

A satellite photograph of the Mississippi River delta region. The river is a prominent dark blue-green line winding through a vast, arid, tan-colored landscape. The river's path is highly irregular, showing meanders and a complex network of distributaries. The surrounding land is mostly flat and appears to be a mix of natural and agricultural terrain. The overall scene is a stark contrast between the dark water and the light, dry land.

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# PARADOXES OF WATER

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from multiple perspectives within and beyond the academy.

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The cover image is of The Nile River, July 19 2004. To the right of the Nile is the Red Sea, with the finger of the Gulf of Suez on the left, and the Gulf of Aqaba on the right. In the upper right corner of the image are Israel and Palestine, left, and Jordan, right. Below Jordan is the northwestern corner of Saudi Arabia. Jacques Descloitres, MODIS Rapid Response Team, NASA/GSFC.

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FORUM

# MEANDERING AND RIVERSPHERE: THE POTENTIAL OF PARADOX

By Irene J. Klaver

**H**eraclitus of Ephesus (535 BCE-475 BCE) was the master of paradox: “It rests by changing,” “a thing agrees at variance with itself,” and “the same: living and dead, and the waking and the sleeping, and the young and the old” (Kahn 1979, Fragments LII, LXXVIII, XCIII). Both Plato and Aristotle saw his views as logically incoherent and inconsistent with the law of

non-contradiction. How can one think living and dead, young and old, warm and cold, wet and dry as being the same? Heraclitus’s point, however, is that opposites are not separate and identical entities, but that they are relational, each other’s transformational equivalents, and on co-constitutive, ontologically and epistemologically speaking. “Cold warms up, warm cools off, moist



*Image courtesy of Brian C. O'Connor, 2009.*

parches, dry dampens” (Kahn 1979, Fragment XLIX). Without the experience of cold, one would not know warmth, and vice versa.

We find another kind of paradoxical statement from Heraclitus in one of his most famous sayings: “one cannot step twice into the same river” (Kahn 1979, Fragment LI). A similar, but longer, fragment gives a further insight in Heraclitus’s notion of the same: “as they step into the same rivers, other and still other waters flow upon them” (Kahn 1979, Fragment L). The tension is between “same” and “other.” The river stays the same, it stays a river, precisely because the waters become other, that is, the water flows. If there were no flow, the river would be a lake or a wetland. And because the waters flow, they are always different, that is, other; in that sense one cannot step twice into the same river. When one

puts one’s feet into the river again, one encounters different waters, different sediments, twigs, fish, insects... However, one could put one’s feet at the same Cartesian cartographic coordinates again and again.

In the following, I expand on various aspects of this dynamic. I sketch paradoxes emerging in the sociocultural and economic trajectories of water in the modern era, and show the sense of logic—and its concomitant model of efficiency—dominant in modern western thought. I develop a riverine or, say, Heraclitean, model, to situate contemporary developments of re-connecting to water, specifically to urban rivers, in a more sustainable and equitable way.[1] I conclude by taking the story-arc of the Los Angeles River as paradigmatic example of new paradoxes emerging in such re-connecting.

## There It Is—Take It

“There it is—take it!” With this legendary concise dedication speech, William Mulholland inaugurated the brand-new Los Angeles Aqueduct in 1913 (Mulholland 2000, 246). With these words, he had initiated not only an aqueduct, but also an era, a new mentality, a modern lifestyle, a stratification of rivers into aqueducts and reservoirs (Klaver and Frith, 2014).

Large-scale water-infrastructure projects became paradigmatic for the twentieth century. Wildly diverse water bodies – rivers, streams, lakes, wetlands, estuaries, and aquifers – were pumped, piped, stratified, dammed, diverted, and converted, yielding a staggering loss of ecological and cultural diversity. Just in the realm of dam building, the World Commission on Dams (WCD) estimates that between 1945 and 2000, 40 to 80 million people worldwide were evicted to accommodate large dam developments—the majority being Indigenous peoples and ethnic minorities (Johnston 2012, 304; WCD 2000). Add to this at

