Building codes provide quality control for life safety and technical matters. In order to be safe and technically sound, a building must protect its inhabitants from several natural elements. This emphasis on protection inadvertently implies a bias for surface integrity in construction. Although the building process may begin with small units such as bricks, panels, and other prefabricated components, the protection must result in continuous wrappings. The many layers of a building's protective skin are much like clothing. Understanding this implication is key to achieving sensitive design within the confines of a code.

There are many hazardous and uncomfortable elements from which a building is designed to guard its occupants. These elements are defined and quantified by the building code, and, according to the degree of danger or discomfort, are remedied by a particular surface wrapping. The structural skeleton is clothed to suit the anticipated conditions.

**FIRE PROTECTION**

A building is defined in the *Ohio Basic Building Code* as "any structure used or intended for supporting or sheltering any use or occupancy. For application of this code, each portion of a building completely separated from other portions by fire walls complying with Section 908.0 shall be considered as a separate building" (*OBBC*, Article 2: Definitions). This definition implies that the limit of a building, whatever its surface configuration may be, is the material manifestation of fire protection. A "fire wall" is assigned a number (of hours, 1 to 5), designating the length of time it may be expected to survive in the event of a fire. Density and thickness affect a material's rating; a more massive material tends to have a better rating. Whether by their manufactured nature, or by joining in construction, the layers composing the envelope of the container must achieve the given fire protection rating.

Each building with a designated fire rating is designed as a zone whose boundaries must contain or resist fire. The walls, floors, and roof/ceiling assemblies must all come together to work uniformly against the potential fire. The places where walls meet floors, walls meet roofs, etc., must be sealed in order to effectively maintain a barrier. There are many leaky places in building construction such as the spaces between wall studs. These places are given special attention in the *OBBC*, and are expected to be firestopped. Great pains are taken to make all the disparate materials join as though they were one continuous wrapping, coating, or membrane against fire. The building can thus be understood as a container whose continuous exterior surfaces are clothed in a fire protection suit.

When openings puncture these sealed containers, the closures, such as doors and windows, must also fall under the same fire ratings as the walls and floors. A tightly sealed zone is more protected against fire; therefore, the fewer openings, the better. During usage, people may break the fire seal by opening and passing through the boundary; however, when occupying the space, they are effectively wearing the fire suit, and are protected.

Elements other than people need to go in and out of these containers: heated air, cooled air, gas, electricity, etc. These mechanical penetrations are considered
to rip open the blanket of protection. For these locations, the OBBC has rules for maintaining the level of fire barrier. For example, at the juncture of a duct and a wall surface, a fire damper must be installed. The valve-like piece works to seal the opening in the event of a fire. The fire coating is treated as though it is a uniform fabric with special considerations at the openings for passage into the volume of space.

Fire protection is manifest in a building as an outfit which continuously wraps the space. The many small units and materials of the building process are made to behave as though they are one wrapper. The struggle (of fire protection within the confines of the code) is between the individuality of these disparate components and their homogeneity as surface.

**WATER PROTECTION**

Another of the primary functions of a building is to protect its occupants (and its contents) from water. The code makes a distinction (with its methods of protection) between water from the ground and water from the sky.

Buildings sit on or in the ground. Water in the ground would seep into a building if it were not prevented from doing so. The code presents ways to waterproof and dampproof a building against ground water. First, the foundation walls and slabs are to be made free from holes and recesses. Once they are made as slick as possible, there are several ways of coating their surfaces to achieve an impervious membrane. The waterproofing consists of some combination of coating the surfaces with a liquid, and wrapping the surfaces with a sheeting material. Essentially, this process creates a rubberized membrane like a rain boot, continuously sealed around the footings yet stopping at a level above the ground where the water is not a threat.

As for water from the sky, the walls and roof must protect the inside body of space from becoming wet. The code provides a list of weather coverings along with their required thicknesses. These skins (aluminum siding, asbestos shingles, plywood with sheathing, stone facing, etc.) are specified in order to keep out rain and snow. Even though these materials consist of small individual pieces, by overlapping, seaming, and sealing, they can be forced to behave as one membrane. The methods of attaching and layering each of the pieces are very specific, because of the strict necessity of achieving watertightness. If the exterior surface has "wall pockets or crevices in which moisture can accumulate," (OBBC, 2104.6 Exterior Wall Pockets) the pockets should be capped or filled in order to provide a slick surface. Just as an umbrella or rainhood is designed to repel water, so too is the upper casing of a building.

As an extra protection against moisture, the interior spaces of walls and roofs are given a vapor barrier. This plastic material (usually) keeps air borne moisture from entering and condensing in the interior. Like a rain-coat, it provides a continuous wrapping around the body/space, and completes the protection between ground water and sky water.

A building protects itself from water by wearing three garments. A vapor barrier lining creates a rain-coat around all extremities and appendages of the space, a rubberlike membrane provides a boot around the foot of the structure, and a variety of materials are stitched together to make an umbrella of protection around the top. Whether these garment-like layers begin as small units or as sheeting materials, their end results must take the form of homogenous coatings. With water protection, the buildings' units give up their identity for the sake of their unified effort to keep the interior dry.

