We need to distinguish two general information measures: (i) content, and (ii) accessibility. The content of information is what is described (i.e., the message of text on a page), whereas its accessibility is the inverse effort needed to receive that information (i.e., how easy it is to read). The frequency or intensity of use of information is, to first order, the product of content with accessibility. This simple relation attempts to balance these two independent factors. For a particular task or situation, information can be ranked according to its direct relevance in content. Readily available information that has little relevant content is going to be used less, or not at all. On the other hand, pertinent information that is less readily accessible will also not be used as much.

Human beings are information-processing machines whose existence depends on the ability to interpret the information present in their surroundings. We must be able to instantly judge and respond to environmental information, and our evolution has equipped us with the sensory and perceptive tools to do so: it is precisely this ability that makes us human. Moreover, since spatial information plays such a fundamental role in our functionality as complex living systems, we require it just as much as we require air and nutrients in order to sustain us. The complexity and organization of architectural information is crucial to our state of mind. An equivalence is proposed here between the physical use of space and the use of the information field it generates.

In communications engineering, it is assumed that information is available, and that its access depends on the ability to retrieve and transmit it without losses. Human perception is instantaneous, however, so access to architectural information involves presentation rather than transmission. The perception of architectural forms can be divided into two aspects, as above: (i) The information content depends on the design, geometry of forms, and their subdivisions, insofar as design organizes elements in particular ways. (ii) Information access is governed by the orientation of surfaces, their differentiations on the smallest scale, and the
microstructure in the materials. These independent factors generate the information field, which in turn determines the use of urban space.

With Pattern No. 106 “Positive Outdoor Space”, Christopher Alexander and his colleagues identify the need for concavity and enclosure in open spaces (Alexander et al., 1977). The result is precisely the one derived here from informational arguments. “A New Theory of Urban Design” (Alexander et al., 1987) states this in the strongest terms: space for pedestrians, streets, gardens, even parking lots, should be formed by surrounding buildings, not vice-versa. It is the space that is important, and the buildings are the means to define it. Whenever buildings are the focus of attention, space is left undefined. With “The Nature of Order” (Alexander, 2001-2005), Alexander goes further to anchor the urban fabric on a continuous ribbon of public space.

The materials used in building façades play a crucial role in creating the spatial information field; the surface quality being an independent factor from the geometry. High-tech materials are a necessary component of any new architecture. Of all new materials encompassing a wide range of qualities, however, those favored so far have one feature in common: they minimize surface information. Therefore, one of their principal effects is to diminish information access (as argued elsewhere, this is deliberate). If we wish to help the formation of urban space, then we have to start using materials, both old and new, with the aim of enhancing surface information.

Historical buildings employ traditional materials in a way that maximizes optical and acoustical information at all angles: an incident signal is dispersed in all directions so that it can be received by many observers. Surfaces that act in this way have special characteristics. They are:

1. Textured, with articulated relief that reflects signals in different directions; and
2. Painted in bright colors with a high color value close to white.

Relief, surface texture, and sculpted decoration reflect sound and light all around (non-specular reflection), whereas pigments absorb an incident ray, then re-radiate the energy in all directions (scattering). The net effect is the same.

Relief patterns throughout traditional architecture distribute sound and light, making a wall partially reflective at an oblique angle. By contrast, smooth polished walls reflect back only at a single normal (orthogonal) angle to their surface. There is no optical contact above eye level. Even worse, a reflective mirror finish prevents all contact because the eye cannot focus on a mirror. (Small mirrors are useful, however, when juxtaposed with matte regions). At the other extreme, very dark colors of any hue, and especially matte black, dark grey and dark brown, absorb all the visual spectrum and don’t retransmit anything at any angle. Building exteriors in such colors minimize information access, independently of any surface relief. Bare concrete is usually a matte medium grey, with poor reflective and light scattering properties.
Large panes of plate glass create informational ambiguity: the visual signal indicates a surface, but there is no information. Depending on the angle, dark tinted windows are either too transparent, too reflective, or too absorptive to define a spatial boundary. The only way to reinforce the visual signal is to use a structural frame between window panes; enough of it to provide unambiguous information. This solution worked for centuries, as long as glass could only be produced in relatively small panes. The need for small window panes is noted by Alexander as Pattern No. 239 “Small Panes” in terms of indoors transmitted light (Alexander et al., 1977), whereas we are concerned here with outdoors reflected light.