

Volume Over Mass

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Introduction

Several movements, each with different ideas or theories of what it means to be modern, occur during the first half of the 20th century (Harwood,2012,p.637). The International Style (sometimes also referred to as internationalism (The subjects of modernist architecture part III,2021, www.optima.inc)).arises in Europe in the 1920s and gets its name from a 1932 exhibit at the Museum of Modern Art in New York (Harwood,2012,p.637). Originated in post-World War I Holland, France, and Germany, the style quickly caught on worldwide, eventually becoming the dominant architectural style in the 1970 (The subjects of modernist architecture part III,2021, www.optima.inc). Evolving from Bauhaus design language, characteristics include regularity, volume over mass, geometry, steel framework and glass curtain walls, smooth white walls, minimal color, and no applied ornament (Harwood,2012,p.637) and Le Corbusier's description of houses as "machines for living"(International style architecture,2023, www.hisour.com). Although it is most common in architecture, both interiors and furniture follow its principles (Harwood,2012,p.637). While these characteristics could make the resulting International Style buildings unwelcoming and cold, the style's emphasis on volume over mass instead makes the architecture expansive, light, and airy (Campbell,2023, www.magazine.artland.com).

Mass

According to Cambridge Dictionary:

A large amount of something that has no particular shape or arrangement, for instance: The explosion reduced the church to a mass of rubble (Cambridge DC,2023, www.dictionary.cambridge.org).

Massing definition in architecture

In architecture, massing is the overall feeling and logic of shape and space (Mass,2023, www.book.leveldesignbook.com).

Does a room feel large and heavy, or low and hidden, or light and open? Why?

Compare two rooms. Are they close together or far apart? Why?

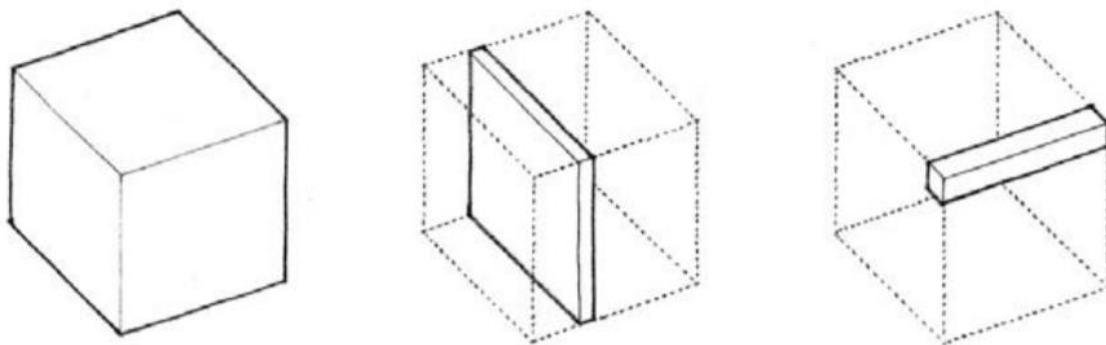
Does one wall seem related to another wall? If so, how and why?

Ideally, the massing supports the building's program, the overall logic and function behind the building's organization (Mass,2023, www.book.leveldesignbook.com).

Massing methods

Dimensional

The simplest way to adjust a shape is to move, rotate, or scale it in the 3D level editor. This is best with basic shapes like cubes and other 3D primitives (Mass,2023, www.book.leveldesignbook.com).