**THERMAL PROTECTION**

A building is supposed to protect its occupants and contents from extremes of hot and cold weather. Through physical means with insulation materials, and mechanical means with equipment, a building's internal temperature is maintained at a comfortable level.
Building codes present formulas with which to design heating and cooling systems. Heat gain or loss for the whole building is calculated relative to the building envelope. The conception of the envelope, or exterior surface of the building, implies that when combatting air temperatures, all exterior surfaces must act as a uniform skin. Surface areas are tabulated, and the temperature differences are calculated from one side of the wall to the other. Based on material characteristics, transmittance values of heat/cold are applied. In order to make a building more protected from the temperature, insulation of various kinds can be applied to the envelope. Either in between the layers of wall materials, or literally wrapped around a structure, insulation is similar to a layer of thermal underwear. By following the contours of the outer material, it gives the space a snug fit. The hidden layer which wraps itself around the container of space needs to be broken for passage. At these junctures, such as doors and windows, there is air leakage and infiltration. Caulking and other sealants are used to seam together joints between the different materials in an attempt to maintain the continuity of the thermal layer.

Because heat and cold completely surround a building, they seek rips, tears, and slivers in the outer and under-layers through which to rush into the space. To protect the insides from this condition, the thermal layer especially must act uniformly. Any crack or crevice weakens the whole. Again with thermal protection, the units of material (rolls or sheets of insulation) behave as though they are one homogenous lining between outside and inside.

**PROTECTION FROM THE FORCE OF WIND**

Codes require that buildings be designed to resist the destructive forces of excessive winds. These winds are considered to act or push on the building, which in turn, is considered to push back in the opposite direction. The building's structural frame and/or envelope is designed to resist these lateral loads. The building's skeleton and skin join to stand against these threatening forces. The physical manifestation of the protection may vary; however, conceptually they are similar. Whether by cross-bracing, moment-resisting frame, or shear walls, resistance against wind is accomplished by some sort of armor that either covers the whole building or is made up or details which cause the entire structure of the building to be effective against the forces. Standardized units join forces to compose a faceted, flexible shell.

**NOISE PROTECTION**

The OBBC requires sound transmission control in residential buildings only, structures comprised of many individual dwelling units. The code enforces protection from noise at the boundary of each separate unit.

The code calls for protection from both "airborne noise" and "structure borne sound" (OBBC, Section 714.0: Sound Transmission Control in Residential Buildings). Walls, partitions, and floor/ceiling assemblies which mark a dwelling unit's edge must be insulated from noise. Both horizontal and vertical planes are filled with a substance to stop the noise from penetrating. At fasteners such as the door where sound may leak, it must be closely tailored to be a tight fit.

Noise is ubiquitous. Noise protection can be understood as an ideally seamless layer bounding a dwelling container. Densification of the skin to collect sounds and to prevent them from entering the space. The building can be called a gathering of muffled sound chambers, many enclosed containers within the larger whole.

**NATURAL LIGHT PROVISION**

Building codes enforce the provision of natural light in all habitable and occupiable rooms. Each
room/container must have a minimum glazing area, the size of which is based on its floor area dimensions. This requirement treats each room as though it were a separate and distinct entity. The glazing can occur on any of the exterior edges of the room. It is measured in surface area, in terms of the amount of sunlight that can enter the space. The internal units of rooms are treated as though they have individual wrappers around their boundaries, which can be punctured by light for the health and well-being of the inhabitants. The room can perhaps be considered to be the smallest unit of space in a building, bound with solid enclosures.

Provisions of natural light infringe upon the privacy created by the opaque barriers; each addition of light causes erasure of solidity. Just as clothing only partially covers the body, the room partially drapes its occupants, allowing some exposure so that the sun can light the body/container. The provision for natural light treats each room as a complete container, defining the boundary between outside and inside of the room itself, a smaller scale version of the previous conception of the whole building as a container.

**CONCLUSION**

Each of the elements vary in their physical nature. Some are ubiquitous and intangible (temperature, noise); some may never materialize in the life of the building (fire, destructive winds), and some are constantly prevalent (water, heat/cold). Through the filter of building codes, they become quantified. After this has been done, an appropriate surface wrapping can be designated to deal with the element. These wrappings treat the building (or part of building) as though it is a container of space which holds people and objects. When it comes to protection against these elements, the walls, roofs, and floors ignore the forces of gravity. The mission of the exterior envelope is to make a barrier against the outside.

Although buildings may be constructed out of heterogeneous building units, the resulting protective casings must behave as though they are homogenous and continuous in their place to define outside from inside.

This bias in the OBBC and other building codes for surface strength and integrity implies particular attitudes for design.

The drawing that affects much of the typical design process is the section, a conceptual cut in space (horizontal or vertical). A section implies infinity; an endless number of sections can be taken through a building. It is within this paradigm that the architect searches for form; yet one comes to a place of closure with a building. Imagining that one draws upon the infinite to enclose space, one fills the blank paper with section cuts. Slivers of all the materials comprising a wall are present in a section, yet the wall's surface makeup is absent. The section-based method of design is incompatible with the surface bias of the building codes. Given the assumption that the codes are here to stay, is it possible to invent a design method which is ideologically aligned with the notion of surface wrappings?

Clothing begins with flat patterns, shapes which become three-dimensional after a series of operations: folding, cutting, and stitching, a direct means of translation between a two and three-dimensional realm. On the other hand, the architect’s section drawings must be interpreted by the builder as materials of specific lengths and widths. Sections must become flat surface templates in order to build. The section imposes a rift between two and three-dimensional design, an interference of the connection between designing and making. Perhaps the methods of making clothing can be used as a model for a more direct means of designing the wrappings for the containers otherwise known as buildings.
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