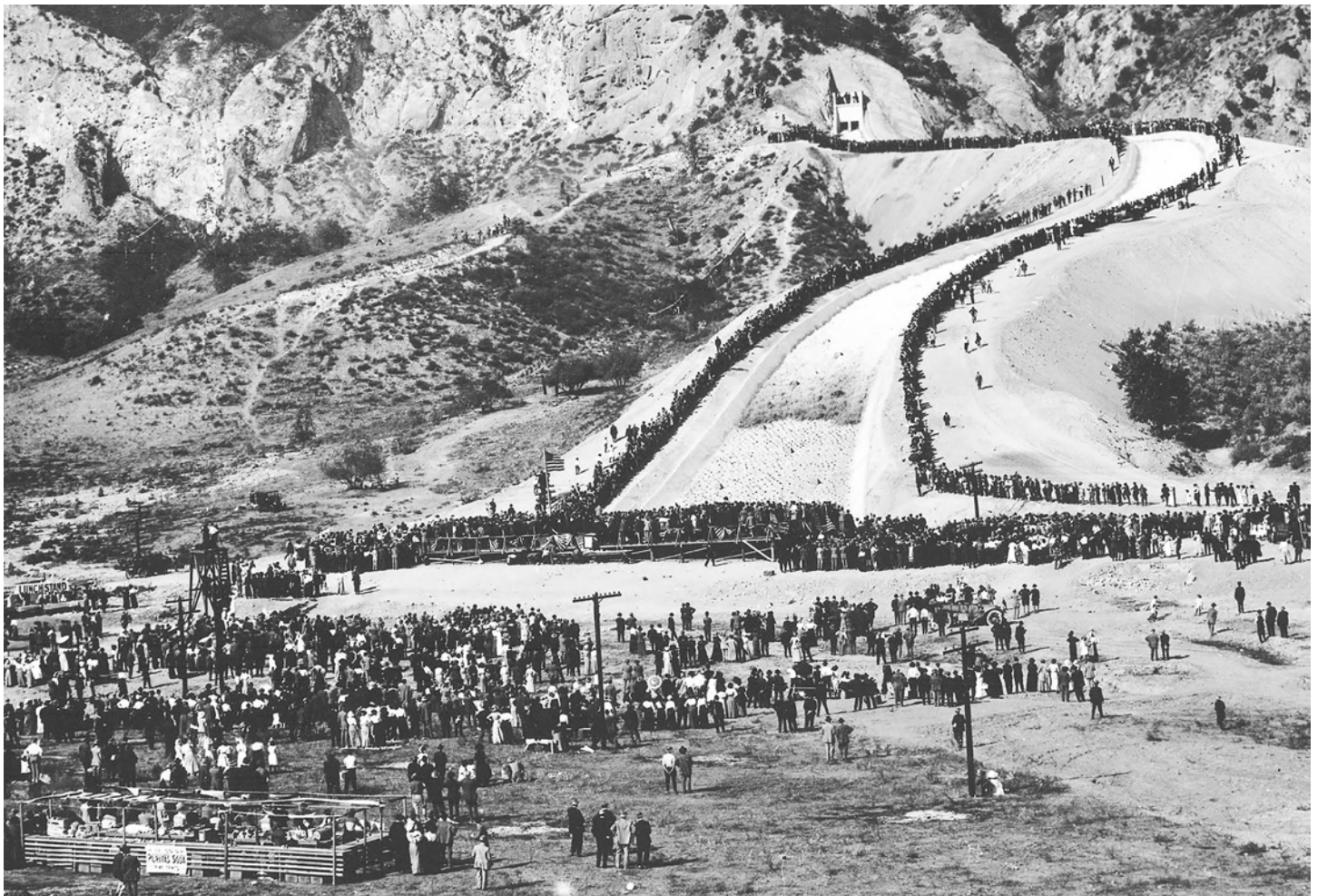
least 427 million river-dependent people whose downstream ways of life have basically been obliterated by the effect of hydro-development (Richter et al. 2010). One can also see water development as one of the major factors in the global decline of both ecological diversity and cultural diversity (Johnston 2012, 305). Irrigated agriculture and thirsty cities have dammed rivers or re-routed them into complex river-linking schemes and changed natural lakes and aquifers into shrinking remnants of themselves, heavily impacting biocultural and hydro-ecological diversities. Water flowed into the twenty-first century homogenized as a marketable and transferable economic commodity.

