Editorial

00 A step backward to go forward
Franco Pisani, Editor, ISI Florence

Essays

00 Redoing is the new Undoing
Jonathan Foote, Aarhus School of Architecture

00 Giovanni Michelucci, from the ‘Borsa merci’ to the ‘Cassa di risparmio’
Alberto Becherini, Università degli Studi di Firenze, DidA

00 ‘Back to Cuypers’. The restoration of the Rijksmuseum Amsterdam
Marie-Thérèse van Thoor, TU Delft

00 Alvaro Siza on Guernica: CTRL+Z as a tool to make a statement
Simone Barbi, Università degli Studi di Firenze, DidA

00 Digital Risk
James Stevens, Lawrence Technological University

00 The im-Possible of the technique
Stefano Lambardi, Università degli Studi di Firenze, DidA

00 L’ottimo non può esser pregiato degnamente
Franco Pisani, ISI Florence

00 CTRL+Z as a form of vanity: Mike ‘Spider’ Webb
Franco Pisani, ISI Florence

Spot on assignments

00 Undoing the Grandi Uffizi exit
Stefano Corazzini, ISI Florence

00 Architecture à la carte. Taste-ful ‘undos’ of a semester
Angeliki Sioli, Louisiana State University. College of Art + Design
Redoing is the new undoing
Jonathan Foote

Workmanship of risk and workmanship of certainty

David Pye, the late 20th century English craftsman and writer, established a relationship between undoing and the aesthetic dimension of manufactured objects, a potent framework still cited by theorists in their attempt to rescue the value of craft. Pye believed that craftsmanship is a response we instinctively read into the object through the level of ‘risk’ associated with its making. An object produced by the workmanship of risk, he wrote, may be ruined or compromised at any moment through the slip of the hand or a momentary lapse in judgment; it is produced in close connection between the mind and hand. Contrasted to this, Pye outlined the workmanship of certainty, whereby production may be fully predicted or known beforehand, a classification by which nearly all objects of serial production are placed. In other words, with industrial manufacturing, the issue of undoing problems or errors is solved through sufficient prototyping and automation, whereas in hand production the mark of the tool on the material cannot be undone. Handwork is a risky proposition and therefore of higher aesthetic value.

Although published in 1968, Pye’s terms have remained remarkably durable, and he continues to be referenced by theorists and re-discovered by architecture students even in the digital age. Malcom McCullough, in his seminal 1996 book, Abstracting Craft, bridged thirty years of technological change by elaborating upon Pye’s theorisation of certainty and risk. Although penned in the era of serial industrialisation, McCullough viewed Pye’s thinking as fundamental to craft perception and equally applicable to the burgeoning age of digital workmanship. In this way, craft can only be solved in the current era by breaking our stubborn and perhaps nostalgic link between craft and its association with the hands of a skilled carpenter, weaver, or stone carver. Twelve years later, McCullough’s view helped set the stage for Richard Sennett’s widely disseminated book, The Craftsman, who argued that craft, taken in its broadest sense, is not bound to handwork at all but is more broadly understood as an ethical framework for exercising skilled knowledge in any practical field. Today, the term digital craft is broadly accepted as the craft of working abstractly through digital means, a skilled application of knowledge whose seamless integration with fabrication erases the old boundaries between architect and craftsman.

Although digital fabrication has disassociated the link between industrial production and seriality, enabling bespoke manufacturing, the nostalgia of craft persists. We still miss the ‘human’ element on the produced work: the inconsistencies of the hand, the

[Photo of Bugnato rustico, Palazzo Medici-Riccardi, Micheleuzzo]
wobble of the chisel or the beholding of a work produced by a highly dextrous hand. Following Ruskin, we continue to idealise the life and work of the lone craftsman and community of craft-based workers. As a new generation of digital natives enter the profession, these nostalgias are re-emerging and are stronger than ever. In this way, it may be important to return to Pye and ask about craft once again. Maybe the digital craft crowd is missing a key point.

What persists for digital craft theorists, beyond Pye’s specific use of the terms related to workmanship, is his bifurcation of risk and certainty. Digital craft proponents frame this as a question of digital design and fabrication workflows. On the one hand, risk signifies an approach that is non-linear and open ended, i.e., creatively risky; while on the other hand, certainty is more generally associated with the use of digital design workflows as tools for corporate or industrial production. Since there is no hand of the craftsman anymore, the risky part is assumed by the architect or the digital fabrication software, in fact, is its ability to reliably collapse the separation between virtual and actual tooling outcomes. While digital workflows are increasingly incorporating open-ended experimentation at a higher level, the actual tooling procedure, where the ‘rubber hits the road,’ so to speak, still fits categorically into the workmanship of certainty.

Digital fabrication workflows gain intelligence when they connect empirical data on material experiments, environmental parameters, and formal conditions with virtual simulations. The simulations, in turn, more precisely anticipate outcomes. Unexpected results feedback into the virtual model, increasing its intelligence. However, there is still an entire universe of material behaviours that are beyond the reach of such predictive capacities.

