PLANNING FOR A MATERIAL WORLD

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Like any social practice, planning operates on the basis of assumptions about how the world works. We are interested in two of these assumptions. One is that planners operate, for the most part, as if culture and nature are divisible and distinct. The world of humans is considered incommensurate – ontologically speaking – with the world of animals, plants, fish, birds, oceans, and land forms. The other assumption is that formal institutions and practices are essential for the development of regions, cities, and neighborhoods. Informal practices are residual or vestigial, incompatible with formal practices, and even harmful.

Neither of these assumptions withstands scrutiny. Humans act inseparably from "nature" and non-human things (such as vermin) are hardly passive in their interactions with others. Similarly, to speak of the only relevant world as that organized around the logics of markets, states, and bureaucracies is to ignore the pervasiveness of informality without which (we would maintain) formal institutions and arrangements would collapse. Informality is not just inherent in sprawling urban areas such as Sao Paulo and Jakarta, it is a mode of urbanization deeply embedded in the concrete, contextualized practices of city building and place-making.

In this article, we use the notion of an assemblage along with additional ideas drawn from actor-network theory (ANT) to dissolve the artificial divides between culture and nature and formality and informality[1]. The notion of an assemblage posits a world that is profoundly material and heterogeneous. At the same time, it acknowledges the way that human activity always occurs in conjunction with non-human things (Beauregard, 2012). These ideas are augmented with two others: the importance of human representation in asserting control over reality (a point particularly central to discussions of formality and informality) and the way in which space and place are performed rather than simply delineated. Formality is that representation which strips the world of its materiality, its heterogeneity, and its ontological integrity (Scott, 1998).

1. Culture/Nature Divide

Actor-network theory rejects the separation between humans and non-humans. This claim, in effect, renounces a methodological individualism which views the world as comprised of atomistic, rational individuals pursuing their singular interests. In its place, ANT posits that the constituent form of reality is networks and not individuals, or what actor-network theorists label as assemblages (Latour, 2005). Within assemblages, actors are known for their effects; that is, an action has occurred when the relationships among actors within the network have changed. To this extent, all action is relational and distributed, or shared, within the assemblage.

What distinguishes assemblages from how networks are commonly conceived is their materiality. In the place of an ontology that positions ideas as the basis of action, ANT embraces a materialism that emphasizes the unavoidable physicality of the production of networked (or collective) action. Humans, for example, must be present in assemblages (or send surrogates

in the form of vaccines or financial support) in order to be considered actors within them. They are "real" people who have established connections and made commitments with others; their presence is essential. Throughout, ANT privileges «the sticky materiality of practical encounters» (Tsing, 2005, p. 1).
Derived from this materialism is an even more important quality of assemblages. Non-human things – automatic door closers, pine forests, sea gulls – are also considered actors. The whole of the material world – not just humans – is ascribed theoretically significance. Because an actor is any entity that can change a network, non-human things become a constitutive part of actor-networks. When a retaining wall collapses and soil cascades down a hillside into a residential neighborhood, the relationships among neighbors, between property owners and insurance companies, between buildings and the surrounding land forms, and between rainwater runoff and streets all change. The assemblage is re-configured.
This inclusion of human and non-humans provides the theoretical foundation for an emphasis on heterogeneity. Actor-network theorists see all assemblages as comprised of humans and non-human things and all actions as involving diverse actors. As Thrift (1996, p. 41) writes, «objects [are] a crucial part of the performance of subjects». Humans act with and in concert with animals and birds, water and air, and various technologies from computer-aided design to household surveys. Two ideas are at play here. One is heterogeneity, a quality of assemblages, and the other is hybridity, a quality of actors who never act alone. This is another sense in which action is distributed; that is, across different types of things, never solely embodied in one type of actor. Things thus assemble not because they are similar but because they have overlapping interest in a particular matter of concern; for example, building a more durable retaining wall (Latour, 2004a).

ANT goes even further – it embraces a flat ontology. Proponents of a flat ontology claim that things have equal weight in determining actions within an assemblage; trees, hares, and speed-bumps are practically equivalent to humans. All are actors and all contribute in equivalent ways to action. We take a somewhat different position. While we recognize that things, whether human or not, can influence relationships within an assemblage, we argue that humans and non-humans have varying capacities to conceptualize actions prior to undertaking them, act purposively, and be morally accountable (Giddens, 1982, pp. 30-2). The impetus for an assemblage stems mainly from humans, but that impetus is only realized when culture and nature are bridged.