The very fluidity of water allows it to be stratified, dammed, canalized, sold, diverted and paved over into sheer infrastructure or concrete “riverbeds” and aqueducts. Like a Heraclitean paradox, the very same fluidity enables a rethinking and reorientation toward reconnecting and

revitalizing rivers within processes of biocultural conservation and cultural diversification. In the following, I develop tools to conceptualize this new biocultural mentality, specifically focusing on urban rivers in the wealthier or so-called developed world.

The twenty-first century is the century of the city. In 2007, the global urban population, for the first time in history, surpassed the rural population. According to the 2014 United Nations Report, World Urbanization Prospects, 66 percent of the world's population is projected to be urban by 2050. The report emphasizes that sustainable development challenges will concentrate in cities

and will require integrated policies (UN DESA 2014, 1–7). These trends urge us to rethink urbanism in terms of cities as agents of change rather than mere engines of growth – change for greater social justice and environmental sustainability. How we imagine cities and envision “urban citizenship” (Amin, Massey, and Thrift 2000) in this new century is of critical importance. I take the urban riverfront as a prism through which paradoxes of riverine management, improvement, and urban development come into focus. With increased pollution and occasional severe flooding, living close to urban waterways in the nineteenth and twentieth centuries was often unhealthy, if not dangerous: a place for



*The opening of the Los Angeles Aqueduct. On November 5, 1913, thirty thousand Angelenos gathered to celebrate the opening of the Los Angeles Aqueduct. As the first cascade of water sluiced down the Newhall Spillway (pictured above) and into the San Fernando Valley, William Mulholland roared to the crowd: “There it is – take it!”*

poor neighborhoods. Changing environmental policy and legislation since the 1970s cleaned up many rivers – a positive trend, often resulting in negative consequences for the traditional occupants of river regions. Waterfront property is now highly desirable real estate. Highly-priced property values result in gentrification, with socio-economic and cultural homogenization and environmental justice issues in its wake.

## Riversphere

Rivers are more than blue lines on a map, more than their basins, their watersheds, or drainage areas. They influence the geology, the air, and soil around them, life around them, cultures around them (Klaver 2012). They create their own hydrospheres, biospheres, and atmospheres. They form intricate networks of relations and conditions of possibilities. I specify the concept of riverine atmosphere as “riversphere” to examine rivers as places of multi-scalar and multi-vector connectivity and complexity.

My sense of riversphere resonates with Gernot Böhme’s concept of atmospheres:

Atmospheres are indeterminate above all as regards their ontological status. We are not sure whether we should attribute them to the objects or environments from which they proceed or to the subjects who experience them. We are also unsure where they are. They seem to fill the space with a certain tone of feeling like a haze. (Böhme 1993, 114)

The notion of riversphere as atmosphere adds social, political, cultural, aesthetic, and emotional dimensions to our thinking about rivers and cities. It resonates with the notion of ambiance, such as the cosmopolitan and open ambiance of a city (Amin, Massey, and Thrift 2000). Riversphere is a thick concept. It enriches the

To envision re-valuing, re-imagining, and re-vitalizing rivers as processes of biocultural conservation and cultural diversification, I present a model based upon two key riverine facets: meandering and riversphere. Both are based in the material, ecological, and hydrological workings of rivers and the diverse cultural relations these processes engender. Thus, urban re-connecting to a city’s river is co-constituted by a joint agency of the river and the urban citizens.

conceptualization of rivers in the cultural imagination, intertwining hydrological, biological, and ecological knowledge and experience with lived experience, social cultural and political activities, story-telling, and the like. In *Hydraulic City: Water and the Infrastructures of Citizenship in Mumbai*, Anand emphasizes the power of stories:

Stories have multiple vocalities and multiple sites of production. Unlike discourses, stories are particularly attendant to the diverse locations at which human agency is thwarted or dreams are partially realized. Stories are unstable.... The telling of stories is always a political act. (Anand 2017, vii–viii)

Anand develops a notion of hydraulic citizenship predicated upon the deep intertwinement and entanglement of the dynamic infrastructural water flows in pipes and pumps, with citizens, technicians, politicians, plumbers; it is a complex vibrant mix of theories, stories, stuff, facts, politics, acts, expectations and experiences, engagements and dreams. In this realm of multiplicity and instability the potential of paradoxes emerges, providing specificity to processes: who and what is acting, or acted upon, shifts depending on the situational perspective.

Theories of complexity are well suited to a twenty-first-century era of high technology,



globalization, urbanization, and climate change. As John Law and John Urry state:

With its many convergent, overlapping and irreversible interdependencies ‘globalization’ is remaking ‘societies’ but not in a linear, closed and finalized form. We might see the growth and spreading of theories of complexity as part of, and simultaneously helping to enact, the very processes of global change. (Law and Urry 2005, 404)

Within a riversphere and meander approach, geometrical and homogenizing models of nature and city planning give way to models of complexity and indeterminacy (Klaver 2017), thereby giving room to biocultural conservation, to multiple models of flow—not just flows of water, but of sediments, animals, plants, soils, people, capital, light, luggage, tourists, money, exchanges, and experiences.

Urbanization in a globalizing world comes with many forms of injustices. Urban reconnecting to rivers in the developed world often results in social inequity and environmental justice issues, especially in terms of gentrification (Kibel 2007). I, therefore, include as a critical component of riversphere, an emphasis on the river as *shared* space, invoking the notion of common, as in David Harvey’s conceptualization of “right to the city:”

The question of what kind of city we want cannot be divorced from that of what kind of social ties, relationship to nature, lifestyles, technologies and aesthetic values we desire. The right to the city is far more than the individual liberty to access urban resources: it is a right to change ourselves by changing the city. It is, moreover, a common rather than an individual right since this transformation inevitably depends upon the exercise of a collective power to reshape the processes of urbanization. (Harvey 2008, 23)

The crucial word here is “common.” The center of Harvey’s right to the city is the shift from an individual right to a common right. Water affords the materiality, medium, and framework or model to think this common, to think the “with.”

Thinking “with” includes the acknowledgement of opposition(s), of resistance, of paradox. The words river and rival are **etymologically related**, rooted in the Proto-Indo-European \**rey-* “to run, flow,” but also “to scratch, tear, cut”. This is the same *rey* as in another famous text attributed to Heraclitus: *panta rhei*, “all things flow” (Kahn 1979, 4). Interestingly, the entry in Etymology on Line continues by mentioning an implicit notion of companion and common in rival, precisely by sharing the same brook:

‘rival’ comes from the Latin *rivalis* “a rival, adversary in love; neighbor,” originally, “of the same brook,” from *rivus* “brook” (from PIE root \**rei-* “to run, flow”). “One who is in pursuit of the same object as another.” The sense evolution seems to be based on the competitiveness of neighbors: “one who uses the same stream,” or “one on the opposite side of the stream.” A secondary sense in Latin and sometimes in English was “associate, companion in duty,” from the notion of “one having a common right or privilege with another.”

The potential of paradox has infused rivers and rivals from early onwards.

Where rivers had been anchors of civilization since ancient times, they became backgrounded in the era of modernity, specifically in the industrial era (Klaver 2012, 15–19). Polluted, diverted, and dammed, rivers “disappeared,” literally paved over or dried up because of impoundments, or relegated to the unsavory side of town. Once the backbones of towns, they became backsides: the unhealthy and unsafe zones, poor people’s areas, harbors, dumping grounds, sites of water on fire, as the Cuyahoga River, and became

backgrounded in the cultural imagination (Klaver 2012, 2014a). In the second half of the twentieth century, a shift in mentality emerged with the rise of an environmental movement, culminating in growing environmental legislation, including the 1972 Clean Water Act. These developments facilitated a *re*-newed foregrounding of rivers in city planning. Rivers meandered back into the cultural imagination (Klaver 2013; Klaver 2014b).

