The Finite Set

Rather than simply comparing the seriality proposed in these works to the idea of the solitary object, perhaps it is more fruitful to imagine forms that bridge these two sides of the spectrum, and offer new ways of critiquing both of these methodologies. In responding to the question of multiplicity vs. objecthood, this paper proposes a new formal mode between infinite seriality and the solitary object — *The Finite Set*.

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The idea of multiplicity in architecture critically engages with the discipline's conception of the subject and its competing notions of temporality. The project of horizontal multiplicity and its association with informal, bottom-up tactics of "non-composition" have been well documented in the Mat typologies of Team X in the 1960's as well as in the unstable formal installations of MOS Architects. Rather than simply comparing the seriality proposed in these works to the idea of the solitary object, perhaps it is more fruitful to imagine forms that bridge these two sides of the spectrum, and offer new ways of critiquing both of these methodologies. In responding to the question of multiplicity vs. objecthood, this paper proposes a new formal mode between infinite seriality and the solitary object — *The Finite Set*.

SUBJECTIVITIES OF THE MULTIPLE:
Contemporary strategies of multiplicity in architecture, such as seriality, fields, tiling, tessellation and horizontal repetition, seek to reflect and define spatial experiences in the city through visual cues and spatial constraints. They structurally organize surfaces, preempting or projecting ideal or intended movements through space, and becoming actants in social life and order. Often they are set against the traditional hierarchical orders of the city, which are structured around particular axes, blocks or boulevards. At other times, they seem to emerge from a particular landscape in the dispersed context of the post-metropolitan city, offering a more informal alternative to object-in-the field strategies that dominate those urban environments.

At the scale of the building, such multiplicities often manifest as geometric tiles, tessellations and patterns, composing a kind of ornamentation as seen for example in the work of Aranda/Lasch, IwamotoScott or P-a-t-t-e-r-n-s. In these cases, the surface is mobilized as a critical design tool that satisfies the demands for iconic architecture, while providing insulation, a strict maintenance of the boundaries between the interior and the exterior.

While their formal characteristics provide important organizational cues, these multiplicities also rely on and reproduce certain understandings of social and political relations. In

an article on the building envelope, Alejandro Zaera-Polo examines the political affects of multiplicity, and argues: "The modular grid, indifferent to the relative weight of individuals or politically active subgroups, very much embodies the ideals of democratic equality and liberal individualism. It demonstrates a preference for non-hierarchical organizations and other ideal notions of democracy in which individuals are equal subjects to the will of majority."[1] In their embodiment of such liberal ideals, however, these multiplicities efface differences, and propose a uniform understanding of social life, repeated over and over without any space for radical intervention or transformation.

TEMPORALITY OF THE MULTIPLE:
These formal characteristics not only act as vehicles for spatial experiences, or as embodiments of a flattened collectivity, but also reflect a particular understanding of temporality. In his essay "Entropy and New Monuments," Smithson touches upon the problem of temporality, and notes how employing a multiplicity of surfaces or structures may eliminate time "as decay or biological evolution,"[2] and instead extend it in an unbounded manner. Accordingly, in Smithson's work time is portrayed to be infinite: a thematic explored repeatedly in the oozes of *Asphalt Rundown* (1969), his spiral sculptures the best known of which is *Spiral Jetty* (1970) and in several progressive sculptures like *Plunge* (1966), *Alogon #1* (Figure 1) and *Mirror Stratum* (1966). In this teleological conception of temporality, there is no room for last things. In fact, what is expected to arrive will be different from all things prior.

DEFINITION OF FINITE SET
But what if the multiple is bounded and set within finite limits? How do the terms change? Borrowed from the mathematical, the *finite set* offers a different possibility for understanding the work in relation to space and time. The bounding of multiples within defined sets has potential to imagine a difference that is not tied to the even gradations of the field or progressive structures of infinite temporalities. The finite logic of the set requires the editing of the multiple to into a selection that is limited. These sets can operate locally and relationally by relying on terms that are defined individually for each set while maintaining theirs status at another scale as a bounded solitary object. To put the question in other terms, these projects oscillate between global autonomy and local specificity to rupture those distinctions and allow for the emergence of new individuated and collective modes of inhabiting the relentlessly expansive city.