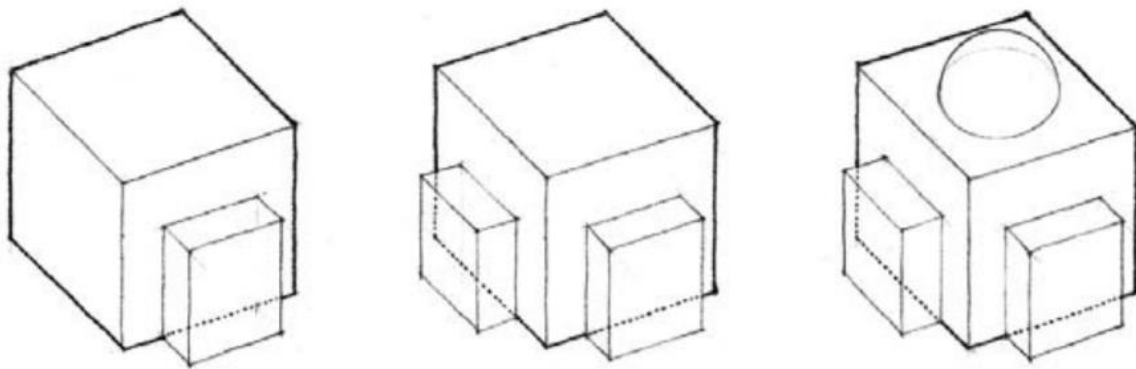


Dimensional massing diagrams from "Architecture: Form, Space, and Order" by Francis Ching (Mass,2023, www.book.leveldesignbook.com)

Additive

Make more complicated shapes by combining simpler smaller shapes (Mass,2023, www.book.leveldesignbook.com). This is the most common massing method in level design and real world architecture (Mass,2023, www.book.leveldesignbook.com).

Articulation: when shapes feel separate and distinct, we say they are articulated(Mass,2023, www.book.leveldesignbook.com). Articulation can make a building feel smaller when the parts feel appropriately sized for people, built at a human scale (Mass,2023, www.book.leveldesignbook.com).



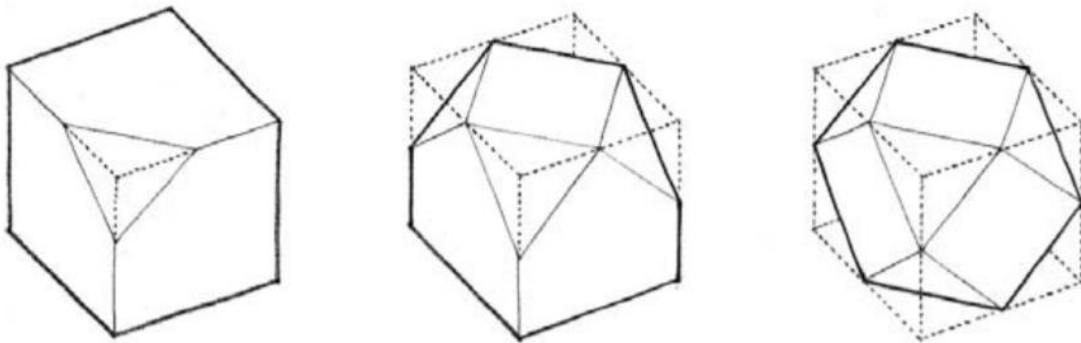
Additive massing diagrams from "Architecture: Form, Space, and Order" by Francis Ching (Mass,2023, www.book.leveldesignbook.com).

Subtractive

Carving a simpler shape into a more complex shape (Mass,2023, www.book.leveldesignbook.com). This is helpful for modernist futuristic architecture, or for carving organic-feeling natural rock forms (Mass,2023, www.book.leveldesignbook.com).

Beveling / chamfering / boolean operations are key techniques in 3D modeling, but most level design tools today lack clipping tools or subtractive CSG support. (Mass,2023, www.book.leveldesignbook.com).

Continuity: in contrast to additive massing, subtractive massing often feels more continuous (Mass,2023, www.book.leveldesignbook.com). Continuity unifies the entire form as one single monolithic shape. Big monoliths won't feel human-sized (Mass,2023, www.book.leveldesignbook.com).



Subtractive massing diagrams from "Architecture: Form, Space, and Order" by Francis Ching (Mass,2023, www.book.leveldesignbook.com).

Massing is the three dimensional form of building (Spacey,2017, www.simplicable.com). This is often the starting point of architectural design as it is the big-picture view of the structure of a building (Spacey,2017, www.simplicable.com). Size and scale, interior space, function, character, place, balance and feasibility are common elements of massing (Spacey,2017, www.simplicable.com).

