Building Information Modeling:
Interactive Versioning Experiment

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REGIONAL AIRPORT
travel / adventure / experience

Perspective 1. Check In Process
Cafe.
Security Transports.
Looks out upon the dynamic activities in the ticketing hall below.
The security system entry points are immediately visible from the check in,
facilitating an open, logical circulation.

Perspective 2. Ticketing Hall Entry From Second Level Parking Units
Skylights.
Green Courtyard.
Piercings in the roof plane facilitate maximum levels of natural lighting and
become a critical component of the passive ventilation system.
The outdoor green courtyard is accessible to the public and serves as a visible
connection to the local environment in terms of weather and vegetation.

A grand, open vault joins the baggage and ticketing program areas above the
security transports, provides access to landside concessions, offers an excellent
view of aircraft activity, and becomes a public gathering space for the city and
travelers alike.

Two main information displays orient passengers and provide pertinent data.

Baggage Drop Off.
Check In Counters.
Check In Kiosk.
Baggage Scale.
Interactive Versioning is the first experiment of an ongoing investigation into the conceptual role of parametric modeling in the design process. In this case, the form is defined by constrained floor-plate relationships. Originally testing methods using numerical values exported to Excel, we discovered this produced undesirable results and shifted our focus to the creation of an interactive model. And restoring the direct influence of user input. The result is a 10-floor structure that allows the user to tweak point locations along the slab perimeters that in turn have global effect on the overall geometry of the architectural body. We are using four point definition types: reference above, interactive reference, reference below, and independent value. Interactive reference points use referential constraints defined as x and y distances from the global origin, which change on account of user inputs. Reference above points pull (x,y) values from an interactive point above. Reference below points pull (x,y) values from interactive points below. Independent points are unaffected by changes in any of the other points but may also be tweaked to adjust a form. On any given level, there are 2 interactive reference points, 2 reference above points, 2 reference below points, and 4 independent points. Additionally, 2 length constraints link interactive points with reference above points on the same level. This allows for changes to affect the entire structure rather than only the floor plates immediately above and below a given change. The addition of constraints to the floor outlines will yield a variety of formal results and offer the possibility to further control the output.

The essential goal of this experiment was to create an editable building geometry defined by constrained floor-plate relationships. Originally testing methods using numerical values exported to Excel, we discovered this produced undesirable results and shifted our focus to an interactive model. The result is a 10-floor structure that allows the user to tweak point locations that in turn have global effects on the overall geometry. There are four point definition types: reference above, interactive reference, reference below, and independent value. Interactive Reference points use referential constraints in terms of x and y distances from the global origin that change on account of user inputs. Reference Above points pull (x,y) values from an interactive point above. Reference Below points pull (x,y) values from interactive points below. Independent points are unaffected by changes in any of the other points but may also be tweaked to adjust a form. On any given level, there are 2 interactive reference points, 2 reference above points, 2 reference below points, and 4 independent points. Additionally, 2 length constraints link interactive points with reference above points on the same level. This allows for changes to affect the entire structure rather than only the floor plates immediately above and below a given change. The addition of more constraints to the floor sketches will yield disparate results in form and offer the possibility to further control manipulation output.

Can parametric data and item constraints be utilized to generate formal iterations of highly restrictive building types?