In defining "the finite set," this paper describes a set of experiments in form-making that have been put to use by various offices. Rather than reducing the shared set of formal tactics to the whims of style, this paper proposes that these practices induce a shift in understandings of the temporal and subjective. This new perspective, which I am calling "the finite set," is critical of the notions of the undifferentiated global mass subject and the infinity of time, and supports techniques that implicate more contingent, local and nuanced meanings.

SUBJECTS OF THE FINITE SET
In her piece on Peter Eisenman's House X, "Death of a Hermeneutic Phantom," Rosalind Krauss cites the work of sculptor Robert Morris, specifically his L-beam installations (Figure 2) from 1965 in which several large (6'x10') white forms shaped like the letter "L" are organized in different orientations in a room. She uses this piece to describe the potential for a limited number of self-similar forms constructing radical difference across field of the installation both because of their relationship to the each other and the viewers' own subjective experience. Krauss describes the piece as "surely calling on us to see that in our experience those forms are not the same. From their placement visually alters each of the forms, thickening the lower element of the up-ended unit, or bowing the sides of the one posed on its ends. Thus no matter how clearly we might understand that the three Ls are identical (in structure and dimension), it is impossible to see them as the same."[3] This potential to create
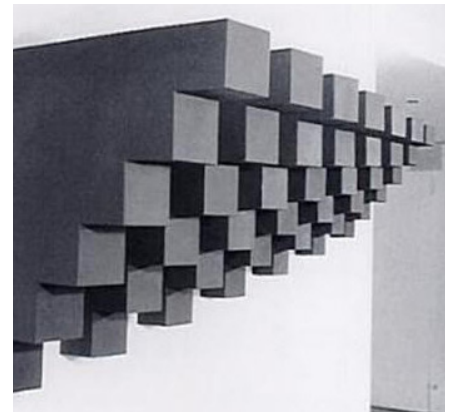
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Figure 1: *Alogon #1, Robert Smithon, 1966.*

distinct difference across a bounded field of otherwise related forms illustrates the potential of the finite formal set, in contrast to the more familiar understanding of multiplicity as unbounded and extensive seriality.

TEMPORAL IMPACT OF THE FINITE SET

In contrasting two parallel art practices that remain critical to understanding seriality—the work of Robert Smithson and Donald Judd—we can see two distinct sensibilities regarding time. We have already examined Smithson's relationship to endless and unbounded temporalities, allowing for a future that is defined by openness. Donald Judd's work and writing refutes the notion of endlessness, and proposes a sense of time that is bounded by individual experiences and lifespans. This has a direct impact on his conception of form and sculpture as he describes the organization of sculpture in his work "Specific Objects" as an act against traditional and progressive modes of composition, instead proposing to build "one thing after another."[4] This technique of composition pervades his work from the simple stacks of his untitled stack works (1967), which vary in number in relationship to the boundaries of the room they are in, to his 100 untitled aluminum works in Marfa, Texas (1983–1986), which are carefully bounded by both by the number 100 and the site specific installation in the old artillery sheds. In his last interview from Marfa in 1992, he explicitly suggests: "There is no time that goes on and on and on and is something all by itself."[5] Formally, he materializes this perspective by producing the bounded set—a seriality that conforms to clear boundaries.

THE FINITE SET IN ARCHITECTURE HISTORY

This logic of the finite set is of course not a practice strictly limited to mid 20th-century minimalist art. In parallel practices of architecture this problem has long been explored at varied scales. Perhaps one of the earliest examples of this tendency to use the conceptual space of finite set is in Giovanni Battista Piranesi's projective plan to infill the marshes of Rome with a set of typologies in his canonical Campo Marzio plan from *Il Campo Marzio dell'antica Roma* (1762).