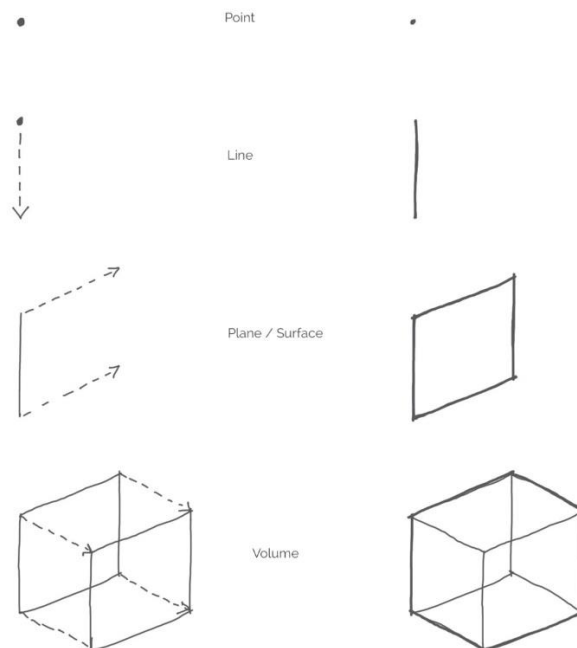
Volume

According to Cambridge Dictionary:

The amount of space that is contained within an object or solid shape, for instance: Which of these bottles do you think has a greater volume? (Cambridge DC,2023, www.dictionary.cambridge.org).

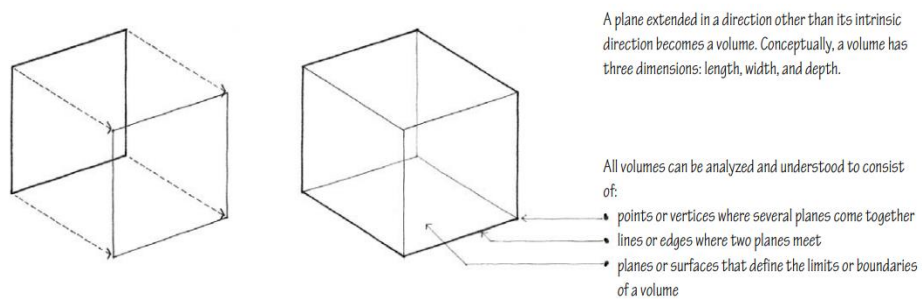
Volume definition in architecture

The primary elements of form are points, lines, planes and volumes – each one growing from the other (Design basics form,2023, www.firstinarchitecture.co.uk). A point is a position in space, a line is the extension of a point (Design basics form,2023, www.firstinarchitecture.co.uk). A surface or plan, is the extension of a line. A volume is a plane extended (Design basics form,2023, www.firstinarchitecture.co.uk).



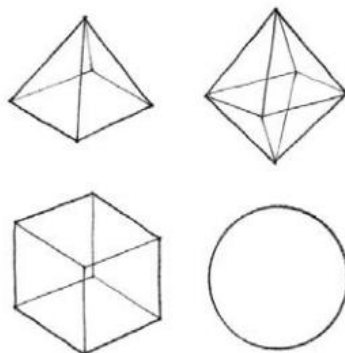
(Source:Design basics form,2023, www.firstinarchitecture.co.uk).

A plane extended in a direction other than its intrinsic direction becomes a volume (D.K. Ching,(2007), p.28). Conceptually, a volume has three dimensions: length, width, and depth (D.K. Ching,(2007), p.28).



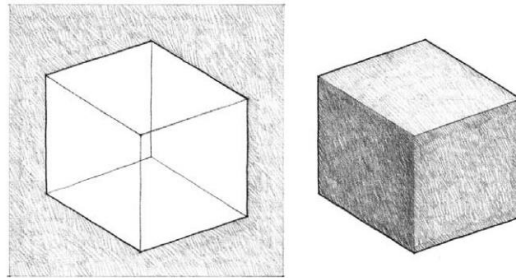
(Source: D.K. Ching,(2007), p.28)

Form is the primary identifying characteristic of a volume (D.K. Ching,(2007), p.28). It is established by the shapes and interrelationships of the planes that describe the boundaries of the volume (D.K. Ching,(2007), p.28).



(Source: D.K. Ching,(2007), p.28)

As the three-dimensional element in the vocabulary of architectural design, a volume can be either a solid— space displaced by mass—or a void—space contained or enclosed by planes (D.K. Ching,(2007), p.28).



(Source: D.K. Ching,(2007), p.28)

Interpretation of Mass and Volume in the International

The International Style is often thought of as the "architecture of the machine age," which symbolized for many the crystallization of modernism in building design (The international style,2023, www.theartstory.org).

