

## **Energy Humanities and Spanish Urban Cultural Studies: A Call for a Radical Convergence**

*Luis I. Prádanos*

The main purpose of this essay is to suggest the potentialities for converging energy humanities and critical urban studies to illuminate relevant aspects of contemporary culture often overlooked by cultural scholars. I will elaborate on what the focus of energy humanities is and how, once brought to bear on urban cultural studies, it can enrich the discipline.

Constant growth in the context of a limited biosphere cannot be sustained. The faster growth-oriented societies appropriate planetary ecological space by expanding their urban economic metabolism, the faster the living systems of the planet collapse. It should not come as a surprise that an economic system designed for constant expansion and growth becomes more entropic and carcinogenic over time (Prádanos, “Degrowth”). Urban capitalism as an energy-devouring regime and a climate disruptor is a necrotic machine; an instigator of “biological annihilation” (Ceballos et al.). As such, it makes impossible its future viability by rapidly depleting the nonrenewable fossil energy that has historically fueled its planetary expansion.

Peak oil and climate change are two highly interrelated problems emerging from urban capitalist modernity and its energy dynamics. Any environmental humanities scholar with a basic knowledge of the global energy and environmental situation clearly understands that capitalist civilization is facing a systemic—although unevenly distributed—collapse due to the impossibility of maintaining its ever-growing social metabolism. The social metabolism is “the entire flow of materials and energy that are required to sustain all human economic activities” (Haberl et al. 3). The current metabolism of global capitalism is already massively disrupting the living systems of the Earth and extinguishing species at a rate hundreds of times faster than what was previously the norm. The World Wildlife Fund’s 2018 *Living Planet Report* shows that “population sizes of wildlife decreased by 60% globally

between 1970 and 2014.” The history of capitalism is the history of a pathological, ever-growing social metabolism. As Jason W. Moore has compellingly argued, there is an inextricable correlation between capitalist expansive dynamics and the ongoing reorganization of the world ecology. The resulting ecological reorganization is unable to support and accommodate most of the planetary biotic community. Needless to say, humans are part of this diminishing living community and their survival depends on regenerating its declining health. Moore argues that, historically, capitalism always resolves its main contradiction—its dependency on the availability of uncaptured nature (human and nonhuman) and its tendency to rapidly deplete it—by “endless geographical expansion and endless innovation” (Moore 22). This expansive economic geography in a finite biosphere has taken humanity to a dead end, quite literally. Globally, there is no more room to easily expand the metabolic order of capitalism and its planetary urbanization of capital without collapsing the already overstressed planet’s living systems. Thus, capitalist innovation without the possibility of further expansion becomes cannibalistic. At this point, more technological innovation at the service of a growth-oriented paradigm is counterproductive. This kind of innovation improves the capitalist technosocial capabilities required to do, better and faster, the destructive things we are already doing. To prevent civilizational collapse, however, we are not supposed to make capitalism more efficient, but to overcome it. The problem is not the tool (technology), but the dominant growth-oriented paradigm guiding it (Alexander).

Peak oil as well as other crucial materials and energy peaks are well known to researchers. The International Energy Agency acknowledges these realities in its 2016 report, predicting a global fossil fuel peak by 2020, although the peak of conventional fossil fuel probably began in 2006. Social chaos arises every time a city gets its massive injection of fossil fuels interrupted for a few days (including its petro-food: each calorie of industrial food consumed in capitalist urban spaces embodies around ten calories of fossil fuel). The situation in Spain within this global context of energy depletion and environmental degradation is dire. Due to its geographical location, Spain is disproportionately and dramatically affected by climate change (especially hydrologically). During the second half of the twentieth century, Spain has rapidly increased its material and energy intensities, grossly overshooting its biocapacity—its footprint is currently more than three times larger than its territorial biocapacity—and drastically degrading all ecosystems within its territory (see Carpintero).<sup>1</sup> In other words, the urban metabolism of Spain cannot be sustained without massive daily injections of energy and materials coming from outside its territory. Spanish energy dependency on imported fossil fuels is extremely high—one of the highest in the European Union, which already

has a geopolitical dilemma due to its high dependency on foreign energy sources.<sup>2</sup> In this context, the problem is not simply that the price of importing fossil fuels is expected to rise and become prohibitive in the near future, but that their supply could be limited by increasing global demand during a time of shrinking production—not an encouraging scenario for a net importer of fossil fuels like Spain. Furthermore, most “modern” Spanish urban infrastructures, transportation systems, and agricultural facilities have been designed and are operated assuming both that fossil fuel will be unlimited, cheap, and easily available in perpetuity and that the environment can be constantly depleted without serious consequences—a double mistake seeded with severe socioecological repercussions. The Spanish party in power as I write (Partido Popular) is actively contributing to make all the aforementioned problems worse by subsidizing and reinforcing Spain’s petro-nuclear-dependency as well as actively obstructing and dismantling any meaningful post-carbon and environmentally regenerative initiative emerging within the Spanish territory. Spain is a clear example of “how the dominant carbon and nuclear energopolitical regime is increasingly disrupting and poisoning life across the world” (Boyer, “Energopower” 198).