In this plan Piranesi is deploying a limited set of formal devices to imagine a new possible city. This set has the unity of self-similar parts deriving from known classical orders but amplifies its ability to construct difference that allows new urban types to emerge. If the set is bound from within by the structures of colonnades and piazza's its is also defined at its edges by city walls and the Tiber River. This engraving frames a practice that uses a finite set of forms both produces a urbanism unique formal types and imagines their commensurate and diverse urban lifestyles.

Interestingly, it is this practice of Piranesi that initiates in the finite that is later taken up by Jean-Nicolas-Louis Durand and expanded into and infinite system in his *Recueil et Parallèle des Édifices de tout genre, anciens et modernes* in 1801. Durand's text and accompanying plates, a seemingly limitless set of methodically generated architectural forms, constructed the fundamental logic and sensibility for the modern turn in the discipline's exploration serial formal design.[6]

More recently, John Hejduk's *Berlin Masques*, a reflection on two blocks of Berlin from 1979–1983 introduced a method re-framing the city through a diverse but defined set of objects. In this case Hejduk drew a set of highly expressive formal caricatures that set construct a collective in their opposition to the deteriorating urban context. The spirited objects form a finite field of difference across two walled blocks in Berlin in a way that both interjects possibility and reframes the vernacular figures of the existing buildings. In examining Hejduk's work in his essay "One or Several Masters?" Robert Somol describes the way objects and their definitions produce a malleable field of urban tools. He explains that in Hejduk's urban schemes "objects with the same name may have different forms in different cities, while those with the same name may have different names, thus revealing new
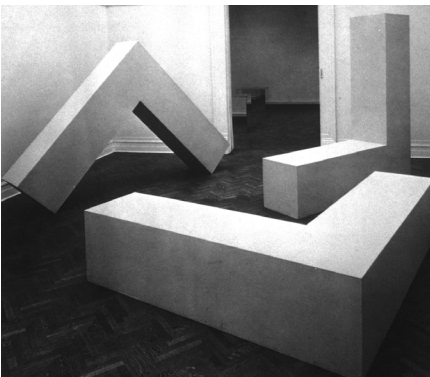

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Figure 2: *Untiled L-Beams, Robert Morris 1965*

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traits."[7] This technique of constructing contingent definitions of subjects and their relation-ships in way that re-imagine urban fields demonstrate the finite set's potential to enable and facilitate collective subjectivities.

Both of these works are set in cities with strong historical fabric and well-defined urban structures that allow the set to play against context. However, the finite set is a system that has come to exist as a nearly formally autonomous reaction to problems of context and dispersed urban form. The well-defined city context of Rome or Berlin has been replaced by the extensive, almost endless urbanism of Taipei and Detroit, which have produced contemporary techniques of the architectural set. This problem of the expansiveness of the dispersed contemporary city is typically addressed through modes of informal intensifica-tion characterized in how Stan Allen describes the role of field-based multiplicity in the city, "the prototypical cities of the late 20th century are distinguished by horizontal extension. What these field combinations seem to promise in this context is a thickening and intensifi-cation of experience at specified moments within the extended field of the city."[8] However there is a key idea in the set strategies of earlier projects that possible in within the frame-work of the finite set but that is missing in thickening of fields. The sets of Piranesi and Hejduk play a series of singular moments against the extensive continuity in the city in a way that affords multiple urban subjectivities—each on its own terms.

CONTEMPORARY EXAMPLES OF THE FINITE SET
Rem Koolhaas and OMA used the potential to create a bounded relational logic in the small finite set for their project for the Hamburg's *Hafencity* Competition in 2004. The solution they proposed was a binary double set using the same form in two opposing orientations to house related but distinct programs. This strategy first emerged in two possible schemes for their *Ascot House* a year earlier in which an articulate void in the larger form could be read as either a courtyard house in plan or an atrium house in section. In the Hamburg competi-tion they chose to use both possible orientations of the same form: One on its side, where the void becomes a theater, and another where the void is displayed as a courtyard. Not quite a single and not quite a multiple, this move squarely invokes a new zone of relational logics that operate for finite sets.