Contemporary methods of construction provide a cage or skeleton of supports (The international style,2009, www.misspreservation.com). This skeleton as it appears before the building is enclosed is familiar to everyone (The international style,2009, www.misspreservation.com). Whether the supports are of metal or of reinforced concrete, the effect from a distance is of a grille of verticals and horizontals (The international style,2009, www.misspreservation.com). For protection against the weather it is necessary that this skeleton should be in some way enclosed by walls. In traditional masonry construction the walls were themselves the supports (The

international style,2009, www.misspreservation.com). Now the walls are merely subordinate elements fitted like screens between the supports or carried like a shell outside of them (The international style,2009, www.misspreservation.com).

The effect of mass, of static solidity, hitherto the prime quality of architecture, has all but disappeared; in its place there is an effect of volume, or more accurately, of plane surfaces bounding a volume (The international style,2009, www.misspreservation.com). The prime architectural symbol is no longer the dense brick but the open box. Indeed, the great majority of buildings are in reality, as well as in effect, mere planes surrounding a volume (The international style,2009, www.misspreservation.com).

The architect who builds in the international style seeks to display the true character of his construction and to express clearly his provision for function (The international style,2009, www.misspreservation.com). He prefers such an organization of his general composition, such a use of available surface materials, and such a handling of detail as will increase rather than contradict the prime effect of surface of volume (The international style,2009, www.misspreservation.com).

In giving this effect the flat roofs normal with modern methods of construction have an essential aesthetic significance (The international style,2009, www.misspreservation.com). For they are less massive and simpler than the gabled roofs usual on the buildings of the past (The international style,2009, www.misspreservation.com). Flat roofs are so much more useful that slanting or rounded roofs are only exceptionally justified (The international style,2009, www.misspreservation.com).

The clarity of the impression of volume is diminished by any sort of complication (The international style,2009, www.misspreservation.com). Volume is felt as immaterial and weightless, a geometrically bounded space. Subsidiary projecting parts of a building are likely to appear solid (The international style,2009, www.misspreservation.com). Hence a compact and unified solution of a complex problem will be best aesthetically as well as economically (The international style,2009, www.misspreservation.com). The massiveness of the architecture of the past was felt as gravitational, with surface and content one (The international style,2009, www.misspreservation.com). Being heavy, massive architecture demanded the appearance of support such as could be given by a piling up of the parts (The international style,2009, www.misspreservation.com).

Thus as a corollary of the principle of surface of volume there is the further requirement that the surfaces shall be unbroken in effect, like a skin tightly stretch over the supporting skeleton (The international style,2009, www.misspreservation.com). Hence the breaking of the wall surface by placing windows at the inner instead of at the outer edge of the wall is a serious fault of design (The international style,2009, www.misspreservation.com). For the glass of the windows is now an integral part of the enclosing screen rather than a hole in the wall as it was in masonry construction (The international style,2009, www.misspreservation.com).

Window frames unavoidably break the general wall surface and if they are heavy tend to make the window a mere hole in the wall quite as much as do reveals (The international style,2009, www.misspreservation.com). Light simple frames, preferably of durable non-corroding metal in standardized units, are to be desired as much aesthetically as practically (The international style,2009, www.misspreservation.com).

Conclusion

The name "International Style" itself was coined in an exhibition in at the Museum of Modern Art in 1932. The museum's two curators, namely Henry-Russell Hitchcock and Philip Johnson defined the style that was based on contemporary European architecture (Fauzia,2020, www.indonesiadesign.com). In the event, they introduced the radically modern architecture design to the American audience (Fauzia,2020, www.indonesiadesign.com).

Hitchcock and Johnson formulated the three essential design tenets of the International Style: volume over mass, regularity in the facade, and rejection of all ornament (Fauzia,2020, www.indonesiadesign.com). The emphasis on volume means International Style preferred thin, flat planes, typically alternating with areas of glass, to create the building's form, as opposed to a solid mass (Fauzia,2020, www.indonesiadesign.com).

