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Notes on contributors

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Anna-Maria Walter worked on love, intimacy and gender relations in the heterogeneous Muslim context of northern Pakistan for her doctoral research. Having finished her PhD in 2018, she has served as a part-time lecturer at the Institute of Social and Cultural Anthropology at Ludwig-Maximilians-Universität Munich, Germany, and holds an honorary fellowship at the University of Exeter, UK. She is currently developing a proposal for her postdoctoral project on female mountaineers and fairy ontologies in the Himalayas.

Acknowledgements

Introduction: Materiality and Connectivity

Martin Saxer and Philipp Schorch

Things that move and thereby connect or, conversely, connections made through things have long been central to anthropology's concerns. From the Kula Ring (Malinowski 1922) and the role of the gift (Mauss 1923–4) to questions of dowry (Goody 1976), the theme of material circulation and exchange has featured prominently in anthropological understandings of the worlds in which we live. In recent decades, too, a renewed interest in things has informed a variety of scholarly endeavours. Arjun Appadurai's volume on *The Social Life of Things* (1986) inspired a substantial body of work on material culture in motion (Thomas 1991; Marcus and Myers 1995; Clifford 1997; Harrison, Byrne and Clarke 2013; Bell and Hasinoff 2015; Joyce 2015; Bennett, Cameron, Dias et al. 2016; Basu 2017). 'Things' continue to be rethought (Henare, Holbraad and Wastell 2007; Bennett 2009; Miller 2010; Bogost 2012; Shaviro 2014; Atzmon and Boradkar 2017), while a recent strand of anthropological work has shifted the focus from the 'social life of things' to the 'social life of materials' (Drazin and Küchler 2015; see also Ingold 2007, 2012).

At the same time, in the field of science studies, Bruno Latour's reflections on the parliament of things (1993) and his outline of Actor-Network-Theory (2005) problematised the notion of agency as something not exclusively human, inspiring new approaches to the study of science, technology and medicine. Interdisciplinary takes on infrastructure highlight both the stubbornness and the fragility of material interventions (Björkman 2015; Harvey and Knox 2015), and studies on transnational commodity flows provide us with a deeper understanding of global connections (Steiner 1994; Bestor 2001; Tsing 2015). New schools of thought are emerging around concepts such as perspectivism (Viveiros de Castro 2004, 2012), multispecies ethnography (Kirksey 2014), new materialism (Barad 2007; Bennett 2009; Dolphijn and van der Tuin 2012) and

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object-oriented ontology and speculative realism (Bogost 2012; Harman 2010; Bryant, Srnicek and Harman 2011; Shaviro 2014), working across the big divides between human and non-human, nature and culture and subject and object, that once seemed to be taken for granted.

All of these approaches and themes – from the classics of anthropology to the bleeding edge of theory production – share a fundamental concern with things in motion and their role in forging connections. This volume – the outcome of two workshops and a symposium – aims to provide a new look at the old anthropological concern with materiality and connectivity. We do not understand materiality as a defined property of some-thing; nor do we take connectivity as merely a relation between discrete entities. Somewhat akin to Heisenberg's uncertainty principle (1927), we rather see materiality and connectivity as two interrelated modes in which an entity is, or, more precisely, is becoming, in the world. Just as things tend to become the things they are through the connections in which they are engaged, connections are often imbued with material qualities. The question, thus, is how these two modes of becoming relate and fold into each other to produce the realities we attempt to understand.

In order to find answers, we explore the forces and potentialities that underlie, constitute and mobilise these entities from ethnographic, historical, methodological and theoretical angles. More specifically, we follow the narrative journeys of things and the emergent ties through which what is commonly called 'material culture' comes into existence, bringing into focus the dynamic courses of material change, dissolution and decay. Thus, we do not see the value of this volume as emerging from a juxtaposition of two well-researched themes – materiality and connectivity – but rather from their deep and often surprising entanglements. Throughout the four-year research process that led to this book, we approached these issues not just from a theoretical perspective; taking the suggestion of 'thinking through things' (Henare, Holbraad and Wastell 2007) literally, and methodologically seriously, we dedicated our first two workshops to practical, hands-on exercises working with things. From these workshops a series of installations emerged, straddling the boundaries of art and academia (cf. Schneider and Wright 2006, 2010). These installations served as artistic-academic interventions during the final two-day symposium and are featured alongside the other, academic contributions to this volume. We will now begin by outlining this process of exploration, with all its pitfalls and outcomes, bringing it into conversation with the chapters and main themes of the book.

Thinking-by-doing

The aim of the first workshop in 2015 was to take stock of experiences with, stories of and reflections on things that move and thereby connect or, the other way round, connections made through things. The method employed was decisively simple: each participant brought three or four things to the workshop and prepared brief interventions – anecdotes about experiences, conceptual insights, questions, puzzles. These 'storied things' were then *put on the table* – metaphorically as well as physically – in order to create an arrangement of materials, field experiences, concepts, theories and histories. This simple exercise of thinking-by-doing[1] turned out to be highly productive, leading to a wealth of ideas that have since found purchase within our own work.[2] However, we also realised that, at least initially, putting things on a table led us down a well-trodden path that went counter to our original proposition of materiality and connectivity as two intertwined modes of becoming. The storied things on the table made us look for connections between them, which we quickly started to visualise with a red woollen thread, naming them with labels. Once more, we found ourselves in precisely the kind of universe of discrete things and their connections that we sought to transcend.

For the second workshop, in 2016, a different setup was attempted: instead of putting things on the table, we decided *to hang them from the ceiling* in order to create a three-dimensional playground. We rented an industrial space in Munich, Germany, and built a simple wooden frame covered by a fishing net. This setup, designed to further our thinking-by-doing, allowed us to hang and reposition things and walk the emerging landscape of thought, changing perspectives, identifying angles and observing parallax.[3] We invited participants to bring not just a handful of 'storied things' to the workshop but rather a 'thing-story' consisting of several items. While, again, productive and providing the seeds from which four of the five installations for the final symposium emerged, the setup posed new problems. First, the industrial space we had rented stubbornly invaded the evolving landscape, adding things like green exit signs to the fragile thing-stories we tried to put in context with each other. Second, many of the items brought to the workshop (a t-shirt, postcards, photographs) had clear front and back sides. Hung on the fishing net, they tended to turn round and, literally as well as metaphorically, turn their backs on us. And third, even more than with the things on the table, we ended up with something reminiscent of a model of the universe with stars, planets and asteroids – discrete material

entities held together by the connecting force of gravitation. In hindsight, we now see that, while the themes of co-emergence, transformation and dissolution were clearly present in several of the thing-stories brought to the workshop, the upside-down think-piece hanging from the fishing net still glossed over these qualities.