Climate change-driven floods and droughts in the twenty-first century have put water back on the map in bold. The cultural realm has been inundated with water: a flood of water-related books, advertisements, brand names, real estate ventures, art projects, and movies, including a James Bond film, *Quantum of Solace* (Broccoli et al. 2009), and *Western* (Grisebach 2018), a moving film about the cross-cultural troubles of a group of German construction workers building a hydroelectric power plant in a remote river in the Bulgarian mountainous country side. Water has even streamed into the stock market: water stocks—as in infrastructure projects, desalination plants, and bottled water companies—have soared. Whereas in the course of the twentieth century, in the so-called developed world, water became backgrounded, often invisible in its infrastructural existence, it has come back with a vengeance and has become a solid part of our social-political, economic world and our cultural imagination. Many cities in the industrial world are designing projects to *re*-connect to “their” river. This bespeaks a shift in what I call

environmental imagination: a socially, culturally, and environmentally *re*-valuing of rivers (Klaver 2013; Klaver 2014a). River-reconnection projects are often a real estate and chamber of commerce driven process, and it is especially in this context that a right to the river as commons is called for to counter the injustices of gentrification, commodification, homogenization, and surveillance (Kibel 2007, Klaver 2018a).

In the following section, I explore the process of reconnecting to the river as a meandering movement, a movement of the *again* and the *re*-. I first trace the value shifts in the notion of meandering and *re*-connect meandering to its river of origin, the Meander River in Anatolia, the Asian part of Turkey. I then sketch a brief example of a contemporary case: the City of Los Angeles’ project of *re*-vitalizing of the Los Angeles River. I show how in the *re*-conceptualization of the Los Angeles River, as well as in its realization, meandering abounds, as does the prefix *re*-.

How do we *re*-consider our situation and *re*-imagine our future? How do we facilitate a change in mentality and foster an environmental imagination? I argue that the prefatory syllable *re*-embodies a crucial catalyzer: *re*-think, *re*-connect, *re*-build, *re*-configure. The prefix *re*- conveys the creative capacity of meandering, the on-going activity of beginning and renewing. It reflects the potential trajectory from biocultural homogenization to biocultural conservation.

## Meandering

Meandering refers to the sinuous movement of a river flowing through—hence creating—a landscape. Because of the complexity of this sinuosity, meandering also stands as a symbol for non-deterministic systems. Furthermore, meandering has a deep past and is etymologically rooted in

an actual river, the Meander or Maeander—now Büyük Menderes—River in Anatolia, Turkey.