“Energy humanities” is an interdisciplinary scholarly field that has been gaining transnational momentum during the last few years (Boyer and Szeman 40). It studies the entanglements between cultural sensibilities, political power, and energy technologies. Energy humanities deploys humanistic inquiry methods to shed light into the historical coevolution of cultural imaginaries, sociopolitical institutions, material transformations, and energy regimes. Specifically, energy humanities often understands the history of urban capitalist modernity as a history of accelerated entropy, fossil fuel exhaustion, and environmental suffocation. Studying Iberian contemporary cultures from this standpoint can be illuminating, as it reveals how their dominant cultural imaginaries can only be maintained by completely ignoring the nonrenewable and environmentally destructive substance that fuels petrocapi-talism and made it both historically feasible in the past and biophysically impossible as a future option. In this regard, the globalizing cultural narratives of capitalist petromodernity—including its latest neoliberal and neo-Keynesian articulations—are delusional, as they actively avoid thinking about its most pressing contradiction: namely, the unfeasibility of maintaining for much longer the material conditions and energy regime that support its (dys)functions. In other words, foregrounding the role of energy in every aspect of our urbanized daily life reveals the material impracticability and social undesirability of the continuation of a growth-oriented paradigm that is rapidly depleting all its sources of nourishment. The outcome of paying sustained attention to energy from the perspective of cultural theory translates into a drastic corrective to the main-

stream cultural imaginary, as this shift of attention always leads to clearly acknowledging several facts: the limits, fragility, and dangers of our dominant sociotechnical system (Hitchcock 22), the destructive and exploitative nature of capitalist modernity, the implausibility of globalizing an energy-intensive regime addicted to constant acceleration and growth, the factual inappropriateness of techno-optimism, and the suicidal (as well as genocidal, biocidal, and epistemocidal) consequences of the planetary urbanization of capital.<sup>3</sup> As Jennifer Wenzel compellingly put it, energy humanities strives to “understand the discrepancy between the everyday tedium of filling the gas tank and the sublimely discrepant timescales at work in fossil fuels, the ways in which geologic past, technological present, and environmental future overlap and collide” (31).

In this essay, my main purpose is to encourage a fruitful convergence of energy humanities and critical urban studies to unsettle our understanding of contemporary Spanish urban culture.<sup>4</sup> This approach, as I will explain later, helps conceptualize counterhegemonic urban collectives and platforms as challenges to the dominant “oil culture” in the context of the Spanish neoliberal crisis as they propose, in theory and in practice, alternative (smaller, slower, more circular, and more convivial) low-energy urban metabolisms that are socially and ecologically regenerative.<sup>5</sup>

For the remainder of this essay, I will focus on two complementary things. First, I will draw on Neil Brenner’s critical urban insights to briefly introduce the notion of “operational landscapes,” which I find crucial to understanding planetary urbanization as a process that is inseparable from capitalist petromodernity and its global metabolic expansion. I believe that these insights, mobilized in tandem with an energy humanities mindset, help both to challenge the dominant growth-oriented urban paradigm and to reframe the urban *problématique* in ecologically informed, culturally sophisticated, and politically empowering ways. Second, I will suggest a few possible starting points for a research agenda for an energy-aware Spanish urban cultural studies. I claim that this direction can be extremely fruitful to challenge the dominant urban cultural imaginary, reactivate a radical political imagination, and promote cultural practices for counter-mapping, counter-narrating, and fostering postgrowth and decolonial urban paradigms to confront “the unevenly articulated, crisis-prone urbanization process” of “tourist infrastructural investment and real estate speculation” that dominates the Euro-Mediterranean region (Brenner and Katsikis 454–55).

According to Brenner (highly influenced by Henri Lefebvre), cities—understood as spatial units disconnected from their sources of nourishment—should not be the main focus of critical urban studies because they are only a fragment of the planetary urbanization process. Modern cities are doubt-

less the most charismatic manifestations of an ongoing process of planetary urbanization of capital, but the metabolism of this process pillages energy and materials from everywhere, dumps toxic waste elsewhere, and relies on the drastic transformation of all societies and ecologies on Earth. The urbanization process entails the “operationalization of the entire planet, including terrestrial, subterranean, fluvial, oceanic and atmospheric space, to serve an accelerating, intensifying process of industrial urban development” (*Critique of Urbanization* 200). As such, to understand the cultural and socioecological changes of Spain during the last few decades, it is not enough to put the magnifying glass on the urban agglomeration centers (Madrid, Mediterranean corridor, and so on), with their urban megaprojects and their excessive proliferation of buildings (even by European standards).<sup>6</sup> It is paramount to also notice the simultaneous and correlative operationalization of the entire Spanish territory (and the entire biosphere) to support these agglomerations. All the planetary ecological systems have been drastically transformed into the operational geographies needed to maintain the functions of the accelerating urban process (including, among many other examples, landfills and other waste sinks, agro-industrial enclosures, extractive sites, logistic networks, and communication and transportation infrastructures). In the last few decades, this process has depleted all ecologies within the Spanish territory in unprecedented ways.<sup>7</sup>

The question remains, can existing urban agglomerations be sustained without being deleterious for the whole planet and without further depleting their sources of nourishment? Can cities significantly reduce the negative externalities of their urban metabolisms—their needs for ever-growing operational landscapes—while thriving socially? Can urban infrastructure be ethically sound, namely, designed to enable, rather than disable, social well-being and environmental enhancement? I do not see why not, but it would certainly require a radical shift in the dominant cultural paradigm—a paradigm shift, to be sure, that can never flourish under the current growth-oriented imaginary. Put otherwise, a socially desirable urban post-carbon transition demands an interlinked and simultaneous deep transformation of both existing urban metabolisms and dominant cultural imaginaries. They go hand in hand. One cannot happen without the other because material and semiotic changes always emerge together as they reinforce and co-shape each other, as Kata Beilin and Daniel Ares-López emphasize in their introduction to this volume. Thus, effective counterhegemonic imaginaries need to be nurtured and facilitated by low-energy, circular, convivial, and regenerative infrastructures that, in order to be envisioned and implemented, would require—paradoxically—the massive mobilization of counterhegemonic cultural sensibilities. To generate this much-needed self-amplifying virtuous loop, first we need to break free from

the existing negative one in which we are trapped: “Like most infrastructures, our planet’s network of carbon power both make possible, and impossible, the kinds of alternatives we might collectively imagine” (Bellamy and Diamanti 2). It seems to me that we have to collectively imagine and perform the impossible to get ourselves out of the pathological, self-destructive infrastructural and semiotic inertias of hydrocarbon modernity. Given the fact that, historically, “[p]olitical possibilities were opened up or narrowed down by different ways of organizing the flow and concentration of energy” (Mitchell 158), I suggest that an energy-oriented urban cultural approach could contribute to advancing counterhegemonic politics and postgrowth urban imaginaries. I will share a few suggestions for pushing this direction within Spanish literary and cultural studies.