2. Formal/Informal Divide

In the typical relation between formality and informality, formality is almost always given exclusive priority. What does not fall within the boundaries of the formal is considered residual and thus informal. The term "formal" thus functions as a meta-language stripping the world of certain features. In doing so, it highlights the factors which best conform to the power relations that have produced this language. In brief, formality's priority reflects current structures of dominance.
Formality, then, functions as a prescriptive representation that is mediated by the juridical norms, official standards and cultural codes in force in the public domain, scientifically certified, or socially accepted. These languages legitimize the formal/informal construction. Consider juridical formality as applied to planning and, specifically, a land use regulation that prohibits a poultry-processing facility in a residential area. That activity is excluded and the law makes no exceptions while sanctioning or punishing

transgressions. Using this logic, informal settlements in developing countries are unplanned with that designation triggering either eviction or the *post hoc* legalization of informal housing[2].

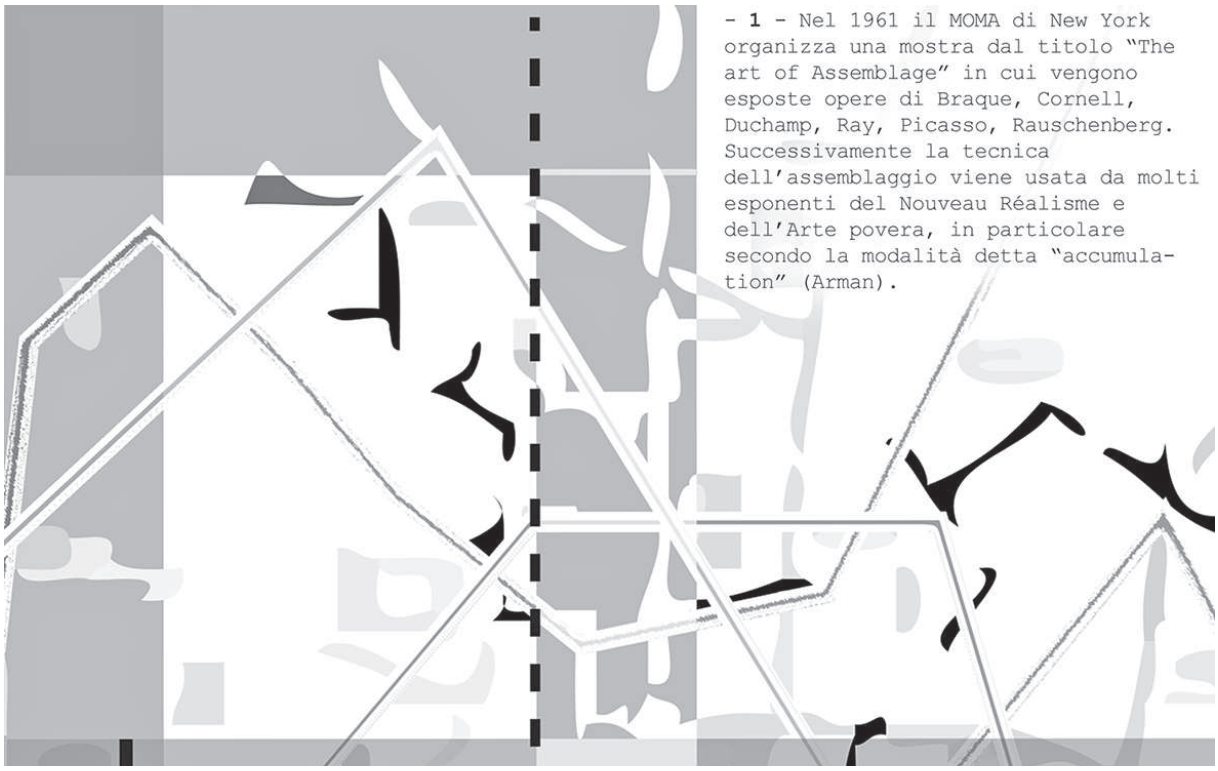
To understand informality, we must abandon exclusionary representations comprised of abstract principles of conformity to pre-defined norms and rules. This is what ANT advises – the rejection of a «purified world of categories [for] a heterogeneous world of hybrids» (Bingham, Thrift, 2000, p. 287). This opens up a perspective that encompasses concepts of movement, contingency, and fluidity and acknowledges the "onflow" of urban life (Pred, 2005). ANT's empirical approach to reality is incompatible with linear and dichotomous distinctions between an interior where all things fit and an exterior left to anomalies and exceptions. Its performativity highlights connections rather than separations. This is assemblage thinking in its Deleuzian inspiration – an openness to co-functioning and co-evolving practices, on one side, and the materiality of practices on the other.