What our temporary playgrounds of things were missing was the dimension of time and its forces of growth, dissolution and decay. Rather than a model of a universe of things, we were after something more dynamic. To capture our initial proposition of materiality and connectivity as intertwined modes of becoming, we needed a different metaphor. Consider then, for a moment, a forest or *thicket*, where vines, roots, bushes and trees grow with and into each other. Their material form as well as their relations are inseparable from each other in the process of growth and decay. In a thicket, things are mostly also ties and ties are things. Rather than discrete entities (things) with relations between them (ties), there are *thing~ties*. We solicit the help of a tilde as a connecting grapheme between these terms that are usually taken as separate. Originally used as a mark of suspension, denoting the omission of one or several letters, the tilde later acquired a variety of meanings. It stands for approximation, a degree of equivalence or a possibly significant degree of error; as a diacritic, it indicates a shift in pronunciation and a number of languages deal with the limitations of the Latin script. The tilde implies movement and gesture where other graphemes suggest a more stable relation. While *thing-tie* may conjure up a hybrid, *thing/tie* might hint at the two sides of a coin and thingtie possibly suggests a new discrete entity, a *thing~tie* maintains the idiosyncrasies, uncertainties, movements and pragmatic decisions present in the history of its typographic use.

Meanwhile, we had issued a call for papers for our final symposium. Reviewing the almost 50 proposals received, we found that many of the most intriguing and convincing ones were concerned with the dimension of time and the forces of dissolution. We thus invited not only scholars working on things that become the things they are through movement and connections, but also archaeologists and historians looking at material traces and what they tell us about connectivity. We approached Tim Ingold, who had been a source of inspiration for our thinking from the outset. Regardless of his own scepticism about the term materiality (2007), he joined us for a short fellowship at the Center for Advanced Studies (CAS) at Ludwig-Maximilians-Universität Munich around the time of the final symposium, which took place in 2017. We invaded a neatly renovated villa in the posh Munich neighbourhood in which CAS

is housed. For the two and a half days of the symposium, five installations, or artistic-academic interventions, as we call them, provided the background for our conversations surrounding the papers presented.[4]

Two main themes emerged from this encounter of research-based papers and installations grounded in the practical thinking of the two earlier workshops: the manifold ways in which mobilising things and materialising connections fold into each other and grow together, and the connectivity afforded by ruination and dissolution. These two themes structure Part II, 'Movement and Growth', and Part III, 'Dissolution and Traces', respectively, of the present volume. Part I, 'Conceptual Grounds', consists of two chapters offering conceptual takes on things and ties – one from anthropology and one from archaeology.

Book outline

Part I: Conceptual Grounds

What we choose here to call *thing~ties* directly resonate with Tim Ingold's chapter, 'In the gathering shadows of material things'. Ingold traces the career of the term *assemblage* in the work of Gilles Deleuze and Félix Guattari (1987). The English term *assemblage*, Ingold argues, is a translation of the original French word *agencement* – despite the fact that *assemblage* also exists in the French language. In current debates, an assemblage is normally a group of heterogeneous elements whose relations are exterior (DeLanda 2006) – reminiscent of the planetary metaphor alluded to above in highlighting the limits of our intellectual playgrounds. The original term *agencement*, Ingold notes, has additional connotations that were somewhat lost in translation. In a world of becoming, he shows, 'the focus shifts to the processes of material formation themselves and to how they go along together' (p. 18). While articulation is what produces an assemblage, Ingold suggests the term *correspondence* for this process of material co-becoming. The nexus formed in this process he calls a *gathering* (p. 18). Ingold's objective is not to replace *assemblage* with *gathering* as a better alternative; his goal is rather to point to the many contexts in which relations are not exterior to material entities but constitutive in their material genesis and decay.

The metaphor of a growing *thicket of thing~ties* as opposed to the image of a moving yet relatively stable planetary constellation directs our attention also to time and history. In Chapter 2, Philipp Stockhammer tackles the problem of understanding human–thing entanglements in

archaeology by suggesting three kinds of changes that things undergo over time. The first concerns changes in perception, which are closely linked to the routes along which a certain thing travels; the second relates to the process of wear and tear, of decay; and the third involves changes in the practices associated with a thing. In all three kinds of change, materiality and connectivity are tightly interwoven. Here, too, it makes little sense to see the shifting connectivities as external to the less than stable materiality in the course of a thing's history. The human–thing entanglements with which Stockhammer is concerned grow from the same variety of seed as Ingold's observations; things and ties, and their underlying materiality and connectivity, are integral rather than external to each other. Stockhammer argues that the work things do (their 'effectancy', he calls it) is closely related to their movement – their 'itinerancy' – which, of course, is central to the methodological underpinnings of archaeology. Itinerancy, as a less anthropomorphising alternative to biography, highlights movement and directly leads back to the old anthropological concerns about material circulation and exchange, and thus to the movement and mobilisation of materials.

Part II: Movement and Growth

Itinerancy is obvious in the theme of the gift, which frames the two opening chapters of Part II of this volume. In Chapter 3, Julia Binter examines the politics of the gift in the colonisation of British Nigeria. Gifts, 'shot through with claims to political, economic and cultural power' (p. 59), played a key role in struggles to maintain sovereignty and impose dependence. In nineteenth-century Atlantic Africa, against the background of the end of the slave trade and the rise of the palm oil economy, new trade agreements and protection treaties were forged with local elites. In this context, African rulers hosted European merchants in elaborate rituals that took place on extravagant war canoes in the Niger Delta. European merchants presented gold-laced hats, silver-headed canes, silk and embroidered coats to their African counterparts as a means to 'break trade' and start or maintain commercial relations. These gifts were used by African rulers to display their wealth and standing, and to facilitate their inland journeys to acquire palm oil. Blurring distinctions between gift and commodity, and imbued with the power of relations, these *thing~ties* were at the heart of commercial activity in a fragile political environment. Binter shows how the British efforts to replace them with stable treaties signed on paper were only partially successful. The 'material processes of becoming imperial were far from

teleological', Binter argues, and gift exchange remained 'invested with the potential to impose power as much as to forge alliances and generate resistance' (p. 67).

Catrien Notermans and Jean Kommers (Chapter 4) follow women from West and Central Africa living in Europe on their journeys to Catholic pilgrimage sites. Shopping for religious souvenirs and sending them home has become a central activity in the lives of these migrant women. The souvenirs, purchased in large quantities on expensive trips throughout Europe, are more than simple gifts for individual friends and family. They are distributed widely through the networks of churches back home and have become a form of 'religious remittance', the authors argue. Here, as in Julia Binter's case, gifts are a form of commodity that assumes a crucial role in the maintenance of transnational relations between Europe and Africa. Imbued with religious power, they are used to heal illnesses, protect against the dangers of witchcraft and strengthen the migrant women's social standing in their home countries.

In both cases, more than a century apart, the things in motion are more than mere symbols or tokens of ties. They *are* the ties – ties that directly stem from their itinerancy. Bought, sent, distributed, and used to heal and protect, things and ties constitute each other as entwined modes of becoming.