A starting point could be for cultural scholars to explore how different cultural manifestations deal with the growing energy intensities and operational landscapes of neoliberal urbanization before and after 2008: to what degree do cultural expressions either make visible or conceal the massive environmental destruction and social corrosion derived from the planetary urbanization of capital? Are cultural artifacts and narratives celebrating or problematizing the dominant urban paradigm and in what ways? Are they praising technological innovation and acceleration without understanding its high-energy demands? How is the socioecological metabolism of the city conceived and depicted in relation to both the dominant imaginary of economic growth and its unsustainable energy regime?<sup>8</sup> Are flows of energy and waste foregrounded by most textual, visual, and digital narratives or do they remain completely obliterated?<sup>9</sup>

I propose the following working hypothesis and invite cultural scholars to explore, test, or bring nuances to it: the less visible and problematized operational landscapes appear in a cultural text, the more attuned the text it is with the dominant urban imaginary. In other words, the less attention to the inflows and outflows of energy, materials, nutrients, and labor (including care and maintenance work) that support the urban fabric and life depicted in the cultural manifestation, the more subservient it is, consciously or not, to the perpetuation of the cultural hegemony and its unsustainable energy regime.

There are multiple ways to apply this frame to literary and cultural analysis. One obvious way would be reading recent textual and audiovisual narratives as more or less critical reflections of the urbanization of capital by tracking how their “cartographic imaginaries” expose or conceal the dysfunctional infrastructures, wasteful energy dynamics, operational landscapes, and ideological contradictions of the neoliberal urban process.<sup>10</sup> Yet another way would be to interpret any narrative—fictional or not—by trying either to “locate the signs of energy through close reading” or to “search out the tell-tale absences of energy” (Bellamy 9–10). Where are the energy and nutrients that

support urban infrastructures and characters (human or not) coming from? Are the economic geographies of extraction and exploitation that feed the neoliberal urban growth machine visible or hidden? Where does the massive waste generated by capitalist urban metabolism go? These are all stimulating questions to reframe and transcend the terms of the prefabricated political urban debate in our critiques of any cultural text and media. I believe that this convergence of energy humanities and urban cultural studies can contribute to reflect critically on how different cultural narratives and social movements understand, contest, and are shaped by the entanglements of power relations and infrastructural inertias, as well as the flows of energy, materials, bodies, and nutrients mobilized by the urban process.

I will provide a concrete example by applying this frame to *En la orilla* by Rafael Chirbes. This 2013 book has been celebrated by literary scholars as one of the most sophisticated novels of the crisis (Basanta 53). Esteban, the main character, is a seasoned carpenter who has lost his business in a risky investment and must take care of his disabled father. Several critics pointed out the paramount importance of the novel's literary space and geography for signalling allegorical and symbolic economic and psychosocial dimensions of the Spanish crisis (Cádiz Montes; Carcelén; Labrador Méndez, "*En la orilla*"; Leuzinger). *En la orilla* mobilizes and unsettles both collective memory and collective amnesia and, more important, biogeological memory (in this case, the marks recorded in the Mediterranean region by the changing ecologies of planetary urbanization). "El ecosistema recuerda" (The ecosystem remembers), as Germán Labrador Méndez put it ("*En la orilla*" 229). In other words, *En la orilla* could be read not only as an allegory of the Spanish economic and moral crisis, but also as a Mediterranean articulation of the planetary urbanization of capital; as an allegory of the Capitalocene: a necrotic epoch in which social and natural histories can no longer be conceptually separated because the urban process is a socioecological disruptor of geological proportions.<sup>11</sup> *En la orilla* can be read as a reflection on the dynamics of necrocapitalism;<sup>12</sup> on how capitalist urbanization feeds on death in its juxtaposition of multiple temporalities: the urban process is propelled by the massive prehistoric organic death embodied in fossil fuels while its ever intensifying metabolism is responsible for the ongoing mass extinction of species (see, for example, pp. 48, 81, 139, 147). Along these lines, *En la orilla* could be interpreted as an allegory of Human Appropriation of Net Primary Productivity (HANPP): namely, the way in which the operational landscapes of the urban process appropriate and destroy the biomass and energy stock necessary to feed both its energy-devouring infrastructures and consumerist inhabitants. If in *Crematorio*, Chirbes's previous novel, HANPP was in its expanding peak, *En la orilla* shows the curving down of a process that is biophysically im-

possible to maintain. Taken together, both novels point to the up-down cycle of our dysfunctional economic culture that, “when it works according to its self-imposed mandate of growing the pace of production and consumption, destroys the ecological systems upon which it depends. And when it does not grow, it becomes socially unsustainable. In a game with these rules, there is no way to win!” (Prádanos “Economy”).

