

Where

V0.03 (Sala Riunioni),
Villa Argentina 0

Preserving Knowledge & Data in Digital Fabrication

About

How do we encode traditional building knowledge into future construction processes?

The radical turn from industrial to digital design and production has led to a paradigm shift in architecture, and it impacts the possibilities to preserve the resulting objects as much as its construction and design. Knowledge about building materials, construction techniques and production processes are currently being transferred into the digital realm. But how are buildings to be maintained or upgraded if digital data becomes lost, if no or only rudimentary information concerning material or construction is available, or if this information can hardly any longer be gathered using the methods of traditional building research?

This workshop will foster a new relation between current best practices in data management in AEC and preservation, building on first findings of the research project “Digital Construction Archive” (Chair for Construction Heritage and Preservation, Prof. Dr. Silke Langenberg, ETH, funded by the Swiss National Science Foundation). The 2008 project “Gantenbein Vinery” and the ongoing “Tor Alva” project will be presented as exemplary projects showcasing the need to form new connections between the fields of Digital Fabrication and Building Preservation to assure future maintenance of digitally fabricated buildings. The participants will be asked to fill in a survey prior to the workshop on their own experiences and needs concerning knowledge management. The outcome of the survey will be summarized in an input presentation together with an introduction to relevant aspects of graph databases, ontologies in data management and the ifc standard to outline a possible workflow of documentation of digitally fabricated buildings (following the FAIR principles). A live demo will showcase potential tools and workflows and be followed by an interactive discussion.



```

1 /**
2 *@procedure makeWallParticles
3 *generate s a particlesystem that represents a brick wall
4 *
5 *@param
6 *$name: nodename of wall
7 *$posX, $posY, $posZ: base coordinates of wall
8 *$width, $height: dimension of wall
9 *$globalRotate: rotation of wall
10 *$nrX: number of bricks in one row
11 *$bw, $bh, $bd: dimensions of single brick
12 *$hGap: gap between stones
13 *
14 *@return void
15 **/
16 proc makeWall(string $name, float $posX, float $posY, float $posZ, float $width, float $height, float $globalR
17
18     float $vertGap = ($width-$nrX*$bh-$bh/2)/($nrX-0.5); //vertical gap between stones
19     float $dz=$bd+$hGap; //horizontal stone offset
20     float $dx=$bh+$vertGap; //vertical stone offset
21     float $dxh=($bh-$vertGap)/4; //center of halfstone
22     float $bhh=($bh-$vertGap)/2; //alength of halfstone
23     int $nrZ=$height/($bd+$hGap); //number of rows
24
25     float $r=sqrt(($bw/2)*($bw/2)+($bh/2)*($bh/2)); //radius of brick rotation
26     float $MIN_GAP=0.0001; //minimum gap allowed between bricks
27     float $MAX_OVERHANG=0.0325; //max overhang
28     float $alpha=0; //rotation of bricks
29     float $dB=(cos($alpha)*$r)-($bh/2); //delta of rotateted brick