The ties in these *thing~ties*, however, are not necessarily singular or exclusive, and may indeed prove multivalent. Exploring the cultural and religious links between Cuba, Africa and the USA, Natalie Göltenboth's intervention (Chapter 5) provides an example of multiple connections layered in a *thing~tie*. Göltenboth tells the story of Barbie dolls brought from Miami to Havana and their elevation to become sacred figurines of West African deities called *orichas* – 'saints' – through rituals of consecration. The act of consecration, here, can be seen as a form of transformation of one set of ties – imaginaries of a luxury life outside Cuba imbued with transnational family relations – into another, systems of belief and religious power flowing from Yorubaland to everyday lives in contemporary Havana. These connections are layered and additive rather than exclusive: while becoming deities through consecration, they continue to speak of the dream-world of Ken and Barbie. In the Barbie dolls, then, a diverse set of beliefs, values, aesthetics and family ties are entwined. As *thing~ties*, they hold in view the many itinerancies in play.

The notion of itinerancy deserves further scrutiny in cases where things do not take the paths foreseen for them, where it requires effort to keep them on track or, in other words, where the ties in *thing~ties* are at risk of being abducted or re-forged into something new. Srinivas Reddy's

contribution (Chapter 6) on the trade of war horses between Europe, Africa, the Middle East and India in the early sixteenth century reveals one dimension of the efforts required to keep goods mobile. While South Indian empires flourished, Portuguese colonial enterprises attempted to seize control of maritime trade across the Indian Ocean. One of the most important commodities flowing into India at that time was stallions to equip the cavalries of rival empires. The war horses were crucial in these struggles of power. For the Portuguese merchants, this tremendously profitable trade came along with the inherent risk that rival empires could begin breeding their own war horses. One of the strategies employed to prevent this was a ban on the sale of mares, withholding the stallions from entering into reproductive ties on site and thereby keeping them as commodities. Reddy argues that the system established a type of membrane to keep a profitable dependence in place. Managing ties through this membrane can be seen as a strategy against the risk of abduction by keeping the reproductive ties between mares and stallions separate from the ties of exchange at the heart of the trade system.

Another example of this kind of risk, on a different continent and in the present, is the topic of Juliane Müller's contribution (Chapter 7). Müller traces mobile phones produced in Asia and imported into Bolivia via the special economic zone of Iquique in Chile by a network of informal traders. In this supply chain, large corporations like Samsung struggle to keep track of their products. Frequently, and for a variety of reasons, Samsung finds shipments destined for one Latin American market ending up in another, much to the dismay of the national branches of the company, which are looking to boost their performance indicators. To keep phones on track requires effort. Samsung has developed a system that not only establishes the authenticity of phones, distinguishing originals from fakes, but also tries to prevent parallel imports – diversions from the predestined path of distribution. To this end, the company introduced the new category of 'Samsung Plus Original!', marked by a silver hologram on the packaging as the certificate of a particular itinerancy. This form of 'branding' (in the original sense of the term) changes the value of the phones regardless of the fact that the product is exactly the same. While Samsung employees are trying to track down phones on the markets of La Paz and re-enter them into their database, traders engage in repackaging and relabelling in order to keep the possibilities of trade open and plural: between them they pursue an ongoing quarrel over things and ties between traders and a transnational corporation.

Things and ties in relation to mobile phones also form the topic of Anna-Maria Walter's intervention (Chapter 8), which explores intimacy

in northern Pakistan. Walter's work teases out how material qualities of life as well as intimate chats and phone calls between lovers and young married couples intersect and constitute each other in a context in which gender segregation structures and regulates everyday life. In other words, the phone as private and mobile item carried close to the body is more than just a thing and more than just a tool to facilitate telecommunication – it is a *thing~tie* at the heart of personal identity, relation-making and social subversion. The phone as thing and the intimate ties it affords allow young couples to test the boundaries of social norms and reinterpret – or abduct – cultural concepts. Virtual connections might be invisible, but they certainly have a tangible efficacy.

As the chapters and interventions outlined above attest, Part II is concerned with cases in which ties are clearly more fluid than things. When a *thing~tie* undergoes change, this change originates first and foremost in the transformation of the ties in which a thing is suspended. This is not always the case, however. Part III looks at instances in which it is rather the things that dissolve; their solid form evaporates while the ties remain strong and even gain in presence and relevance.

Part III: Dissolution and Traces

How connections may be forged through dissolution is brought into focus by Gillian Tan's contribution (Chapter 9), which explores a smoke-purification ritual in Tibet. Tan suggests that smoke both requires and enables us to think about materiality and connectivity in new ways. In smoke-purification rituals, burned juniper incense gains its potency for forging relations in the process of leaving its material form behind. Tan describes the ritual complex of smoke-purification as vital to the making and maintaining of relationships between ritual practitioners, pastoralists, 'worldly' local deities and the environment in eastern Tibet. It is through the ritual enactment of these relationships, Tan argues, that worldly deities come into being; they are not only fortified by smoky relations but also depend on them for their very existence. Burning incense – the dissolution of juniper into smoke – affects human practitioners and worldly deities in a mutual process of becoming and un-becoming (p. 149). In these smoky relations, it becomes clear that materiality and connectivity, underpinning things and ties, do not exist on their own but rather come into being through mutual constitution.

Marc Higgin comes to a similar conclusion in his reflections on his intervention (Chapter 10). Higgin collected water in the puddles of a busy road leading to the harbour in Aberdeen. He brought this water to

the symposium at CAS and put it into a humidifier. The vapour of King Street invisibly filling the fancy premises of the symposium highlights the 'surrounding vital quality' of things that are no longer things, Higgin suggests. Vapour invites us to reflect on modes of connectivity and materiality that usually remain unaccounted for, yet are intrinsic to human ways of becoming in the world. Similarly to the 'smoky relations' that Tan explores in the Tibetan context, it is the very transformation of the water from a puddle into humidified air that constitutes relational force.

Even less palpable than smoke or vapour is radiation, perhaps the ultimate un-thing overflowing with pervasive ties that shape the material world in the most profound and lasting ways. In Chapter 11, 'Apocalyptic sublimes and the recalibration of distance', Jennifer Clarke explores the aftermath of the 2011 earthquake, tsunami and nuclear meltdown in Japan. Between the plethora of strangely sublime post-disaster images and the national emphasis on the necessity to endure suffering (*gaman suru*), Clarke responds with a form of anthropology that seeks to generate knowledge not through retrospective analysis and writing but through the practice of art.