The novel is full of references reflecting not only the massive appropriation of biomass by concrete, agro-industrial toxicity, and other anthropogenic materials related to the urban process (36, 42)—“parecía que no iba a quedarse ni un centímetro de terreno sin hormigonar” (15) (it seemed that it would not remain a single piece of land without concrete)—but the seascape is also operationalized as a sink for toxic urban by-products (43). One of the passages that most vividly expresses the intensification of operational landscapes, labor exploitation, and transnational flows of energy mobilized by the urban process is in Esteban’s long inner monologue triggered by the observation of a bag of nuts (148–51). The correlation between the petrochemical intensification of the food system and the urban process is made explicit here, as the localized, low-impact traditional food economy that fed locals for generations is transformed into commodities to feed the global markets and the urbanization of capital: “pueblos de la ex huerta, que, en vez de judías, tomates y habas, producen envases de plástico para comercializar frutos cultivados y recolectados a diez o doce mil kilómetros de distancia . . . concentra energías extraídas de los cuatro continentes que han tomado forma de haba, cacahuete, nuez de macadamia, garbanzo tostado o grano de maíz” (148–49) (towns previously devoted to vegetable gardening that now, rather than beans and tomatoes, produce plastic containers to commercialize nuts gathered thousands of miles away . . . the nuts embody energy extracted from four continents and are shaped as fava bean, peanut, garbanzo bean or corn). This local loss of food sovereignty will likely compromise the survival, autonomy, and well-being of many Spaniards once the effects of peak oil make long distance food trade unviable.

According to Joaquín, a secondary character who was a garbage collector before he became unemployed, the twenty-first century smells like gas and garbage (276–79). In fact, burning fossil fuels and accumulating waste and pollution are the signature outcomes of urban petromodernity. Interestingly, the novel suggests that waste is more visible both after a party (287) and during a crisis (299). The private party of capital accumulation is always a wasteful and crisis-prone dynamic that suffocates life, accelerates entropy, and pillages resources. This parasitic dynamic not only generates unacceptable human and nonhuman exploitation and inequality in the present, but it also cannibalizes the future.<sup>13</sup>

The inextricably toxic combination of ecological depletion, petrochemicals, garbage, tourism, forced migration, and concrete that the Mediterranean urban process entails is articulated through the novel in different iterations. The more interesting passage in this regard is perhaps when Esteban observes some of the multiple abandoned constructions that the crisis left unfinished all around the coastal region and, in the distance, some fragments of the beach. He always felt uneasy at the beach since the tourists started invading it decades ago. The Mediterranean corridor is a drastic changing ecology where the metabolism of the urban process and its multiple flows (of commodities, migrant laborers, materials, energy, tourists, and waste) merge and intensify:

cada primavera, descargan toneladas de arena los camiones: un sitio violado, sucio, en el que esa gente que viene no se sabe de dónde, turistas de paso, me a defeca o eyacula, donde limpian sus sentinas, retretes y fondos de depósito los petroleros que uno ve a cualquier hora en el horizonte rumbo al puerto de Valencia, los paquebotes que efectúan cruceros mediterráneos cargados de jubilados . . . agua turbia . . . el cemento de las construcciones que bordean la playa, la basura que se acumula en las escolleras que han construido para evitar que las tormentas se lleven la arena” (366–67)

(each spring, trucks unload tons of sand: this is a dirty and violated place where tourists from who knows where pee, defecate or ejaculate, where the oil tankers that can be seen at any time on the way to Valencia port and the cruise ships full of retirees clean their toilets and tanks . . . turbid water . . . concrete from the construction sites surrounding the beach, garbage accumulating in the breakwaters that were built to prevent the waves from carrying the sand away)

Ever-expanding and intensifying operational landscapes and flows of energy are needed to maintain the functions of the entropic capitalist urban process. This life-capital conflict and the massive violence that the urbanization of capital entails is often made invisible by ignoring the in-and-out-flows mobilized by the urban process. In other words, the connections between operational landscapes, geographies of predation and exploitation, and urban agglomerations are mostly hidden in our dominant cartographic imaginaries: these connections remain in the blind spot of our growth-oriented economic

culture. Nevertheless, *En la orilla* dwells on these invisibilities: “Agua que se traga el fregadero, laberinto de cañerías, cloacas, filtros y balsas depuradoras, tubos que van a dar a la mar” (435) (Water going down the sink, a labyrinth of plumbing, sewers, filters, treatment systems, tubes ending in the sea). This massive metabolism only gets due attention when the acceleration of the urbanization of capital is suddenly interrupted or slowed down for some reason:<sup>14</sup>

como cicatrices de sus actuaciones quedan aquí y allá los restos de sucesivos proyectos: canalizaciones que no prosperaron y mediante las que se intentaba drenar todo el pantano y convertirlo en tierra cultivable, muros que pretendían actuar como contenedores y hoy son ruina, oxidadas tuberías abandonadas entre la maleza, restos de antiguas balsas en desuso o que nunca se utilizaron, vertidos, escombreras, dunas rotas por la constancia de azadas o por la premura de máquinas que se han llevado toneladas de arena como material de construcción. (422–23)

(like scars of their interventions, the rests of successive projects remain here and there: unfinished scoring projects for draining the whole marsh to make room for arable land, walls that are now ruins, abandoned rushing pipes, rests of unused ponds, spills, dumps, dunes rip apart either by the constant impact of the hoes or by the machines that extract tons of sand to be used as construction material)

There are many more examples in this novel as well as in *Crematorio* of how the capitalist urban process makes cheap and invisible the massive nature, work, care, food, energy, and lives it mobilizes, exploits, depends upon, and depletes: “Cheap is a strategy, a practice, a violence that mobilizes all kinds of work—human and animal, botanical and geological—with as little compensation as possible” (Patel and Moore 22). This is the strategy of capitalist urbanization. I claim that a convergence of energy humanities and urban cultural studies helps to make this dreadful strategy visible.