First, consider co-functioning. Co-functioning involves relationalities and associations operating in the broader frame of relations between humans, non-humans, and things. In that frame, the social is *performed* as a type of relation and not assumed to be a pre-existing entity. This strong anti-structuralist position challenges the traditional vision of space and scale as independent of the practices that produce them, an underlying principle that informs many formal representations such as city maps. A city map is a product of conventions on scale, position, and survey technologies and any built form or movement in the city is meant to descend coherently from it. Conversely, we adopt an approach which acknowledges that the city does not exist in one space or at one scale, but «is differently enacted at multiple sites» (Farias, Bender, 2010, p. 6). Bruno Latour (2004b, p. 29) in *Paris: Invisible City* speaks of «the shifting representations of the social» to argue that urban phenomena become visible when they are «transformed, transported, deformed from one image to the next, one point of view or perspective to the next».

On these theoretical grounds, we question the explanatory priority of the formal as a representation saturated with authority – normative, political, moral, technical. Instead, we recognize that the formal is imposed on practices that are, in reality, relatively undisciplined and contingent. The formal is a representational distillation that serves dominant actors. In contrast, we mount a critique of the «politics of representation» that informs much of cultural geography and urban planning. This politics elevates the symbolic over «the responsive and the rhetorical» (Amin, Massey, Thrift, 2000, p. 223). Furthermore, it downplays co-functioning practices. Our perspective also harbors a claim for a more democratic and symmetrical mode of looking at the messiness and relentless emergence of the world.

Second, to embrace materiality is to challenge one of the assumptions on which the formal/informal divide is based; that is, that material objects are inert, manipulable, and easily displaced from the informal to the formal domain. As Vannini (2009, p. 284) claims, «Material objects are no mere props for performance but parts (*sic*) and parcel of hybrid assemblages endowed with diffused personhood and relational agency». Restated, the materiality of an assemblage is in constant motion as relations between humans and non-humans change in contingent, unpredictable, and creative ways (McFarlane, 2011, p. 215). This understanding replaces a view that casts inanimate objects as inert and under the control of humans.

Consider, as an example, a big city power grid. Power grids are usually thought of as high-technology networks under the control of formalized planning procedures and standardized monitoring protocols. We replace this representational perspective by one that moves as close



- 1 - Nel 1961 il MOMA di New York organizza una mostra dal titolo "The art of Assemblage" in cui vengono esposte opere di Braque, Cornell, Duchamp, Ray, Picasso, Rauschenberg. Successivamente la tecnica dell'assemblaggio viene usata da molti esponenti del Nouveau Réalisme e dell'Arte povera, in particolare secondo la modalità detta "accumulation" (Arman).

as possible to the grid's actual workings. Our assemblage would «include humans and their (social, legal, linguistic) constructions... [and] … some very active and powerful nonhumans: electrons, trees, wind, fire, electromagnetic fields» (Bennett, 2005, p. 49). It would acknowledge that a power grid functions as a complex socio-technical interface constantly interacting with nature and reacting to unpredictable social events. In such interactions as the flooding of underground wells or the theft of copper cables subsequently sold on informal markets, formal procedures are constantly tested and often bypassed by improvisational practices. Consequently, any formal assemblage is infected by «energies and factions that fly out from it and disturb it from within» (*ibid.*). Informality, then, emerges where formal plans, procedures, rules, maps, texts, and images are constantly re-arranged and negotiated through chains of co-functioning and the incessant assembling of actors, objects, unpredictable events, grounded needs, and places. Such practices are both pervasively conterminous and coincident with institutionalized activities. They are not the manifestation of anarchy, chaos or social disorganization set in dichotomous opposition to formality, orderliness, and organization. Rather, these practices constitute the adaptive relations of assemblages.