Materials left behind by processes of dissolution may re-emerge as *thing~ties* of a different kind. Like Clarke's account, Lorenzo Granada's contribution (Chapter 12) begins with an apocalyptic event – the 1985 avalanche that buried the city of Armero in Colombia. Granada seeks to understand the ways in which the radically changed landscape and the rubble left behind affect those who live in the Magdalena Valley today. While some of the things buried have become treasures unearthed and sold, others have the potency to haunt and bewitch. Some things emerging from the mud acquire different lives and become new *thing~ties* through the very process of ruination, burial and excavation; other items, such as a skull a friend of the author stumbles upon, retain their old ties, which, too strong to be cut, become dangerous. Granada responds to the negativity of this landscape and the surprising possibilities of debris with what he calls a fragmented ethnography, articulating the constellations of broken things that inhabit this unstable terrain.

Memories ingrained in things can loom large, and sometimes the only way to move on is to rid oneself of things. The Yanomami community that Gabriele Herzog-Schröder addresses in her intervention (Chapter 13) puts a tremendous effort into cutting all ties to a deceased person. After death, a person's body and all his or her belongings that could provoke remembrance are eliminated in an elaborate ritual process to rid the community of memory and whatever could linger and enchant. The body of a deceased person is transformed into ashes and finally eliminated by

consumption. Here, materiality needs to be obliterated in order to untie connections.

Tabula rasa, the blank slate, the empty wax tablet ready to be inscribed again, material erasure as requirement to reshape relations from the ground – this is also the idea that pushed modernist urban planners like the famous Mexican architect Mario Pani, whose work is the topic of Adam Kaasa's contribution in this volume (Chapter 14). Kaasa shows how the quest to make room for Utopia, for example by clearing slums in Mexico City, goes hand in hand with materials of another kind – the architectural journals, drawings, plans and visualisations that undergird urban planning and rewrap *tabula rasa* urbanism as technical necessity rather than political or aesthetic choice. The matter of erasure, Kaasa argues, is thus 'not only the rubble of demolition, but the matter of documents, bodies, photographs and architectural journals that legitimate demolition. These are, after all, materials of circulation and connectivity' (p. 216).

Chapter 15 adds yet another angle to the afterlife of things and the struggles that may arise around their narrative ties. Elia Petridou follows the afterlife of debris left behind by refugees on Lesvos (Lesbos), Greece. At the peak of the refugee crisis in 2015, life jackets and abandoned rubber dinghies piled up along the shores of the island. While artists like Ai Weiwei started using them for installations across Europe to highlight the plight of refugees, Lesvos saw itself confronted with a waste problem. Petridou traces several upcycling initiatives transforming the waste into designer bags with a story and providing refugees with opportunities for generating income. These artistic and social projects intervene in the nexus of things and ties, transforming piles of polluting waste into a resource, and the traumatic memories of crossing the sea into political statements or items of everyday use. The design and sewing workshops appear as places where people work not just on materials but on the remodelling of erstwhile connections.

In the final intervention, Lisa Rail's story of *tamga tash* (Chapter 16) deals with yet another kind of historical trace. *Tamga tash* is a stone in northern Kyrgyzstan inscribed with the Tibetan mantra *om mani padme hum*, hinting at a distant past of ancient inter-Asian connections. The stone itself is immobile, but the stories and materials (from travel blogs to books and prayer flags) emerging in conjunction with it travel far. At the symposium, Rail's installation was formed around a replica of the stone to highlight the multiplicity and inseparability of things and ties, and the ways in which they are re-presented or made present. A replica still staying conjunct with its original is, Rail infers, a co-constitutive

process of mediation in which both stone and stories are taking shape and leave traces in unexpected ways. After the symposium, the Center for Advanced Studies asked us to remove the stone from its garden. It now lies silently at the bottom of a tree in a nearby park – a trace not just of the story of *tamga tash* but also of our exercise of rethinking things and ties.

Conclusion

We began this introduction, and the research project that led to this book, with a proposition to explore the nexus between materiality and connectivity and the aim of offering a new perspective on an old anthropological concern.

Taking the notion of 'thinking through things' both literally, and methodologically seriously, we enacted it in practice, approaching our question through thinking-by-doing: putting things on the table, hanging them from the ceiling and curating academic arguments *in situ*. Our ultimate goal was not to formulate a coherent new theory. As seen, for example, in the much-debated conceptual trajectory from objects to things and materials, there is no shortage of theoretical reflections in this burgeoning academic field – theoretical reflections that inspired our curiosity and informed this volume's authors in their individual chapters and interventions in different ways. Rather than testing theories, however, we set out to experiment methodologically and trigger complications at the intersection of materiality and connectivity.

At times, we veered off course and almost lost touch with our initial intention of understanding materiality and connectivity not as defined properties of a thing but as two interrelated modes of becoming. In the process of editing this volume, joining and juxtaposing the chapters and installations presented at the symposium, there emerged the two lines of inquiry that now structure this book. It took two workshops, one symposium and ongoing discussions to arrive at the insight that things and ties appear as evolving *thing~ties* suspended in processes of growth and dissolution. As interrelated modes of becoming, materiality and connectivity make it necessary to coalesce things and ties into *thing~ties* – an insight towards which the chapters and interventions came from different sides, and one in which our initial proposition still shines through. Throughout the pages of this volume, we invite the reader to travel beyond imaginaries of a universe of separate planets united by connections, and to venture with us instead into the thicket of *thing~ties* in which we live.

Notes

1. See video: https://www.youtube.com/watch?v=vLJnw267CFs&feature=youtu.be (accessed 29 August 2019).
2. For example, the notion of curation emerged as an enlightening lens – not as the expertise of individual curators, but closer to the original meaning of *curare* – to heal – although in a broadened yet specific sense of attending to, or taking care of, material environments (Schorch et al. forthcoming 2020; Saxer 2016).
3. Some impressions can be found here: https://www.flickr.com/photos/146280257@N06/sets/72157671668717391/.
4. The recordings of the symposium can be found at https://cast.itunes.uni-muenchen.de/vod/playlists/h0khPlzmxt.html.

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14

The matter of erasure: making room for utopia at Nonoalco-Tlatelolco, Mexico City

Adam Kaasa

Erasure's agency

I set out to consider the modernist ideological position that to build in a city one must first demolish what exists: one must make room for utopia.[1] Urban erasure is ideological, and that ideology is material. Processes of urban erasure, of urban demolition, of slum clearance and of land terraforming require structures of legitimacy to be enacted, and those structures of legitimacy are produced through materials. Materials that produce the legitimacy for urban erasure in the following case of a site in Mexico City in the 1960s, materials like paper, ink, graphite, typewriters, bound journals and texts, printing presses and newspapers – the materials of the public and professional sphere of discourse – operate in connection with the material produced by urban erasure. In turn, the materials produced by an enacted erasure, materials like rubble, debris, ruin, refuse and dust, perform the formal, functional and aesthetic failure required of that material to legitimise demolition. Finally, the materials that replace what once was on a site, a new building for example, become the argument for a past demolition. Building on the work of Gastón R. Gordillo (2014, 25) that 'seek[s] to show that the pure multiplicity of rubble is the void that haunts modernity', this chapter explores the matter of that multiplicity, by extending it from the rubble of destruction to a consideration of the material documents that legitimise demolition and rebuild: architectural journals, presentation and pitch boards, and statistical visualisations. The materiality of urban erasure, of dissolution,

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is a co-constitution of the materials of planning ideology, their material effect, and the connections between them.