The convergence of energy humanities and urban criticism that I encourage is not only useful to approach cultural narratives, but also practices. There are a number of emerging urban cultural practices and sensibilities that are actively reframing the terms of the urban debate in the aforementioned direction. This is the case for the projects of counterhegemonic urban collectives proliferating around the Iberian Peninsula, including Basurama,<sup>15</sup> *Collectiu*

Punt 6, Colectivo Dunak Taldea, ZULOARK, and TXP Todo por la praxis, just to mention a few. They all combine horizontal structures of decision-making; collaborative learning and participatory urban design; experimental, decolonial, and feminist urbanism; and cultural resistance in order to empower citizens to create more liberating and healthy urban spaces for all. The most interesting aspect about the majority of the urban proposals developed by these collectives is that they all tend to significantly reduce cities' dependency on fossil fuel energy and other external material inputs (shrinking the need for operational landscapes) while improving the quality of life of all residents without requiring massive financial investments.

There is also a proliferation of collaborative platforms and research clusters, the main goal of which is to map, support, and promote citizen-generated initiatives to repurpose the city space. A couple of examples include Plazas P2P: A Southern European Network, which promotes citizens' occupation and appropriation of urban spaces for communitarian and convivial purposes, and BCNUEJ (Barcelona Laboratory for Urban Environmental Justice and Sustainability). The most encompassing is perhaps Vivero de Iniciativas Ciudadanas (VIC), an open-source platform and collaborative project for rethinking architecture and urbanism. Most of their featured projects are designed to rethink the urban space in a way that prioritizes social cohesion, local empowerment, and people's well-being over capital accumulation, while reducing the existing negative urban externalities (public debt, waste, pollution, social exploitation, and polarization), promoting accessibility for and participation of all residents, and reducing the demand for fossil fuels. All these collectives and platforms—highly influenced by feminist urbanism—promote ethical infrastructures and

favor an urban design that facilitates the daily social reproduction of all citizens (disabled, children, elders, women, different cultures, minority groups), not just the productivity of car owners, young, single, able professionals. Cities are designed to improve livability and not only to facilitate economic transactions. As such, feminist urban designers promote users' creativity, flexibility, and modifiability, to allow every person to access the city commons and to remake the urban space according to their needs. (Incelean and Prádanos 684)

VIC offers a number of valuable tools for anyone ready to enact their right to the city and to participate in counterhegemonic urban transformations. These

tools include the wiki of citizens' initiatives, featuring a number of existing resources and community projects for engaging in alternative navigations and transformations of the urban spaces, as well as the wiki of places where transference of social innovation to public and digital spaces is already happening ("Iniciativas"; "Lugares"). As such, VIC serves as a catalyst and amplifier of existing counterhegemonic urban projects and practices by generating networks and synergies among them.

One of the many promising outcomes that has recently emerged from these efforts is Mapa Los Madriles: Atlas de iniciativas vecinales, a collaborative platform to map the existence of many participatory and collective urban initiatives in Madrid.<sup>16</sup> Another example is Estonoesunsolar in Zaragoza, a collective that repurposes and maps vacant lots and disinvested urban spaces into multi-use vibrant public places.<sup>17</sup> The projects promoted by this collective often reduce the energy intensity of the urban metabolism and, therefore, the need for exploiting operational landscapes. These projects tend to increase social inclusivity for all by prioritizing multifunctionality and flexibility, encouraging local engagement and autonomy in urban planning and design, minimizing material and energy requirements for both construction and maintenance, and not relying on heteronomous high-tech services and massive investments. Some aspects of the urban philosophy embraced by these collectives are being adopted by some municipalities governed by the political platforms developed after 15-M (such as Mares Madrid). Hopefully, this will generate a momentum for these emerging communitarian experiments to acquire broader visibility and massive popular support.<sup>18</sup> In this regard, the Atlas del Cambio, launched in 2018, offers a tool for visualizing, mapping, and reinforcing the ongoing changes and projects generated by these new municipal movements all around the Spanish geography.<sup>19</sup>

Can the proliferation of these projects contribute to problematizing and eventually overcoming capitalist urbanization, along with its dominant petroculture, its production of sociospatial inequalities, and its dependency on massive operational landscapes? Can these alter-urban models mapped by, among others, VIC and Atlas del Cambio consolidate and emphasize "a new [more benign] relationship between urban agglomerations and their operational landscapes" (Brenner and Katsikis 435)? Can these projects multiply to the point of displacing capitalist urban processes and reducing global environmental disruption by minimizing the need for operational landscapes? The outcome is to be seen, but, at the very least, these urban projects offer compelling examples of "critically reflexive counter-visualizations" and point to the multiple socioecological benefits of embracing a different urban paradigm (*Critique of Urbanization* 207–08). They also "open up a horizon for imagining a different form of urbanization, an alterurbanization. Many

urbanizations are in fact possible. Rather than being technological laws or economic necessity, urbanization projects are collective political choices, a medium and product of power, imagination, struggle and experimentation” (Brenner, *The Hinterland* 127).

One crucial lesson to learn from contrasting the dominant neoliberal urbanism with the ongoing projects supported by these counterhegemonic urban collectives is that, usually, the more technocratic, centralized, energy-intensive, debt-driven, and expansive the metabolism of a certain urban intervention is, the more socio-ecologically costly it becomes. But, more important, they exemplified the fact that the other way around is also true: participatory urban projects are often non-debt-driven, less material- and energy-intensive, and tend to favor social cohesion, local happiness, and environmental regeneration. Counterhegemonic urban interventions also teach us that participatory repurposing of urban space is often socio-ecologically smarter than allowing obscure market interests represented by nonlocal developers to build much more expensive—socially and environmentally disrupting—infrastructures.<sup>20</sup> It should be clear at this point that neoliberal urbanization processes fueled by interurban competition rapidly collapse the living systems of the Earth. The result is a stressful and joyless hedonism for a few privileged humans and more precarious lives for most. The time has come for the active embracement of alter-urbanization models that promote happy, healthy, decelerated, and convivial urban spaces for all. Urban spaces with circular metabolisms that enhance, rather than suffocate, life on earth.