Finally, from an immanent point-of-view, informal practices can be a novelty or they can be an unforeseen event (or enactment) that questions the relations and boundaries of what is considered formal. This transgressive quality

has important implications for how we think about their spatiality. If we reject the formal/informal divide, informality is no longer the prerogative of the global south and a marginal issue in the global north. Even in northern/western cities, informality arises continuously in co-functioning chains that connect humans and non-humans with objects and technologies. It is a constituent form of the city and, as such, a mode of urbanization that assumes diverse configurations, from slums, shanty towns and peri-urban coronas in developing countries to more entangled and hybrid forms of urban landscape (for example, street retailing) in the developed world.

3. Practical Matters

The erasure of the culture/nature and formal/informal divides enriches our understanding of the world and sets the stage for a more robust planning. To illustrate, we draw on five case studies written around the theme of assemblage thinking. Two of them, one on data-driven governance in New York City and the other on the global mobility of microfinance, point to the complexity of formal/informal relationships. The other three cases reveal the unavoidable heterogeneity of assemblages. They are set in Naples and address multi-ethnic waste markets, the pedestrianization of the seafront, and the regional water system in Piana Campana[3].

In his "Making an Ethical Market: The Ideas, Technologies and Constituencies of Congestion Pricing Advocacy in New York City", John West describes the efforts made by the City of New York to impose tolls on drivers entering the city's central business district for the purpose of diminishing traffic congestion and encouraging greater use of public transit. Drawing on the work of Michel Callon (1986), he shows how the power to implement this scheme was produced through three translations: 1. social scientists translating the daily rhythm of buses, automobiles, trucks, and delivery vans into data on the number of trips, origins and destinations, trip duration, and peak travel times; 2. planners and advocacy groups using these representations to build statistical models of congestion pricing systems; 3. politicians and lobbyists articulating constituent interests to gather support for enabling legislation.

West's analysis demonstrates both the fluidity with which policy analysts move between humans and non-humans and the variegated nature of formality itself. The analysts recognized that people make choices using different logics and experiences, but they could only imagine how to comprehend and manipulate these behaviors by representing reality in terms of physical objects moving across space. That done, humans were then brought back into the analysis as rational decision-makers intent on balancing access, time lost due to congestion, and the costs of mobility. Analysts were adept at turning humans into non-humans and then back (the first two translations), and yet consistently disappointed by the failure to obtain political support (the third translation).

In this case, the local government sought to impose a higher degree of formality on business district mobility than already existed. Regulated by driving laws, traffic lights, parking availability, sidewalk barriers, street widths, and police personnel intend on maintaining traffic flow, the City government proposed another disciplinary overlay. In addition to the costs of driving, insuring, and maintaining vehicles, congestion pricing would require drivers (and business owners making deliveries) to calculate the costs of entering the zone at certain times and not others. Driving in and through the business district would become even more constrained by state policy. Although proposed as a market solution that enabled choice, it multiplied the restrictions – more formality rather than less.

The second case is He Lin Ying's "Mobilizing Policy. Microfinance's Journey from Bangladesh to Washington