Tim Ingold (2007) argues for a return to the matter of materials, rather than the concept of materiality. Deploying James Gibson's division of materials into medium (like air), substance (like rock or mud) and surface (the interface between medium and substance), Ingold makes the case that matter matters (Ingold 2007, 4–5). Taking Ingold's return to the material as a starting point, this chapter investigates the complex connections between the multiple materials involved in producing urban erasure (Ingold 2010). Taking the matter of urban erasure seriously suggests the need to consider the medium, the substance and the surface of erasure.

The matter of erasure is a potential that rests in the very matter of the urban. Every urban form holds in it the possibility or potential of erasure, of demolition, of destruction. However, equally, this potentiality is not a property of the material's 'substance', to use Gibson's term, but rather of its co-constitution with social and political processes. As Ingold (2007, 1) notes, materials are active not because they have agency, but because the properties of materials themselves are processual and relational. That is, for Ingold the duality implicit in the distinction that arises between subject and object when objects are imbued with agency is one that reduces agency to an individuating capacity, rather than a relational one. It is impossible to think the agency of urban erasure without considering the entanglements of property law, building standards and conservation heritage, to name just a few of the most common legal intermediaries. However, we need to add to this the capacity of aesthetics themselves to be agents of legitimacy in relation to demolition. Asher Ghertner's (2015) work on slum clearance and demolition in Delhi forms an important argument about taking image, text, aesthetic symbols and their relationships to aspiration, desire and the political as fundamental components of the capacity for material erasure. In other words, it is not solely the property of the material that lends itself to destruction: wood, stone, concrete, steel and glass – all can be demolished if a legitimate cause is produced. The materiality of erasure is more than the possibility of matter to be erased.

This chapter argues that erasure as part of urban planning or architectural production is a political choice produced as a technical necessity (Kaasa 2018). In line with Walter Benjamin's assertion that 'what is crucial in the observation of architecture is not seeing but rather the coming through of traces and structures' (quoted in Frisby 2001, 7), the chapter works to identify the architectural and urban planning

ideologies that led to the possibility of arguing for and delivering a massive urban project of erasure followed by a project of rebuilding in Mexico City. Specifically, I turn to Jane Rendell's (2007) work at the intersection of critical theory and architectural practice. Methodologically, Rendell suggests the need to explore 'modes of critical practice that operate in architecture through buildings, drawings, texts and actions' (2007, 6). Following from the work of other architectural scholars who argue for the primacy of the textual in architectural production (Colomina 1994; Kleinman 2001), Rendell's intervention allows us to hold on to the materials of built form, while allowing the location of architectural materiality to include other visual and textual artefacts.

Architectural design deploys what Gillian Rose and Divya Praful Tolia-Kelly (2012) describe as co-constitution in as much as the process of design itself moves between image and haptic, material, textual and narrative processes. The movement between the image/text and the material in architecture is a semantic argument, one that desires to prove its own legitimacy. Architecture compels multiple forces of political jurisdiction, of land ownership, of structural engineering, and of finance, to agree with its argument. Insofar as this is true, it contains within it the possibility of producing what Ghertner calls 'rule by aesthetics' (2015). If this is the case, then the matter of erasure is not only the rubble of demolition, but also the matter of documents, bodies, photographs and architectural journals that legitimate demolition. These are, after all, materials of circulation and connectivity. The architectural journal as a 'thing', to use Ingold's distinction from an 'object', entangles the flow of ideas that creates the legitimacy for erasure as an urban process (Ingold 2010, 3–7). That is, there is not only matter in the act of erasure, or demolition, nor only matter in the act of building after erasure. Matter exists in the idea, in the very argument of erasure. Part of the materiality of urban erasure lies in the traces of documents that define and defend it as a necessary. It is this matter of erasure, then, that this chapter explores.

I work through a case study of the origins of the argument for urban erasure central to the Nonoalco-Tlatelolco modernist housing project. Nonoalco-Tlatelolco is located to the north of the *zócalo* in Mexico City, and the project was developed and built between 1949 and 1964 by the architect and urban planner Mario Pani (1911–93). However, the site of this chapter lies in the materials that connect built form to ideology: the architectural journals, and architectural drawings and visualisations. First, I trace the relationship between the *tabula rasa*-dependent urbanism of Le Corbusier and demonstrate its influence on Mario Pani. This idea becomes legitimate in Mexico City through its circulation in the

material 'thing' of *Arquitectura/México*, the leading architectural journal in Mexico at the time, co-founded by Mario Pani. Secondly, I turn to a set of architectural drawings, maps and visual diagrams produced by the Taller de Urbanismo (Urban Studio) run by Pani between 1945 and 1964, to show this idea in architectural practice. What is uncovered through the analysis is a recurring normative argument about the dynamics of slum regeneration in Mexico City.

The *Charter of Athens* and Mexico

Of all the urban projects Mario Pani completed in his life, one of the largest exercises that combined the restructuring of urban spaces, transport infrastructure, housing and services was Nonoalco-Tlatelolco. Internationally renowned in architecture and urban planning discourse at the time, the modernist master plan of 102 buildings for some 100,000 people featured in a comparative article in a 1962 edition of the French architectural journal *L'Architecture d'Aujourd'hui* alongside the new master plans of Brasilia, Brazil, by Lucio Costa, and Chandigarh, India, by Jane Drew and Le Corbusier, a founding member of the influential modernist group the Congrès Internationaux d'Architecture Moderne (CIAM) (Jácome Moreno 2012, 94). In fact, when Pani originally sent the architectural photographs of the completed project, the editors of *L'Architecture d'Aujourd'hui* misread them as photography of architectural models, and rejected them. So close was the functionalist material reality in Mexico City to the unbuilt modernist fantasies of post-war Europe that it was interpreted as false. It was a pure *tabula rasa* urbanism erasing the vast majority of the site, and inserting a modernist rupture to the city around it.