Unlike the expansive and destructive capitalist planetary urbanization undemocratically imposed upon us (the biotic community), postgrowth and decolonial urban practices could significantly reduce the material and energy intensity of the urban metabolism while improving socioecological functions for all (humans and nonhumans). Chilean economist Manfred Max-Neef makes a distinction between needs and satisfiers. Human needs (food, shelter, safety, meaningful social interactions, and so on) are universal, while satisfiers (how different societies meet their needs) are culturally, technologically, and historically specific. Satisfiers can be more or less socio-ecologically destructive or benign. For example, capitalist urbanization satisfies some needs for some privileged people in the present while disrupting all socioecological systems needed to satisfy all human needs for most, both in the present and in the future. Global capitalist urbanization is arguably the most destructive satisfier ever adopted at such a scale in human history. Conversely, counterhegemonic urban interventions show how more benign urban paradigms can qualitatively better meet the same needs (and for all!) while enhancing the socioecological conditions needed to satisfy these needs in the future. The ongoing planetary urbanization of capital makes a destructive satisfier the glob-

al default: a perfect recipe for civilizational collapse. High-tech urbanism (like smart cities) tends to accelerate this deleterious process by improving the capabilities of the aforementioned destructive satisfier (Inclezan and Prádanos). Techno-optimism seeks to solve the problem of pathological acceleration with further acceleration. On the contrary, the counterhegemonic urban collectives mentioned here demonstrate the practical viability of alter-urbanization models able to satisfy needs for most citizens through appropriate satisfiers (meaning convivial, decentralized, decarbonized, autonomous, non-growth-oriented, and democratically manageable) that either significantly minimize existing social and ecological externalities or, even more promising, are socio-ecologically regenerative.

Counterhegemonic urban practices and narratives are planting the seeds for alternative infrastructures to be able to “create new memories, neural pathways, politics, desires” (LeMenager 28). Infrastructures are never politically neutral, as Dominic Boyer reminds us, they enable and facilitate certain things to happen while preventing others from materializing. They facilitate certain psychosocial and biophysical inertias and habits while deactivating other possible ways to perceive and relate to ourselves and others. The infrastructures of petrochemical modernity constrain our political imagination and perpetuate a dominant urban imaginary that imposes systemic exploitation, spatial exclusion, and environmental disaster. For this reason, it is urgent to cultivate what Boyer calls “revolutionary infrastructures” to facilitate the socio-spatial relations and inertias needed for achieving a radical—rooting on earth—urban political ecology and enable socially desirable postgrowth futures for all (“Revolutionary Infrastructure”). This is not only a conceptual possibility, it is also already happening across many “geographies of hope” (to borrow David Harvey’s words) where “designs for the Pluriverse” are confronting the necrotic globalizing designs of patriarchal Western capitalist modernity (Escobar). I claim that environmental cultural criticism has a lot to contribute to understanding and supporting this radical cultural shift by embracing a convergence of energy humanities and critical urban studies.

## Notes

1. To visualize how Spain has transgressed almost all biophysical boundaries, see “Country Comparisons.” University of Leeds, <https://goodlife.leeds.ac.uk/countries/#Spain>.
2. In 2017, Spain beat its record on imported petroleum for the third consecutive

- year. See Antonio M. Vélez, “España batió en 2017 su record de importaciones de petróleo por tercer año consecutivo.” *El diario*, 13 Feb. 2018, [www.eldiario.es/economia/Espana-record-importaciones-petroleo-consecutivo\\_0\\_739826946.html](http://www.eldiario.es/economia/Espana-record-importaciones-petroleo-consecutivo_0_739826946.html).
3. The “urbanization of capital” is David Harvey’s term to describe how most cities are designed and developed to facilitate capital accumulation, not to meet the needs of their inhabitants.
  4. For a good introduction to urban cultural studies, see Fraser’s *Toward an Urban Cultural Studies: Henri Lefebvre and the Humanities*. See also Fraser’s *Henri Lefebvre and the Spanish Urban Experience*.
  5. Ross Barrett and Daniel Worden argue that oil culture “encompasses the fundamental semiotic process by which oil is imbued with value within petroculturalism, the promotional discourses that circulate through the material networks of the oil economy, the symbolic forms that rearrange daily experience around oil/bound ways of life” (xxvi).
  6. These agglomeration centers, along with the precarization of their residents, have been the main focus of the cultural critique of the crisis and the main topic of the so-called literature of the crisis.
  7. A couple of examples are the radical transformation and biological impoverishment of all Spanish river ecologies to harness hydropower (see Eric Swyngedouw) and the homogenization of most agricultural landscapes and the resulting biological annihilation and topsoil destruction brought about by the proliferation of industrial monocrops that transformed diverse food cultures and landscapes into energy-intensive green deserts. Many of these monocrops are also transgenic, as “90 percent of European agricultural GMOs are produced in Spain” (Beilin and Viestenz xvi). For a visualization of drastic urban alterations of the Catalan territory during the last decades, see Comparador Històric del Territori, [betaportal.icgc.cat/comparador-gificador/#16/41.4359/2/2403](http://betaportal.icgc.cat/comparador-gificador/#16/41.4359/2/2403).
  8. I explore this point at some length in chapter 2 of *Postgrowth Imaginaries*.
  9. Samuel Amago is currently working on a project on the representation of trash in contemporary Spanish visual narratives. In chapter 3 of *Postgrowth Imaginaries*, I elaborate on what I call “the political ecology of waste.”
  10. Regarding the concept of “cartographic imaginary,” see Harvey. See also Compitello’s compelling application of this concept to read another Chirbes’s novel.
  11. See Chakrabarty for a discussion on the impossibility of maintaining the distinction between natural and human histories in the Anthropocene.
  12. See Banerjee for an articulation of this concept.
  13. See Labrador Méndez’s “The Cannibal Wave.”
  14. The photographic project “España: Error de Sistema” is a compelling visualization of the scale of this pathological urban metabolism. “España: Error de Sistema,” [lab.eldiario.es/error\\_de\\_sistema/](http://lab.eldiario.es/error_de_sistema/).
  15. In chapter 3 of *Postgrowth Imaginaries*, I study a couple of projects by Basurama.
  16. See Los Madriles: Atlas de iniciativas vecinales, [losmadriles.org/](http://losmadriles.org/).
  17. See Estonoesunsolar, [estonoesunsolar.wordpress.com/](http://estonoesunsolar.wordpress.com/).
  18. See, for example, Faber and Seguin.