In SANAA's *Kitagata* housing project in Gifu, Japan there is a finite set that operates at the scale of the iterative housing unit. Clearly a large set of possible unit types have been culled to produce an optimal set of units that when configured into the bar have a partic-ular balance between the system that defines the image of collectivity in the overall slab building and the difference and individuality unique to each unit. To see this balance between specificity and uniformity is a distinct contrast to the housing slabs legacy in the relentless expanse of post-war housing slabs like the *Corviale* on the periphery of Rome or *Montparnasse* in Paris. These more typical slabs seemed to extend undifferentiated and limitlessly only ceasing for lack of funds. In Gifu there is a deliberate attempt to curate difference through choice of a particular set of base forms to build up to the complete slab building. This system is not endless but bounded in this case by the choice of the author defined by SANAA's famously extensive testing through modeling to imagine an ideal balance of emergent diversity.

In the emerging practice of Hillary Sample and Michael Meredith, MOS, the struggle between the finite and infinite has evolved from various experiments on infinite sets in early installation works to several projects that could be described as finite in recent building projects. In 2010 they created *Installation No. 9 (Rainbow Vomit)*, a room-size installation based on the unstable "heap" of cubes that was then illuminated with complex graphic projection of discordant lines. This type of work that is strictly based on horizontal non-hierarchical systems of swarms, heaps, piles and fields becomes more refined in their even more recent projects like *House no. 5 (Element House).* The Element House in New Mexico is

ENDNOTES

1. Zaera-Polo, Alejandro. "The Politics of the Envelope: A Political Critique of Materialism." *Volume 17* (Fall 2008) pp. 90.

2. Smithson, Robert. "Entropy and the new Monuments." *Robert Smithson: Collected Writings*. Ed. Jack Flam. Berkeley and Los Angeles: University of California Press, 1996: pp. 11.

3. Krauss, Rosalind. "Death of the Hermeneutic Phantom: Materialization of the Sign in the Work of Peter Eisenman." *Houses of Cards*. Ed. P Eisenman, R. Krauss and M. Tafuri. New York: Oxford UP, 1987: pp 176-177

4. Judd, Donald. "Specific Objects." *Arts Yearbook* 8, 1965.

5. Judd, Donald. Video Interview by Christopher Felver, Marfa, Texas, June 1994

6. Lucan, Jacques. *Composition, Non-composition: Architecture and Theory in the Nineteenth and Twentieth Centuries*. Lausanne, Switzerland: EPFL Press, 2012. pp. 523–524

7. Somol, Robert. "One or Several Masters?"" Hays, K. Michael. *Hejduk's Chronotope*. New York: Princeton Architectural Press [for the] Canadian Centre for Architecture, 1996. pp. 104

8. Allen, Stan. "Field Conditions." *Points + Lines: Diagrams and Projects for the City*. New York: Princeton Architectural Press, 1999: pp. 98.

built-up out of a self-similar units that are configured and composed within a fixed limit of 6 base forms set against the sublime western landscape that it is situated within. The newly finished *School No. 1—(Krabbesholm, Art, Architecture/Design School)* in Skive, Denmark is constructed of 4 bars of buildings with distinctly high geometries. These sets of 6 and 4 in the recent work suggest a turn from the earlier extensive logic of Smithon's teleological temporality and Zaera-Polo's mass subject to a relational logic that is aligns with both Krauss's definition of Morris's L-Beams and Judd's temporal notion of part-by-part—from the infinite to finite set.

Within practice of my own firm, SCHAUM/SHIEH, my partner Rosalyne Shieh and I have deployed this strategy at multiple scales in an effort to grapple with various problems of formal organizations and their attendant subjective and temporal corollaries. In our scheme for a competition with Albert Pope for *the Kaohsiung Pop Music and Maritime Center* (Figure 4) we deployed a set of circles in a field bounded by the definition of the formal square shape of the historic harbor area that was the site. In this ill-defined fabric of the post-industrial context of Kaohsiung, Taiwan's old port the finite set of circles created their relational definition of space and form that set up a base logic of urban form. As the pop-music visitor moves in looping trajectories intertwined in the landscape with families headed to the beach and offices workers on break. The same set of circles produces a multiplicity of form and event, each within their own time-scale and rhythm.