At its opening on 20 November 1964,[2] Nonoalco-Tlatelolco was the future-made-present, a gleaming testament to rational order and architectural functionalism. Now, many mark it a modernist horror – a particular trope in the development of a homogeneous set of prescriptive urban design and social engineering principles built on the most inhuman of scales (Gallo 2010; McGuirk 2015). Its architect Mario Pani, however, remained optimistic. Years after the 1968 Olympic massacre and the devastating destruction of the 1985 earthquakes that left some thirteen buildings in the modernist complex demolished and several hundred dead, in an oral history interview with the architectural historian Graciela De Garay in 1991 Pani said:

> We wanted to continue with more projects, to expel all those who
> were living in poor neighbourhoods, we wanted to build more and
> more housing complexes. I was planning on building five or six
> Tlatelolcos, with an extension of over 3 million square metres, two
> million square metres of gardens, and a capacity for 66,000 families.
> (quoted in Gallo 2010, 57)

Though it was planned, Pani was never able to complete the subsequent
phases of his urban erasure and regeneration in what was commonly
referred to as the *zona de tugurios* (or 'slum area'), a region identified as
being to the north and east of the historic centre in Mexico City.[3]

It was in part through *Arquitectura/México*, the architectural
journal that Mario Pani co-founded in 1938 and of which he remained
editor until its folding in 1978, that the migration and flow of ideas from
architects around the world were positioned as legitimate in Mexico,
including the ideas about slum clearance and regeneration central to
projects like Nonoalco-Tlatelolco. The first issues of *Arquitectura/México*
focused on the internationalisation of architecture, and engaged in com-
parisons of similitude rather than difference. These early issues included
the work and writing of CIAM protagonists working towards a globalised
approach to urban planning and architecture at the time. Founded
in Switzerland in 1928 by 28 European architects at a meeting organ-
ised by Le Corbusier, CIAM hosted a series of eleven conferences until
its dissolution by an offshoot of younger dissenters, Team 10, in 1959.
Among the most widely cited publications was the *Charter of Athens*, an
edited volume compiled by Le Corbusier of the discussions about the
functional city originating during CIAM IV in 1933, but not published
till 1943. Through its exposure in architectural journals and discourse,
CIAM had influence in Mexican architecture and urban planning. Hannes
Meyer, a Swiss architect who would emigrate to Mexico and figure in its
urban planning, was present at the inaugural 1928 CIAM meeting, and a
co-drafter of the Declaration of La Sarraz (Mumford 2000, 24–7).[4] Meyer
also authored the first article on urbanism and Mexico City to appear in
the journal *Arquitectura/México*, in 1943. Later, a full reprint of a text by
another CIAM protagonist, Sigfried Giedion, the introduction to his tome
Space, Time and Architecture, appeared as an edited translation by Alonso
Mariscal in issue 20 (Mariscal 1946).

In the *Charter of Athens*, Le Corbusier relates a new urban vision of
dense collective housing in vertical towers surrounded by gardens created
through the erasure of slum-like conditions, most famously visualised in
his Plan Voisin for Le Marais in Paris (Mumford 2000, 89). As a version

of the principles laid out in the *Charter of Athens*, Pani's first large-scale housing project, the Centro Urbano Presidente Alemán (CUPA; 1947–9), was at the forefront of experiments in modern housing in Mexico, and in Latin America – an early example of urban restructuring whose argument would lead to the Nonoalco-Tlatelolco project some 15 years later. The CUPA is routinely referenced in relation to Le Corbusier's *Ville Radieuse*, an unrealised urban master plan presented in 1924 and published in 1931, extolling a city-scale plan of intense zoning, the separation of cars from pedestrians, and the proposal of tower-block residential patterns throughout a garden landscape, with communal services (Le Corbusier 1987). As William Curtis (1982, 208) put it, 'the "Charter of Athens" was really a restatement of the Ville Radieuse philosophy but without the poetry.'

The idea of the building

Enrique X. De Anda Alanís (2008b, 159) traces 'the image of Western modern architecture in Mexico', centring on the early presence of Le Corbusier in professional journals *Cemento* and *Tolteca* between 1924 and 1931 (De Anda Alanís 2008b, 168–76).[5] De Anda Alanís (2008b, 170) includes what he claims is the earliest record of a publication on Le Corbusier present in Mexico, an article from the daily newspaper *Excélsior* on 15 July 1926. Titled 'Un tipo de casa ultraísta', it was authored by Le Corbusier's cousin and business partner Pierre Jeanneret some two years after Le Corbusier's *Vers une architecture* (published in France in 1923) arrived in Mexico. The Mexican art historian Ida Rodríguez Prampolini (1982, 20) suggests that 'while we cannot credit Le Corbusier with the architectural theories of functionalism, the repercussions of his book *Vers une Architecture* contributed in large part to the development and consolidation of this new style of architecture.' In terms of Pani's urban planning studio, Manuel Larrosa (1985, 99–100) argues that it adhered to the considerations concerning transport and zones for work, recreation and housing stipulated in the influential *Charter of Athens*. De Anda Alanís (2008b, 125) equally reflects on the urban planning and 'slum' regeneration programmes of Pani, rhapsodising that 'the work that was implemented was on the same messianic scale as that of the architects of European modernity. … "architecture or revolution" was the threat made by Le Corbusier in 1923.'

In his own words, Mario Pani would reference the influence of Le Corbusier on his work throughout his career. For example, when discussing his collective housing projects in an interview conducted by Louise

Noelle (2000, 25), Pani stated that '[t]he origin of the matter is the theory of Le Corbusier on the Radiant City, that is, tall buildings that allowed green spaces to be freed up, with all the necessary services on the ground floor'. In an interview as part of an oral history project in 1990, Pani mentions that, in proposing the dramatic shift for the CUPA site from 200 houses to over 1000 apartments, 'clearly, I was thinking about the radial city, the *Ville Radieuse*, that was then being proposed and evangelised by Le Corbusier' (De Garay 1990, 2). Later, in reference to Le Corbusier, while discussing Pani's own participation on the jury for the 1952 São Paulo Biennale,[6] Pani says, 'I was also in favour of what Le Corbusier was doing. I based the multi-family Alemán on his theories' (De Garay 1990, 2). He continued, recollecting that he 'believed the city should be made like the *Ville Radieuse* of Le Corbusier, and [he] tried to accomplish this through the *multifamiliares*, particularly in the Miguel Alemán' (De Garay 1990, 2). Pani also paid extensive homage to Le Corbusier in *Arquitectura/México*.[7] The inaugural issue showcased an interview with Le Corbusier, and also of importance were an essay in issue 82 in June 1963 by Raul Henríquez, titled 'Arquitectura moderna en México', demonstrating the influence of Le Corbusier on architecture in Mexico, and a special issue (no. 92, December 1965) dedicated to Le Corbusier following the architect's death in that year.

Demolition as regeneration

The normative argument framing much of Mario Pani's focus on housing involved creating a better standard of life for the urban poor through slum clearance and the construction of a housing ladder – and this was certainly present in the development of Nonoalco-Tlatelolco. As demonstrated above, this argument finds material legitimacy through the connecting materiality of the architectural journal *Arquitectura/México*. This argument also remained consistent, from early work on his first multi-family housing unit, the Centro Urbano Presidente Alemán (1947–9), to the inauguration of the Nonoalco-Tlaltelolco project in 1964, to an oral history interview just three years before his death (De Gary 1990).[8]

In preparation for the VII Panamerican Congress of Architects in Havana, 10–16 April 1950, Pani's Taller de Urbanismo focused on developing an aesthetic language that could translate Le Corbusier's argument into planning doctrine, and therefore be used to justify the urban erasure required to build Nonoalco-Tlatelolco.[9] The argument presented in Havana was as follows: as people move into new modernist housing

units, they vacate their older homes, which are then occupied by people from even lower classes, who vacate their homes. This housing ladder continues until the lowest-quality housing (informal settlements) is vacated, allowing 'the authorities to freely dispose of these slums, once emptied, transforming them, for example, into magnificent sports fields' (Cuevas 1950, 21).