19. See Ciudades del cambio, [ciudadesdelcambio.org/](http://ciudadesdelcambio.org/).
20. See the essays by cultural scholars Feinberg and Larson as well as Saltzman for two excellent studies of participatory repurposing of Iberian urban spaces.

## Works Cited

- Alexander, Samuel. "A Critique to Techno-Optimism: Efficiency without Sufficiency Is Lost." Postcarbon Pathways Working Paper Series, Melbourne Sustainable Society Institute, 2014.
- Amago, Samuel. "Basura, cultura, democracia en el Madrid del siglo veintiuno." *Journal of Contemporary Spanish Literature and Film*, vol. 2, 2014–2015, pp. 33–69.
- Banerjee, Subhabrata Bobby. "Necrocapitalism." *Organization Studies*, vol. 29, no. 12, 2018, pp. 1541–63.
- Barrett, Ross, and Daniel Worden, editors. *Oil Culture*. University of Minnesota Press, 2014.
- Basanta, Ángel. "La trayectoria novelística de Rafael Chirbes." *Convocando al fantasma: Novela crítica en la España actual*, edited by David Becerra Mayor, Tierradenadie, 2015, pp. 25–56.
- Beilin, Katarzyna, and William Viestenz. "Introduction." *Ethics of Life: Contemporary Iberian Debates*, edited by Katarzyna Beilin and William Viestenz, *Hispanic Issues*, vol. 42, Vanderbilt University Press, 2016, pp. ix–xxxiv.
- Bellamy, Brent Ryan. "Energy and Literary Studies." *Reviews in Cultural Theory*, vol. 6, no. 3, 2016, pp. 9–12.
- Bellamy, Brent Ryan, and Jeff Diamanti. "Editors' Introduction: Envisioning the Energy Humanities." *Reviews in Cultural Theory*, vol. 6, no. 3, 2016, pp. 1–4.
- Boyer, Dominic, and Imre Szeman. "The Rise of Energy Humanities." *University Affairs*, 12 Feb. 2014, <https://www.universityaffairs.ca/opinion/in-my-opinion/the-rise-of-energy-humanities/>.
- Boyer, Dominic. "Energopower: An Introduction." *Energy Humanities: An Anthology*, edited by Imre Szeman and Dominic Boyer, Johns Hopkins University Press, 2017, pp. 184–205.
- \_\_\_\_\_. "Revolutionary Infrastructure." *Infrastructures and Social Complexity: A Companion*, edited by Penelope Harvey, Casper Bruun Jensen, and Atsuro Morita, Routledge, 2017, pp. 174–86.
- Brenner, Neil, and Nikos Katsikis. "Is the Mediterranean Urban?" *Implosions/Explosions: Towards a Study of Planetary Urbanization*, edited by Neil Brenner, Jovis, 2013, pp. 428–59.
- Brenner, Neil. *Critique of Urbanization: Selected Essays*. Birkhäuser, 2017.
- \_\_\_\_\_. *The Hinterland, Urbanised?* Urban Theory Lab, 2016, [http://urbantheorylab.net/site/assets/files/1193/brenner\\_ad\\_2016\\_final.pdf](http://urbantheorylab.net/site/assets/files/1193/brenner_ad_2016_final.pdf).

- Cádiz Montes, Jessica. "En la orilla de Rafael Chirbes: una alegoría de la crisis económica." *Dimensiones: El espacio y sus significados en la literatura hispánica*, edited by Raquel Crespo-Vila and Sheila Pastor, Biblioteca nueva, 2017, pp. 385–92.
- Carcelén, Jean-François. "En la orilla de Rafael Chirbes: paisaje después de la canalla." *Ínsula*, no. 803, 2013, pp. 11–13.
- Carpintero, Óscar. *El metabolismo de la economía española: Recursos naturales y huella ecológica (1955–2000)*. Fundación César Manrique, 2005.
- Ceballos, Gerardo, et al. "Biological Annihilation via the Ongoing Sixth Mass Extinction Signaled by Vertebrate Population Losses and Declines." *PNAS*, vol. 114, no. 30, 2017, pp. 6089–96.
- Chakrabarty, Dipesh. "The Climate of History: Four Theses." *Critical Inquiry*, vol. 35, no. 2, 2009, pp. 197–222.
- Chirbes, Rafael. *Crematorio*. Anagrama, 2007.
- \_\_\_\_\_. *En la orilla*. Anagrama, 2013.
- Compitello, Malcolm Alan. "City Present in City Past: Rafael Chirbes' Cartographic Imaginary." *International Journal of Iberian Studies*, vol. 26, no. 1–2, 2013, pp. 41–63.
- Escobar, Arturo. *Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds*. Duke University Press, 2018.
- Faber, Sebastiaan, and Bécquer Seguin. "Welcome to Sunny Barcelona, Where the Government Is Embracing Coops, Citizen Activism, and Solar Energy." *The Nation*, 2 Aug. 2016.
- Feinberg, Matthew, and Susan Larson. "Cultivating the Square: Trash, Recycling, and the Cultural Ecology of Post-Crisis Madrid." *Ethics of Life: Contemporary Iberian Debates*, edited by Katarzyna Beilin and William Viestenz, *Hispanic Issues*, vol. 42, Vanderbilt University Press, 2016, pp. 113–42.
- Fraser, Benjamin. *Henri Lefebvre and the Spanish Urban Experience: Reading the Mobile City*. Bucknell University Press, 2011.
- \_\_\_\_\_. *Toward an Urban Cultural Studies: Henri Lefebvre and the Humanities*. Palgrave Macmillan, 2015.
- Haberl, Helmut, et al. "A Socio-Metabolic Transition towards Sustainability? Challenges for Another Great Transformation." *Sustainable Development*, vol. 19, 2011, pp. 1–14.
- Harvey, David. *Spaces of Capital: Towards a Critical Geography*. Routledge, 2001.
- Hitchcock, Peter. "Energy Bars." *Reviews in Cultural Theory*, vol. 6, no. 3, 2016, pp. 22–24.
- Inclezan, Daniela, and Luis I. Prádanos. "Viewpoint: A Critical View on Smart Cities and AI." *Journal of Artificial Intelligence Research*, vol. 60, 2017, pp. 681–86.
- "Iniciativas ciudadanas." *Vivero de Iniciativas Ciudadanas*, <http://viveroiniciativasciudadanas.net/wiki/iniciativas-ciudadanas/>.
- International Energy Agency. World Energy Outlook, 2016 [www.iea.org](http://www.iea.org).