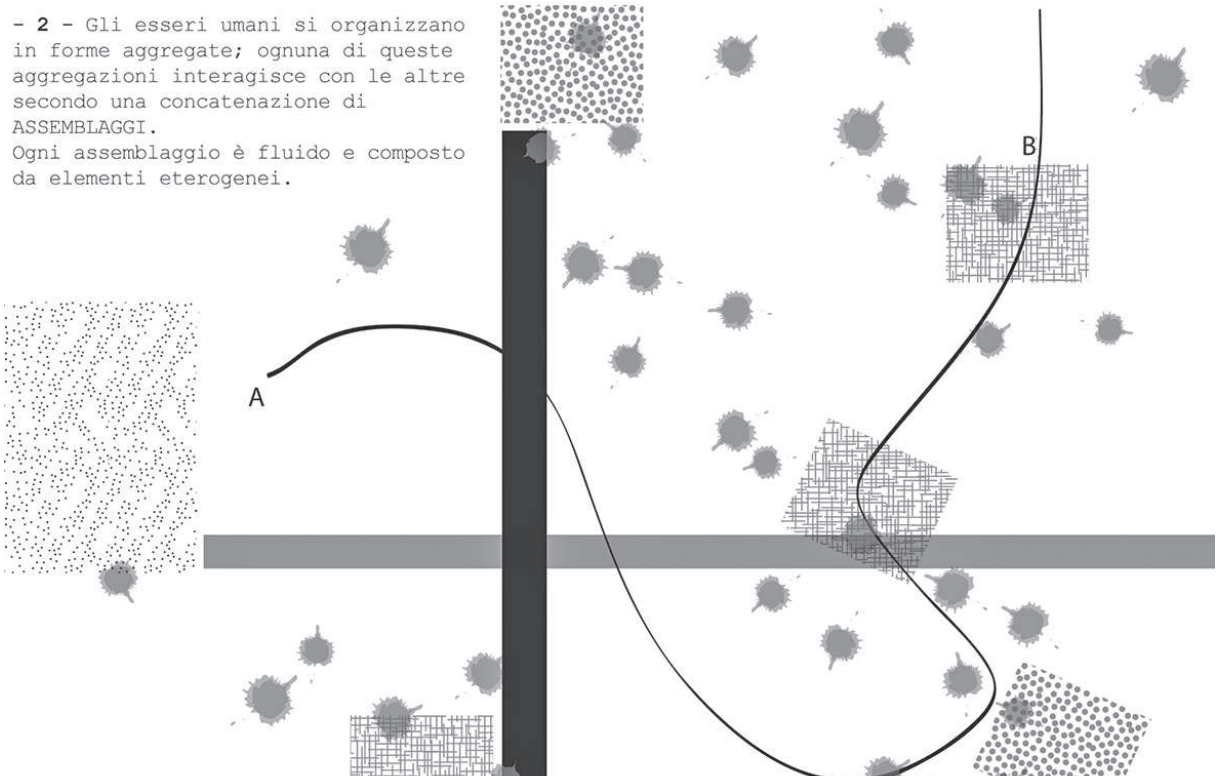
DC". In her work, He traces how microfinance went from a mechanism of poverty alleviation to one designed to integrate poor people into commercial financial markets. The clients of the program were shifted from being borrowers deeply embedded in social and local relations to consumers of capital individually responsible for using that capital and re-paying the loan. Central to these transformations was the World Bank which encouraged the diffusion of microfinance by investing in these programs outside of Bangladesh where they had originated (Roy, 2010). A support framework of technical assistance and training was established to solidify the Bank's version of microfinance and bring microfinance into the world of global capitalism.

As microfinance moved from Bangladesh to Washington DC, it also moved from a socially-inflected program whose functioning depended on local conditions to one which operated on the basis of individual consumers and the laws of global markets. To this extent, as He shows, microfinance was stripped of its informality. Believing that what is informal is outside the capitalist market and inferior to formal mechanisms, the World Bank could not tolerate microfinance in its original form. In its informal state, microfinance was less likely to travel from one nation to another and could not be easily diffused. If it remained particularistic, it could not be a "best practice." In brief, microfinance had to be universalized to meet the Bank's goals (Tsing, 2005, pp. 4-5). "Formal" is a synonym for "universal," and a microfinance program outside of capitalism or one functioning in the gap between the formal and the informal offended World Bank policy.

This melding of the formal and informal is even more apparent when we focus on the culture/nature divide. In her "The Open Seawalk is not open", Gilda Berruti retraces the pedestrianization of Naples' seawalk and the creation of a restricted traffic zone in surrounding areas. The local government justified the policy in terms of citizens' right to the city, access to the natural environment, and the beauty of landscape. From its beginnings, the policy was contested by residents and business owners. Its unintended consequences have included social segregation of the seawalk, traffic congestion, and limitations on transit service for commuters from Naples' western hills to downtown. In addition, traditional place-making practices such as leisure activities, the selling of seafood, and street vending by different urban populations have been partly replaced by franchise restaurants. In the spring of 2013, a nearby building collapsed due to geological instability brought about by tunneling for a new underground transport line. As a result, restrictions on traffic were suspended.