The presentation boards for the Congress in Havana open with a four-part montage representing this housing ladder. The first three pages are dedicated to maps that show the sites of change. The final page of this four-part opening montage is not a map of the city, but rather a mapping of the process of regeneration, a key diagram that visually asserts the argument about demolition. This page is split into two parts. The bottom third is a statistical visualisation of data from the 1940 census for Mexico City, comparing family sizes with the frequency of apartments of different sizes in the city.[10] Whereas just under a third of the population live in families of one or two people, just under half of the dwellings are one-room studios. More clearly, 78% of families are made up of three or more people, but 73% of dwellings have one bedroom or less. The census data signals a housing crisis of overcrowding in Mexico City. This presentation of a situation of overcrowding in the city uses the visualisation of demographic statistics to justify the proposition of decanting populations from areas considered to be overcrowded 'slums' to new, planned, modernist neighbourhood units in the as yet non-urbanised parts of the city.

The top two-thirds of the page are left to typography and graphics. One of the visual motifs of relationship and cause at use here is the arrow. On the left are three words: 'Dynamic', 'Tenants', 'Upward'. Each word is placed slightly above and to the right of the preceding one, and the end of each word is linked to the beginning of the next with a dynamic, curved white arrow, as if each leads to the other. Underneath we read 'For the regeneration of the slums'. To the right, a series of images are set up as a literal ladder. At the bottom of this ladder is a representation suggestive of a crowded slum. Above and to the right from here is a series of four boxes, unlabelled, with an arrow leading to each one, up and up and up, until the last graphic: a single-family modernist home. Along the side of the ladder-like set of images, the image of a moving van intersects a diagonal arrow as it climbs up from the slum to the single-family home. At the bottom of the image, the original 'slum' is crossed out, and in its place there is a graphical image of trees. This graphic presents a visual representation of the normative project of urban erasure behind modernist urban regeneration. Coming full circle from studio to congress, the visual

diagram was printed in *Arquitectura/México* in May 1950, a month after being presented in Havana (Cuevas 1950, 22).

This four-part opening montage acts as a visual argument for moving populations from one part of the city to another. The typography of '*tugurios*' or 'slum' figures prominently, and the repetitive form of the arrow enables leaps of causal logic necessary for the argument to succeed. The only element the argument required was the first step – a site big enough, and 'empty' enough, to build a large neighbourhood unit to begin the chain reaction of urban regeneration. A decade later, it arrived in what would be Nonoalco-Tlatelolco. In 1963, with the Nonoalco-Tlatelolco just a year away from its inauguration, Pani worked on the *Programa del C. Presidente Lic. Adolfo Lopez Mateos, de regeneración urbana y vivienda para trabajadores en la Ciudad de México* (Programme of President Adolfo López Mateos for urban regeneration and workers' housing in Mexico City). The proposal is the story of what can happen next now that a population can move out of their homes and into Nonoalco-Tlatelolco. The plan adopts not only the terminology and narrative logic of Pani's early solution to the 'urban problem' of Mexico, but also the visual logic. One map visualises the decantation of central Mexico City to newly built housing projects in the south of the city. A plan for the 'central hovel area' of Mexico City, a horseshoe shape surrounding the *zócalo* to the north is shown later in the proposal. Nonoalco-Tlatelolco is visible in the plan as just one small part, located above 'Guerrero', a colonia north-west of the historic centre of Mexico City. Its scale within the overall plan provides a visual cue for the ambition of the full urban regeneration project. Finally, on a page titled 'Dynamics of regeneration', we have a carbon copy from the Urban Studio project – large arrows flowing from Guerrero into the newly built housing units of Nonoalco-Tlatelolco, visualising the flow of people 'decanting' from their homes, leaving a vacated space for the pattern of erasure and rebuilding to begin again.

The repetitive form of the arrow acts as a visual component legitimising and naturalising the normative claims about urban erasure and regeneration in Mexico City. As Perkins and Dodge (2012, 269) argue, 'visual illustrations communicate specific information about the vision, but at the same time these images reinforce and reify the policy detail that will bring about the transformation'. The form of the arrow works to link the narrative thrust of the argument through these scales, creating a flattened causality. Both enable the delivery of an argument for decanting several areas termed 'slums' in urban research publications spanning thirteen years between 1950 and 1963, an argument that was central to the justification for Nonoalco-Tlatelolco (Pani 1966, 106).

Ideas matter

The matter of erasure I have examined in this chapter is very different from the matter that others might turn to, matter like rubble, dust or ruin, the effects of natural disaster or of war. Where others look to the material aftereffects of demolition, I look to the materials that produce demolition and erasure as a legitimate urban planning argument: the material of the architectural journal, and architectural presentation boards. Specifically, I have traced the matter of an argument from Le Corbusier to the Taller de Urbanismo, to one moment at a Congress in Havana in 1950, a moment of material circulation, and later to publications in *Arquitectura/México*. The argument that any one moment caused the urban erasure of Nonoalco-Tlatelolco is not one I make here. Urban erasure is not an object. Rather, it's a 'thing' in Ingold's (2010) sense, a relational thing that we need to understand as part of a life-world that connects materialities across space and time. As such, urban erasure does not happen at some point in time, but is a processual 'thing~tie' (see Saxer and Schorch, Introduction to this volume) happening all the time. The process of urban demolition and the production of newness through new build is not simply a natural function of material properties, but an entanglement of matters. The matter of erasure is a series of intra-actions, to borrow Karen Barad's term (2007), between the matter of buildings, the matter of rubble, and, fundamentally, the matter of ideas.