- Labrador Méndez, Germán. "The Cannibal Wave: The Cultural Logics of Spain's Temporality of Crisis (Revolution, Biopolitics, Hunger and Memory)." *Journal of Spanish Cultural Studies*, vol. 15, no. 1–2, 2014, pp. 241–71.
- \_\_\_\_\_. "En la orilla de Rafael Chirbes: proteínas y memoria." *Turia*, no. 112, 2014–2015, pp. 225–34.
- LeMenager, Stephanie. "Infrastructure Again, and Always." *Reviews in Cultural Theory*, vol. 6, no. 3, 2016, pp. 25–29.
- Leuzinger, Mirjam. "La intemperie y el pantano: Metáforas de la crisis en la obra de Jesús Carrasco y Rafael Chirbes." *Discursos de la crisis: respuestas de la cultura española ante nuevos desafíos*, edited by Jochen Mecke, Ralf Junkerjürgen, and Hubert Pöppel, Iberoamericana/Vervuert, 2017, pp. 247–64.
- "Lugares." *Vivero de Iniciativas Ciudadanas*, <http://viveroiniciativasciudadanas.net/wiki/lugares/>.
- Max-Neef, Manfred A. *Human Scale Development*. The Apex Press, 1991.
- Mitchell, Timothy. "Carbon Democracy." *Energy Humanities: An Anthology*, edited by Imre Szeman and Dominic Boyer, Johns Hopkins University Press, 2017, pp. 157–83.
- Moore, Jason W. "Ecology and the Accumulation of Capital. A Brief Environmental History of Neoliberalism." Food, Energy, Environment: Crisis of the Modern World-System Workshop, 9–10 Oct. 2009, Fernand Braudel Center, Binghamton University.
- Patel, Raj, and Jason W. Moore. *A History of the World in Seven Cheap Things: A Guide to Capitalism, Nature, and the Future of the Planet*. University of California Press, 2017.
- Prádanos, Luis I. "An Economy Focused Solely on Growth Is Environmentally and Socially Unsustainable." *The Conversation*, 7 Apr. 2015, [theconversation.com/an-economy-focused-solely-on-growth-is-environmentally-and-socially-unsustainable-39761](http://theconversation.com/an-economy-focused-solely-on-growth-is-environmentally-and-socially-unsustainable-39761).
- \_\_\_\_\_. "Degrowth: Igniting the Political Imagination of Joy." *U.S. Intellectual History Blog*, 14 Mar. 2017, [s-usih.org/2018/03/degrowth-igniting-a-political-imagination-of-joy-guest-post-by-luis-i-pradanos/](http://s-usih.org/2018/03/degrowth-igniting-a-political-imagination-of-joy-guest-post-by-luis-i-pradanos/).
- \_\_\_\_\_. *Postgrowth Imaginaries: New Ecologies and Counterhegemonic Culture in Post-2008 Spain*. Liverpool University Press, 2018.
- Saltzman, Megan. "Las formas de control y la cotidianidad en la ciudad global: #femPlaça, una intervención para reclamar el uso abierto del espacio público." *Journal of Contemporary Spanish Literature and Film*, vol. 2, 2014–2015, pp. 189–224.
- Swyngedouw, Erik. *Liquid Power: Contested Hydro-Modernities in Twentieth Century Spain*. The MIT Press, 2015.
- Wenzel, Jennifer. "Taking Stock of Energy Humanities." *Reviews in Cultural Theory*, vol. 6, no. 3, 2016, pp. 30–34.
- World Wildlife Fund. *Living Planet Report—2018: Aiming Higher*, edited by M. Grooten and R. E. A. Almond, World Wildlife Fund, 2018, [www.wwf.org.uk/updates/living-planet-report-2018](http://www.wwf.org.uk/updates/living-planet-report-2018).

---

Prádanos, Luis I. "Energy Humanities and Spanish Urban Cultural Studies: A Call for a Radical Convergence." *Environmental Cultural Studies Through Time: The Luso-Hispanic World*. Ed. Kata Beilin, Kathleen Conolly, and Micah McKay. *Hispanic Issues On Line* 24 (2019): 27–45.

---