From an assemblage perspective, Berruti argues that one of the main reasons for the ineffectiveness of the pedestrianization policy was the failure to consider the seawalk as a socio-natural whole. Formal boundaries were imposed over a section of a complex system that had been co-functioning as an assemblage of social practices and natural relations. She also reveals how claims to public space and a healthy environment were deployed rhetorically by the local government to build consensus for gentrifying the seafront area. The rhetoric, however, was filled with pointless and empty signifiers rather than substantive acknowledgment of the co-functioning chains that connect society and nature.

Laura Basco, in her "Making multi-ethnic waste markets", illustrates the functioning of informal waste markets in neighborhoods of Naples. These are mostly temporary spaces where migrant pickers of diverse ethnicities buy and sell waste materials (fabrics, metals, plastic) that they collect on the streets. Mostly low-income individuals, the sales help them to cope with severe forms of poverty. Since 2007, Naples has been undergoing periodic and dramatic waste crises



due to the progressive collapse of the industrial system of regional waste disposal. Remarkable amounts of waste – including recyclable materials – have not just produced conditions of dramatic environmental degradation, but become available for different uses by low-income newcomers, thus reactivating a local tradition of waste picking.

The culture/nature divide, as Basco argues, has been a major impetus for public waste policies in the region, as they have been mostly designed as formal and technocratic industrial systems focused on incinerators; that is, the destruction rather than re-use of waste. Little citizen input and little room for recycling exist. From an assemblage perspective, all of the relations between humans and objects so deeply embedded in the informal economy of waste collection and reuse have been ignored in the design and policy making of waste management. This exclusivity has led to the malfunctioning of the industrial waste system and is one of the main reasons why informal, temporary waste markets flourish. Basco also makes clear that, until now, these informal practices have been mostly a survival strategy for the poor and not a parallel, informal economy as in cities where waste management policies are not so rigidly regulated and allow for citizen involvement[4]. If organized and supported, waste picking could spur grassroots investments by poor people, create jobs, reduce poverty, save public money, preserve natural resources, and protect the environment. This would require, however, that the institutions and actors

involved in the waste management process regard the waste production chain as an «arena of cultural production» (ivi, p. 51) where nature and society are closely entangled rather than a straight line from consumers to waste disposals to incinerators.
As a final example, Enrico Formato, in his "Eco-town metabolism vs wild urbanization", illustrates the conditions of environmental and social decline of the great plain – the Piana Campana – near the city of Naples, a densely populated and sprawled conurbation that is highly fragmented and discontinuous. Among the most complex and contradictory sub-regions in Europe, this territory has been deeply compromised since the 1950's by senseless urbanization triggered by state industrialization and postwar Keynesian policies. Later, it was embraced by private investors who built shopping malls, and criminal organizations involved in money laundering activities, unplanned settlements, and toxic (and illegal) waste dumping. Criss-crossed by the Regi Lagni, an hydraulic engineering system of canals designed in the 17th century, the Piana Campana has functioned as the core-structure of the regional landscape. Today, the canals support a chaotic assemblage of things, practices and events from abandoned areas and unplanned settlements to illegal landfills and nomadic camps.
Over the years, different plans have been proposed to restrain the twin processes of regional decline and marginalization, but none has been fully implemented. No formal scheme has worked. Attempts to rationalize uses of natural resources (water, agricultural land, wildness) and urban functions (housing, transport, landfills, industries) have been based on a division between culture and nature. In the case of wild urbanization, such as the Piana Campana, this is pointless. In response, Formato proposes a vision of socio-environmental recovery that sets wilderness as the key condition for challenging environmental fragmentation, social conflicts and parasitic economies: the old canal network acts as a material interface for a new eco-town metabolism. His proposal encompasses the co-functioning of material resources and social practices, with wilderness – a resistant nature, highly adaptive and resilient – as a metabolic system with the potential to progressively regenerate this now-compromised territory.