```

Schedule

10:30 – 11:45 | Introduction & Input Presentations

11:45 – 12:30 | Lunch Break

12:30 – 13:30 | Live Demo: Tools & Workshops

13:30 – 14:30 | Discussion

Team



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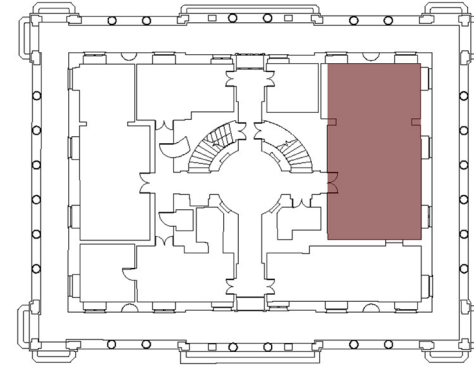
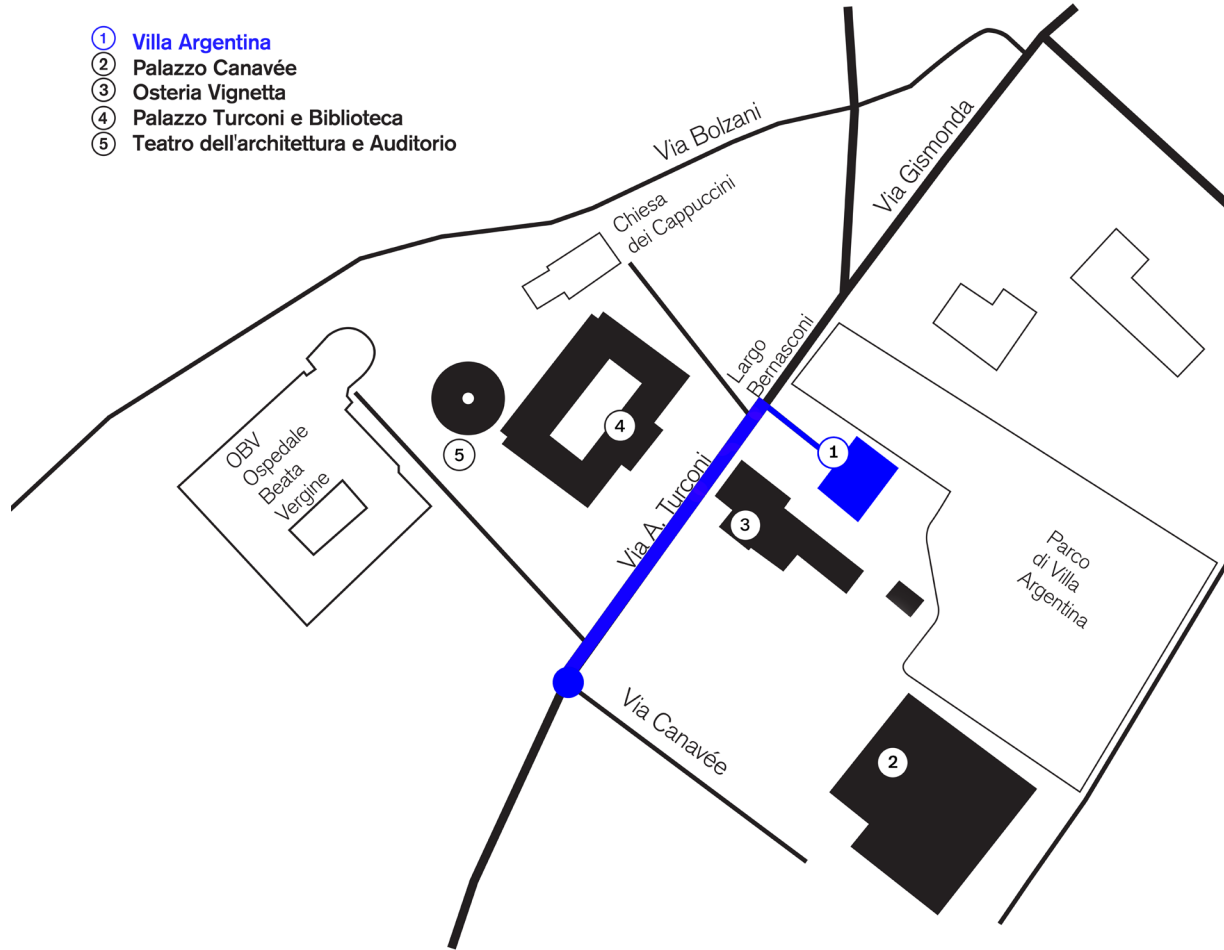
Construction Heritage and Preservation, ETH Zürich



Li Chen

Block Research Group, ETH Zürich

- ① Villa Argentina
- ② Palazzo Canavée
- ③ Osteria Vignetta
- ④ Palazzo Turconi e Biblioteca
- ⑤ Teatro dell'architettura e Auditorio



Villa Argentina 0

 **V0.03: W3: Digital Construction Archive**