I began this chapter with a discussion of Ingold's (2007) return to material and asked, What might be the medium, the substance and the surface of urban erasure? I answer this question through a diversion to reconsider the insights that James C. Scott (1998), who relies heavily on Jane Jacobs ([1961] 1992), offers when writing about the hubris and failure of modernist planning. In *Seeing Like a State*, Scott offers a critique of high-modernist urban planning, arguing that '[t]heir most fundamental error was their entirely aesthetic view of order' (1998, 133). By this Scott means the reduction of the pluriverse of the city to a set of simplified relationships guided primarily by a visual order. This simplification, argues Scott, is a recurring trope in scientific and modernist governance, and, in terms of high-modernist urban planning, leads to failure through its incapacity to confront complexity: 'As an aesthetic matter, it led to the visual regularity – even regimentation – that a sculptural view of the ensemble required. As a scientific matter it reduced the number of unknowns for which the planner had to find a solution' (Scott 1999, p. 140). As a historical argument, Scott's analysis falls short of contemporary readings of modernist cities like Brasilia. If, for Scott, the success of a planned city

is that it achieves its original goals, then it follows that there cannot be such a thing as a successful urban plan: the social always overwhelms the intentions of the planner. I raise Scott, and his debt to Jacobs, not to argue for or against high-modernist planning, but precisely because at its core, at the core of a project of simplification – the central argument for Scott –, is the necessary precondition of a possibility of erasure: the possibility of a choice of with whom or with what one cohabits the world. Erasure here is a metonym for choice and power to simplify (into racial or class segregation, monocultures, terraforming, or zoning). Simplification, I argue, is a process of erasure: It is not just that high modernism fails to achieve that which it claims is possible to achieve, but that the underlying ethic is one of *tabula rasa* urbanism. By way of an Ingoldian focus on the matter of erasure, however, it becomes clear how ideas connect through substances like graphite and ink, media like the architectural journal or the congress, and surfaces like the architect Mario Pani, who operates between the two.

Coda: erasure remains

> In time Santiago de Tlatelolco lost more and more of its importance until it became a dirty and unattractive suburb, the seat of army barracks, prisons, warehouses and factories. Today, like the old gods, technicians are going to create a new Cosmogonic Sun with the buried remains of the past and the blood of the new nation.
>
> (González Rul 1960, 228)

In 1960, writing in the pages of *Arquitectura/México*, the leading architectural journal in Mexico at the time, Francisco González Rul narrated the story of modern-day Tlatelolco. González Rul presented a narrative of urban decline, describing the site as having 'lost more and more of its importance', as 'dirty and unattractive', and filled with things unbefitting its central location in the geography of the city and the history of the country. Instead, deploying the twentieth-century Mexican nationalist return to Mesoamerican tropes (Bonfil Batalla, 1996), González Rul references the 'old gods' of the Aztec empire and 'the buried remains of the past' – here meaning the literally buried archaeological remains of historic Tlatelolco. From here, González Rul ascribes god-like qualities to the 'technicians' (the architects and planners) who will construct the new creation myth of a modern Mexico – the modernist housing utopia from the architect and urban planner Mario Pani. And yet, to make room for this utopia, erasure is required.

Ending with a beginning, the beginning of 'a new Cosmogonic Sun' suggests that even urban erasure is not something from nothing. In spite of the legitimacy produced in the matter of architectural journals and presentation boards, erasure undoes itself. As the historian Stefka Hristova argues (2016, 6), '[r]ubble speaks of remains, and the act of remaining'. Erasure erases one thing, but produces another – and through it, remains remain. Whether the buried remains of the past, demolition dust, or the hubristic urban planning documents of architects and planners, the matter of erasure remains.

Notes

1. Intentional urban demolition is, however, not necessarily the only act of erasure that is political in nature. Anthropologist and human geographer Austin Zeiderman makes the compelling case that natural disasters, such as landslides and mudslides, become political tools for reorganising state–citizen relations in Bogotá, Colombia. See Zeiderman, 2016.

2. The 20 November in Mexico is *el día de la revolución* (the day of the revolution), commemorating 20 November 1910, regarded as the start of the Mexican Revolution.

3. The reason for this lay not necessarily in the perceived failure of the buildings, nor in the idea of housing densification around modernist ideals, but rather in a falling-out with the ruling party. In an oral history a few years before his death, Pani narrates how he fell out with President Gustavo Díaz Ordaz (1964–70) and says that this is what halted his broader ambitions to extend the logic of the Nonoalco-Tlatelolco development: 'Acabo de tener acuerdo con el presidente Díaz Ordaz, y me dijo: "¿Cómo es posible que a Pani le den tanto trabajo? No quiero que se le dé ni una sola obra más." … Con eso terminamos ése capítulo' (Pani, quoted in De Garay 1990, 12).

4. The Declaration of La Sarraz was the founding document of CIAM.

5. *Cemento* and *Tolteca* were journals connected to the cement industry, and used to promote the use of the material in contemporary buildings. See the chapter 'Cement' in Gallo 2005, 169–200. De Anda Alanís also lists articles appearing in these two journals and in the Mexican daily newspapers *El Universal* and *Excélsior* that show modern architecture mostly from Europe divided into countries. Countries represented at the time were Germany, Austria, Spain, the United States of America, France, the Netherlands, Sweden, Italy, Hungary and Belgium. He also mentions two references to modern buildings in Latin America, one from Uruguay and the other from Cuba. See full list in De Anda Alanís 2008a, 160–1.

6. The two other jury members were Sigfried Giedion, business partner, friend and promoter of Le Corbusier, and Junzo Sakakura, a disciple of Le Corbusier.

7. His theories and built work featured prominently in issues 1 (December 1938), 2 (April 1939), 21 (November 1946), 32 (October 1950), 37 (March 1952), 45 (March 1954), 56 (December 1956), 74 (June 1961), 76 (December 1961), 78 (June 1962), 79 (September 1962), 82 (June 1963), 90 (June 1965), 91 (September 1965) and 92 (December 1965).

8. The visual materials discussed here originate in the presentation at the VII Panamerican Congress of Architects in Havana, as published in *Arquitectura/México*, original presentation boards based on the study for the Congress from the Archivo Pani in the Faculty of Architecture at the National Autonomous University of Mexico (UNAM), materials on Nonoalco-Tlaltelolco published in *Arquitectura/México*, and archival materials on *Programa del C. Presidente Lic. Adolfo López Mateos, de regeneración urbana y vivienda para trabajadores en la Ciudad de México* (1963), a research document also from the Archivo Pani. The study from the archives is authored by the architects Mario Pani, José Luis Cuevas, Dominguez García Ramos and H. Martinez de Hoyos, and the engineer Victor Vila; the publication is twenty-seven pages long and primarily visual. Some of the images were subsequently published in *Arquitectura/México*. See, for example, the following, published in *Arquitectura/México*: Mayorga 1949; Cuevas 1950; García Ramos 1959.

9. The title of their presentation in Havana provides a good description of its intentions: *Experimentos concretos de dispersión organizada y de concentración vertical para el mejoramiento de la habitación de la clase trabajadora en la capital de la República Mexicana* ('Concrete experiments of organised dispersion and vertical concentration for the improvement of the housing of the working class in the capital of the Mexican Republic').

10. The family sizes of Mexico City in 1940 as depicted in the presentation board for the Congress in Havana were: 32% of one to two people, 30% of three to four people, 29% of five to seven people, 9% of eight or more. The types of dwellings in the Mexico City were cited as 46% studio, 27% one-bedroom, 21% two-bedroom, 6% three-bedroom.

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