In a sense, mass of building is a unified composition of two-dimensional shapes or three-dimensional volumes, especially one that has or gives the impression of weight, density, and bulk (Sigin,2020, www.handsi.wordpress.com). In his book: *Towards a New Architecture*, Le Corbusier mentions the mass as one of the elements by which architecture manifests itself since the architectural elements with the parts they occupied create the building mass (Sigin,2020, www.handsi.wordpress.com). His one of three reminders to architects is mass (Sigin,2020, www.handsi.wordpress.com). Mass is determined by the plan. The plan is the generator (Sigin,2020, www.handsi.wordpress.com). The whole structure rises from its base and is developed in accordance with a rule which is written on the ground in the plan: noble forms, variety of form, and unity of the geometric principle (Sigin,2020, www.handsi.wordpress.com). This is mass with all these elements (Sigin,2020, www.handsi.wordpress.com). Without plan there can be neither grandeur of aim and expression, nor rhythm, nor mass, nor coherence (Sigin,2020,

www.handesi.wordpress.com). The plan is what determines everything; it is the decisive moment (Sigin,2020, www.handesi.wordpress.com).

At this point, mass being determined by the plan and the volume production using the plan is correlated (Sigin,2020, www.handesi.wordpress.com). Therefore, rather than commenting on buildings about the duality Ching mentions, buildings are perceived and then reproduced as quantity of space displaced by the mass of building by reading and making use of original orthographic plans, elevations and sections and first-hand experiences (Sigin,2020, www.handesi.wordpress.com). To initialize the building volume, the process started with defining the void building blocks, the basic volume of the building massing (Sigin,2020, www.handesi.wordpress.com). The shape of the volume and its dimension is defined by exterior surfaces in the x- and y-directions and the building height in the z-direction (Sigin,2020, www.handesi.wordpress.com). The volume is seen without included or determined elements, as empty spaces filled with air. Of course, the details, the architectural elements taking place on facades were abstracted to a certain extent. Solid planes in same color generate the volume without ambiguity, and they offer depth (Sigin,2020, www.handesi.wordpress.com).

When talking about architectural space, the terms “carving space” and “creating space” are often used to consider how space is not only something that can be seen but is also experienced (Elements of architecture,2023, www.openoregon.pressbooks.pub). Space can affect your emotional experience of a site; it is intangible, yet we know when we feel cramped or swallowed by space (Elements of Architecture,2023, www.openoregon.pressbooks.pub). When analyzing architecture, always think about space, both interior spaces and exterior, and how you might experience or be directed through space (Elements of Architecture,2023, www.openoregon.pressbooks.pub).

References

- Cambridge Dictionary, “*Meaning of Mass in English*”, accessed 13 April 2023,
www.dictionary.cambridge.org/us/dictionary/english/mass
- First in Architecture, “*Design Basics Form*”, accessed 13 April 2023,
www.firstinarchitecture.co.uk/architecture-design-basics-form/
- Francis D.K. Ching. (2007), page 28, “*Architecture, Form, Space, and Order*”, Published by John Wiley and Sons, Inc., Hoboken, New Jersey, Third Edition.
- Harwood, B., May, B. & Sherman, C. (2012), page 637, “*Architecture, and Interior Design: An Integrated History to the Present*”, Pearson Education. Kindle Edition
- Hisour,” *International Style Architecture*”, accessed 13 April 2023
www.hisour.com/international-style-architecture-28014/
- Hande Sigin, “*Volumes in Building Scale: Volumes as opposed to Mass*”, 20 May 2020,
www.handsi.wordpress.com/2020/05/20/volumes-as-opposed-to-mass-volumes-in-building-scale/
- John Spacey, “*What is Massing*”, 14 October 2017,
www.simplicable.com/architecture/massing-architecture
- Nadia Fauzia, “*10 Major Variations of Modernist Architecture*”, 9 March 2020,
www.indonesiadesign.com/story/major-modernist-architecture-style
- Open Oregon, “*Elements of Architecture*”, accessed 13 April 2023,
www.openoregon.pressbooks.pub/art101/chapter/elements-of-architecture
- Optima,” *The Subsects of Moderist Architecture Part III*”, 12 April 2021,
www.optima.inc/the-subsects-of-moderist-architecture-part-iii/

- Preservation in Mississippi, "*The International Style: Volume, not Mass*", 2009, www.misspreservation.com/2009/08/12/the-international-style-volume-not-mass/
- The Art Story, "*The International Style*", accessed 13 April 2023, www.theartstory.org/movement/international-style/#beginnings_header
- The level Design Book, "*Mass*", accessed 13 April 2023, www.book.leveldesignbook.com/process/blockout/massing
- Tori Campbell, "*Concrete and Glass: Building that Defined the International Style*", accessed 13 April 2023, www.magazine.artland.com/concrete-glass-buildings-that-defined-the-international-style/