This strategy of the finite set was deploy at a radically smaller scale in SCHAUM/SHIEH's installation *About Face* as part of the *Common Ground,* International Exhibition at the 13th

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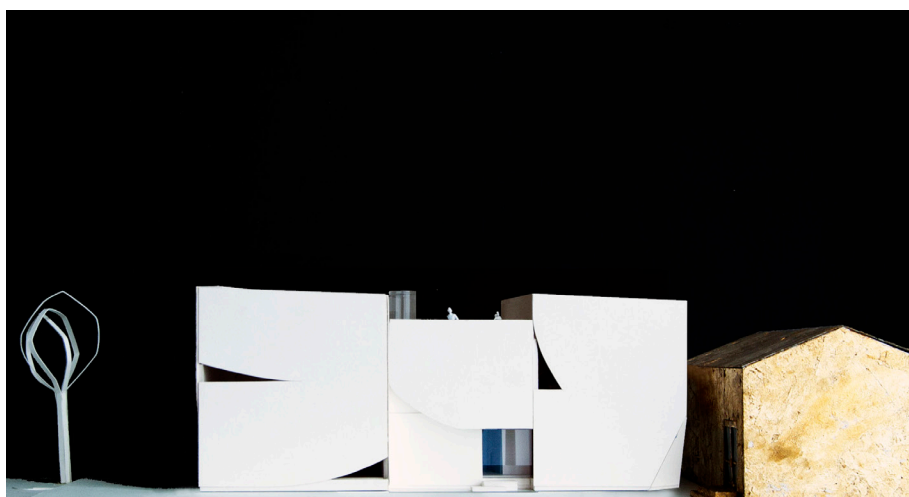
Venice Biennale in 2012 (Figure 5). Our installation was a re-imagination of a room we had built two years earlier in a single–family house in Detroit. The original room cut through and was supported by several existing walls and floors in order to open up the rooms to new exposures and relationship. In Venice the structure was required to be self-supporting and easily transportable. The self-contained logic of the project set against the deteriorating background of the Arsenale in Venice led us to deploy a set of 23 self similar forms that could be just stable enough to support the cross axis of the structure as it cantilevered over the floor of the gallery but loose enough configuration to unwind from the top to the bottom. The looseness of the relationships in the set created a movement within the form and provoked a dynamic engagement as visitors moved up around and through the installation both bodily and visually.

Figure 3: *Transart Gallery, SCHAUM/SHIEH, 2013–Present.*

In the recent commission for a new gallery, *Transart*, in Houston, Texas (Figure 3) the practice has been able to explore the dynamic of the set at the scale of a complete building. The

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complex is a set of four pavilions organized as distinct but connected art spaces for a private curator. The building façade is composed of 15 large panels that stack against each other and wrap the pavilions one after another to contain a gallery, library and meeting space. The simple program works against the typical part-by-part logic of the surrounding neighborhood of single-homes, which also includes the Menil and Rothko Chapels. The logic is a three dimensional one that is layered in the process of production and not in a more typical hierarchy from ground to sky.

CONCLUSION

Considerations of the spectrum from multiplicity to singularity, as proposed by the forums in this conference, should rather ask "which multiplicities?" and investigate how they operate. The idea of the finite set reframes the multiple's relationship to the subjective and the temporal. The emergence of formal tactics like the relational potential of the finite can penetrate the gloss of style to recode our definitions of time and the urban subject.

Figure 4: *Kaohsiung Pop Music Center Competition Entry, SCHAUM/SHIEH, 2010.*

Figure 5: *About Face installation at Arsenale in Common Ground: 13th Venice Architecture Biennale, SCHAUM/SHIEH, 2012.*