for lack of need, but rather for convenience. If abandoned, SGBC risks not only the caliber of future buildings certified with Miljöbyggnad but also to a degree their credibility. Environmental certification systems exist to safeguard against foreseeable problems, not run from them. It should also be noted that Boverket is currently under extreme political pressure not to impede the construction of new dwellings. As such, one can't help but suspect that a single email from a person yielding political influence could erase a policy which otherwise, once updated, has the potential to safeguard a fundamental environmental criteria. Building energy use, thermal comfort and noise attenuation are important indicators of building quality and we are not about to abandon our commitment to them. Nor should we abandon daylight when it is at its greatest need of supporting policy.

In Sweden, it is generally understood that those who can afford to choose to live on the upper floors of buildings where light and views are more plentiful. Or, if economics allow, they prefer to reside in a well-spaced villa area where access to daylight is seldom a problem. The decision of where to live or work, send our children to school or even spend the final years of our lives is subject to a number of harsh realities however, not least of which is economy. It is important that buildings have the built-in capacity to ensure that at least a very minimum of daylight is provided. Adequate access to daylight should not be a luxury item that only the privileged can afford but rather like the air we breathe, a fundamental right. Building regulations exist on the assumption that in their absence, insufficient attention would be given to a particular aspect of importance. In Sweden today, such is the case for daylight. To ensure this right is protected equally for all, daylight must be on the agenda throughout both detail planning and building design processes. It is in this manner that we can best use increased urban density as a tool to create the humane and habitable housing that this country so desperately needs. Before this can happen however, revisions to existing legislation must be allowed to be completed.

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