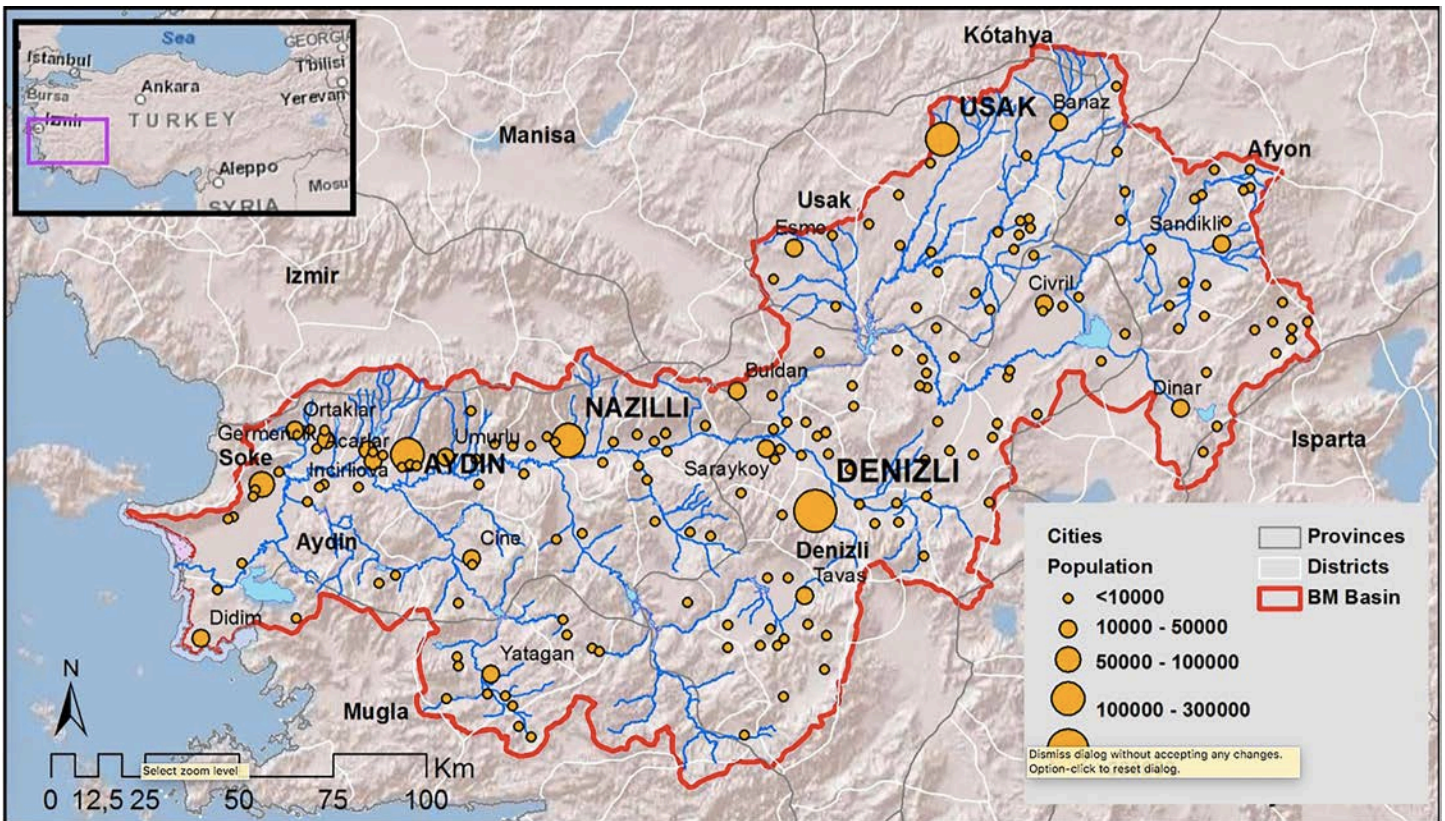
In a meandering of history, the Meander River played major roles in antiquity and then all but disappeared from the cultural imagination (Klaver 2014b; 2016). From early modernity

onward, meanders were engineered away to facilitate modern developments, such as commercial river transportation, property boundary determinations, and city planning. Rivers were stratified and meandering acquired a negative connotation. Linearity has been the privileged paradigm of progress and its leading model of efficiency; its concomitant mindset has been goal-oriented or teleological. Meandering, convoluted and seemingly undirected, is seen as not just the opposite of efficiency, but as being in its way, synonymous with aimless wandering, ambling along a winding path, and rambling through long-winded arguments.

In the course of the second half of the twentieth century, non-linear systems had become widely accepted in the sciences—physics, mathematics, and engineering. Complexity, chaos theory, and non-deterministic, non-linear modeling had become the state of the art in many fields, including the study of behavior of large-scale natural or

social systems in ecology, economy, and politics. [2] Analyses of both practices and systems highlight the importance of field-dependency, of a larger context. These dynamics and an increasingly complex society in terms of media and globalization led to an acceptance of complexity in the cultural imagination and a re-valuation of meandering (Klaver 2014b; 2016).