4. Implications for Planning

When, recently, a building collapsed in the middle of a restricted traffic zone in Naples, this single event dramatically revealed the complex connections between non-human things (buildings, aquifers, traffic lanes, debris), humans (car drivers, commuters, residents, city users), technologies (tunneling excavations) and norms (vehicular and pedestrian zoning). Planners had not imagined these specific relationships when they formulated the pedestrianization policy for the seafront. And, no one would expect them to have predicted the building collapse or to have had knowledge of the myriad relationships that lay partially hidden from view until normality was disrupted. Unexpected events produce unexpected consequences. However, if the planners had been more attuned to how people and things work together in assemblages, they might have been more sensitive to the fluidity, contingency, and hybridity that seep into all plans once they are implemented.
To convince you of this argument, we have focused on two assumptions that are central to mainstream planning. One is that humans are the only actors of any significance in the world, with nature and technologies doing their bidding. The other is that formal institutions and practices are the key to bringing about the imagined world of planners and their supporters. We labeled these the culture/nature and formal/informal

divides. In discussing them, we affirmed the materiality, heterogeneity, and hybridity of the world as it exists, implying that most planners do not question these divides and think and act in human-centric and formal ways. At the core of our argument is the claim that the formality and informality are dialectically related and inseparable in reality. Without the informal, the formal would cease to function effectively. Implemented to conform perfectly with and without deviation from the plan, formal systems (whether bus systems or farmers' markets) will eventually fall short of their goals.

Planners, then, should abandon the notion that informality is a distraction and an anomaly or that it can and must be converted to formality. Rather they need to recognize the limits of instrumental rationality and formal representations that dispense with heterogeneity and hybridity. This has a number of implications. First, planners must cast off the traditional notion of the plan-as-the-rule when dealing with urban practices. They should aim to incorporate fluid and contingent processes within the plan's general framework, not assess conformity or non-conformity to the plan. Plans are best when incomplete. They should leave room for a range of informal practices that attach themselves to formal spaces. Here we are thinking of everything from street vending and flash-mobs to insurgent urbanisms such as the recent occupations of Zuccotti Park in New York City and Tahrir Square in Cairo (Davis, Raman, 2012). In order to be effective, planners have to give up control.

Second, planners have to recognize that while formal representations are dominant, they are not exclusive. Formal discourses have to be negotiated and confronted by other perspectives, and critically assessed. Being closed to alternative understandings leads to the neglect of actors and practices central to the functioning of cities and their assemblages.

Third, planners need to recognize the hybridity of human behavior, always occurring, as it does, with objects, technologies, and nature. Plans are implemented by writing regulations, obtaining financing, signing contracts, monitoring conformance, and gathering support from different government agencies and officials. All of these actions center on humans – the culture/nature divide in action. We are not suggesting that human activities be ignored. Rather, we are suggesting that they must be understood in their material and hybridized fullness. Zoning regulations, for example, work when humans, buildings, land forms, and nature (for example, hillsides) all do what we expect them to do. To focus only on human action is myopic. At the same time, planners have to recognize the heterogeneity of the assemblage. They need to be knowledgeable about nature and technologies and more willing to factor their knowledge into their plans, leaving room for contingency and serendipity.

Humans are not alone in the world and the world – the material world – is neither inert nor passive. Materiality is a process in which objects bind actors together and participate as near-equals in life on earth. The forms of cooperation are uneasy, but in compensation people are allowed to maintain their differences. We are reminded here of the cyborg metaphor (Gandy, 2005) and its applicability to such mundane tasks as collecting for sale the metal and plastic containers discarded on the streets. The people who do this, called "canners" in New York City (Lieto, 2013), are hybrids of purloined shopping carts, plastic bags, recycling centers, intermediary buyers, and informal agreements that parcel out access to various neighborhoods.

Finally, this perspective suggests that planners should be receptive to a world that they can neither fully know nor fully control. To this end, we would encourage planners to be more experimental. ANT and assemblage thinking encourage us to view the world as in constant motion. The fit with planning's transformative project is compelling.

Notes

1 Dovey (2011, p. 351) has written that «The potential to understand and re-think the ways formal and informal processes play out in cities is one of the greatest prospects for assemblage theory».
2 Informality is not illegality. They are two, quite different but often intersecting conditions.
3 These five cases were presented at a one-day conference "Planning in a Heterogeneous World: Reassembling Informality" held at "Federico II" University in Naples, Italy, June 12, 2013. Many of the ideas in this article were discussed at the conference and accompanying workshop.
4 One case is New York State's Returnable Container Act also known as the Bottle Bill that focuses on everyday practices of waste collection and recycling, including the redeeming of empty containers by consumers. Such a framework has unexpectedly provided room for a growing informal economy (the canners) as a self-provided welfare for low-income people. See Lieto (2013).

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