Take stone fracturing, for example. One can create
precise conditions for controlling the fracture line, but each instance of fracturing the actual surface topography is slightly varied, a result of micro resistances embedded in the heterogeneous, crystalline structures of the material itself. Repeat the exact process one hundred times, and you would have one hundred different topographic outcomes. It is impossible to redo the same fracture twice. The entire history of rustication depends precisely on this, which is why the technique was always associated with a kind of physical vitality and visible mastery of stone work. This was captured well in a 1543 description by the philologist Claudio Tolomei, who referred to the technique as "un natural artificio...e una artifiziosa natura." "In tal modo," he continued, "s'ingengnano in questi tempi rassemblare una fonte, che dall'istessa natura, non a caso, ma con maestrevole arte sia fatta." For our discussion of risk and certainty, the technical conditions of stone fracturing raise the possibility of certain, repeatable processes leading to uncertain, non-repeatable outcomes. The notion of indeterminacy in certain, repeatable processes leading to uncertain, non-repeatable outcomes is slightly varied, a result of micro resistances in the heterogeneous, crystalline structures of the material itself. Repeat the exact process one hundred times, and you would have one hundred different topographic outcomes. It is impossible to redo the same fracture twice. The entire history of rustication depends precisely on this, which is why the technique was always associated with a kind of physical vitality and visible mastery of stone work. This was captured well in a 1543 description by the philologist Claudio Tolomei, who referred to the technique as "un natural artificio...e una artifiziosa natura." "In tal modo," he continued, "s'ingengnano in questi tempi rassemblare una fonte, che dall'istessa natura, non a caso, ma con maestrevole arte sia fatta." For our discussion of risk and certainty, the technical conditions of stone fracturing raise the possibility of certain, repeatable processes leading to uncertain, non-repeatable outcomes. The notion of indeterminacy in digital craft, but it is has not been connected digital processes has been widely studied, and also connected digital craft, but it is has not been connected with workmanship. This was captured well in a 1543 description by the philologist Claudio Tolomei, who referred to the technique as "un natural artificio...e una artifiziosa natura." "In tal modo," he continued, "s'ingengnano in questi tempi rassemblare una fonte, che dall'istessa natura, non a caso, ma con maestrevole arte sia fatta."  

When fracturing is brought into the digital age, the result can be quite remarkable. Focused on the desire to make a building "made, not manufactured," Allied Works implemented digitally customised concrete shuttering for the Clifford Still Museum in Denver, USA, completed in 2007. Taking advantage of the myriad and sometimes difficult to control parameters of an in-situ concrete pour, the architects specified form boards of varying width that, when removed, induced a fractured edge at the joints. The bevel angles and board widths were carefully calculated based on empirical tests to establish the liminal bevel angle conditions for the desired effect, i.e. fractured, but not too fractured. The result is a broken, incidental, and unique facade surface that recalls in a non-arbitrary way the fractured rock of the Rocky mountains against the bright alpine sky. Because of the level of indeterminacy, the concrete work re-introduces the workmanship of risk. The process could obviously be repeated, but no two facades would be the same. The uncertainty, or risk, previously associated with the dexterity of the hand is shifted now to the agencies embedded in the material itself. One may still miss the nostalgia associated with rustication’ holds some promise for a new kind of digital workmanship, reinvigorating once again David Pye's humble text.  

---  
4. Plato, Symposium, 209b  
5. Plato, Republic, 570a.  
6. This assessment is based on an analysis of the frequency of the words appearing in books via Google's Ngram viewer. 7. Pye defines craftsmanship as, "workmanship using any kind of technique or apparatus, in which the quality of the result is not pre-determined, but depends on the judgment, dexterity and care which the maker exercises as he works," The Nature and Art of Workmanship, 20.  

Image credits:  
1) public domain  
2) © Allied Works
The Undo control does not undo the following actions: renaming files, saving files, opening and closing files, emptying the Clipboard, making changes that are program-wide and not specific to the current image (such as changes to color settings and preferences), or using commands that do not change the image pixels (such as zooming or scrolling). Undo and redo controls on the History palette. You can undo multiple actions, as well as specific actions, by using the History palette. The History palette lists all actions performed on the active image. The most recent action is at the top of the list. Redoes the selected action and all undone actions preceding it. Clicking this button is equivalent to clicking an item’s yellow-X eye icon. Undo Selected. Undoing and Redoing Changes. The Undo command discards the last changes to the file in the editor. The Redo command discards the results of the last Undo command. You can undo or redo your changes as many times as required. However, when you exit PyCharm Edu, the undo history is lost. PyCharm Edu smartly defines the logical steps that can be undone and redone. The following events signal about the end of a logical step: Pressing Enter. Repositioning the mouse cursor. Undo/redo buffers will be cleared automatically when you call Clear method, or when you use methods for loading documents (which call Clear inside). You can clear undo and redo buffer yourself using method ClearUndo. Implementing menu/toolbar buttons for undo/redo. You can undo/redo operations from the application code, using methods Undo and Redo. The undo/redo buffer will be cleared automatically when you call Clear method, or when you use methods for loading documents (which call Clear inside). You can clear undo and redo buffer yourself using method ClearUndo. Implementing menu/toolbar buttons for undo/redo. You can undo/redo operations from the application code, using methods Undo and Redo. The undo/redo buffer will be cleared automatically when you call Clear method, or when you use methods for loading documents (which call Clear inside). You can clear undo and redo buffer yourself using method ClearUndo.