Re-valuing meandering has a train of effects on a variety of concepts and practices. Meandering as a metaphor for a different sort of thinking is founded in and summarizes the non-deterministic models used in many fields of science that were once the hallmark of linear, positivist thinking. Meandering allows for ambiguity and hybridity, for that which cannot easily be measured, which does not want to be measured, or determined in scheduled time tables. In that sense, meandering makes room for a thinking in terms of spheres, including the notion of riversphere, which covers the less quantifiable



*Büyük Menderes river basin and its main cities. Source: Handbook of monitoring in the Büyük Menderes River Basin. 2015. p. 9.*

multi-dimensional aspects of rivers. Meandering proceeds covering more ground, percolating into deeper depths, listening to more voices, foregrounding the specificity of being what it is when and where it is observed. Meandering makes room for the slow and for the workings of the material realm not ruled by strict structures. It facilitates a slow ontology, a slow epistemology and a slow ethics. Taking time to be, to learn, to know, to judge.

The activity of meandering can be characterized as a process of sedimentation and reactivation, which is a slower process than water running through a concrete channel. However, speed from A to B is not necessarily the only mark of efficiency. Meandering takes more factors into consideration, and therefore is able to respond with more versatility and from a broader set of perspectives. Meandering facilitates a different way of thinking about efficiency, acknowledging that it might be more efficient in the long term to take more time and explore possibilities, just as a river does when it meanders through a basin. More than control, exploration drives innovation. Meandering as a method, as a mental strategy, privileges exploration; it is a messy process, learning from mistakes, and following contingent relations. Many human practices develop in sinuous ways: learning through failing, honing a skill, building experience, facing unexpected challenges, starting anew. Meandering foregrounds the searching in the notion of re-search. Meandering invokes a model of engineering in terms of ingenuity, a bricolage and tinkering that acknowledges and interacts with various kinds of knowledge and expertise, that is capable of adjusting itself to local situations and demands.

Meandering holds much in common with *mêtis*, a term describing practical, even cunning, intelligence in ancient Greek culture.[3] *Mêtis* stands for resourcefulness, practical effectiveness and experiential wisdom. Homer's Odysseus is *polymêtis*—experienced, crafty, wily, and cunning.

Meandering invokes, elucidates, and hints at a different imagination, another mindset, a new epistemological and ontological model, and a cultural and political framework that diversifies what counts as expertise, knowledge, politics, progress, and efficiency. Meandering privileges on-going political deliberation over simple analyses or reductionist geo-political frameworks. It bespeaks the social-political necessity of taking time to explore terrains, to elucidate attributes, relations, problems, and solutions, as a gateway to new constructs of imagination, to a capacity to aspire (Appadurai 2004).

The movement of meandering echoes an ongoing beginning and reveals how beginning works. Beginning does not take place in a vacuum, is not *a creatio ex nihilo*, but is always building on past experience, which can also entail a break with this experience. The emergence and fading of the Meander River in the cultural imagination can itself be seen as a meandering: an appearance and disappearance of the very river that left its indelible mark on human culture by giving its name to the process in which it disappeared again. The paradoxical and self-referential character intensifies the complexity of the process.

The complexities of fluvial geomorphology provide another spatial metaphor in what is known as an anastomosing stream (from the Greek to “recreate a mouth”). This is a form of braided channel, found on the Upper Mississippi and other “low energy” streams, that branches out from itself and then reconnects with itself, thus dividing and rejoining, both feeding and being fed by itself. The multiplicity of flows, channels, and interconnections suggests other ways in which our thought and communities can draw on potamology for insight.[4]

I now make a Heraclitean move, looking to the past to envision the near future—looking to the history of the Meander River to see the emergent meandering way of thinking.

# The Meander River

The River Meander (Anatolia, Turkey) once formed a mercantile and military conduit between Europe, North Africa, and Asia. Herodotus mentions the Meander’s winding ways and Strabo has given us the meaning of meandering as wandering. The earliest mentions of the Meander are found in Homer and Hesiod between approximately 750 and 650 BCE, in which the Meander region is portrayed as rather backwards.

Not long thereafter, beginning in 600 BCE, the Greeks settled the Ionian Coast, including the

Meander Delta. The Meander valley became the vital trading route between the Mediterranean and Asia and emerged as a region of high cultural significance.

We might call this the first meandering of the Meander River in the cultural imagination. From a “rural backwater” to the most precious gateway to the east: “vast caravans of wood, wheat and spices, marble and ivory” followed its course (Seal 2012, 11–12). Trade and armies traversed the basin. The city at the high headwaters of



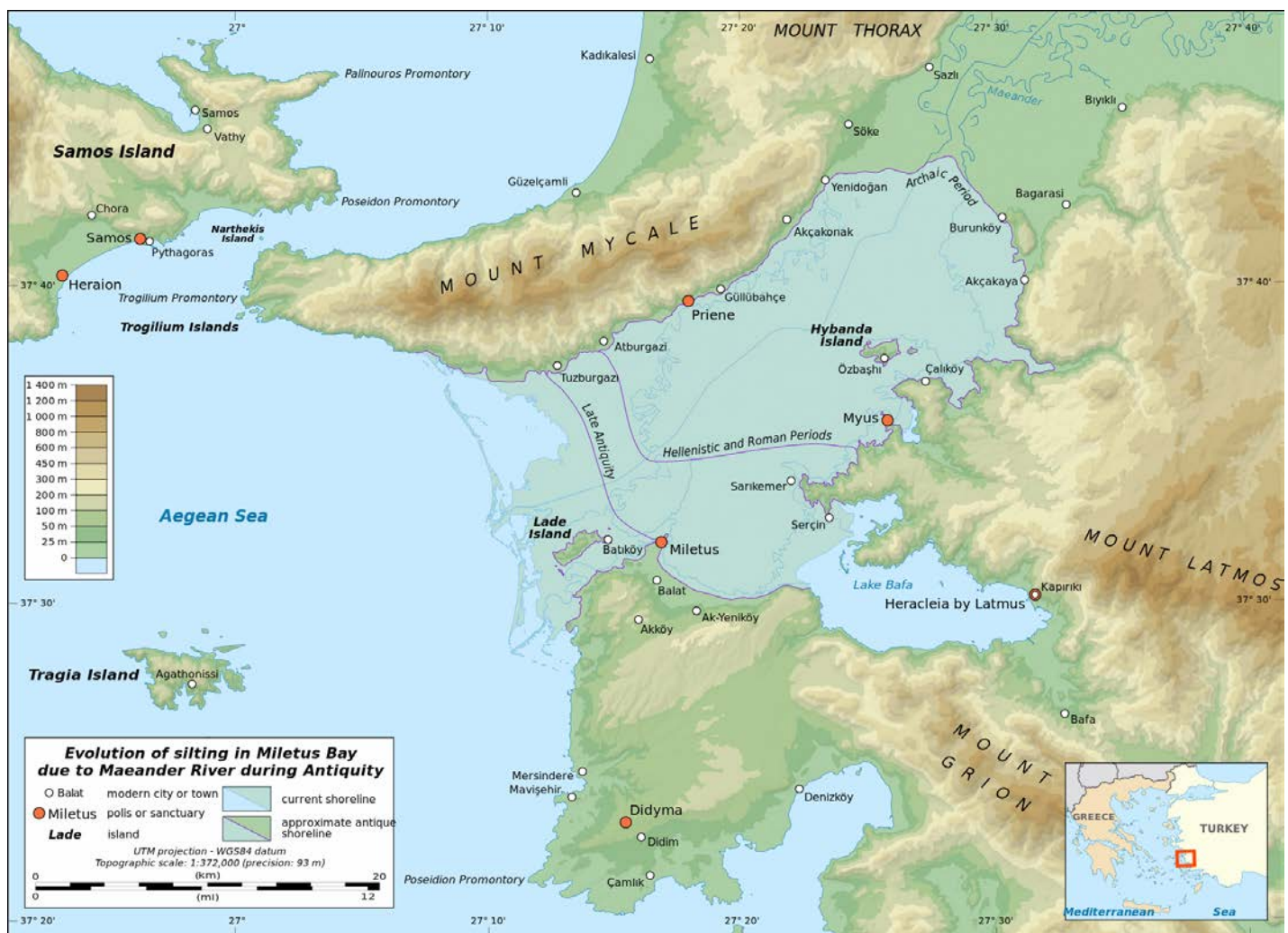
M. Pouqueville, “Milet et cours du Meandre,” (Miletus and the course of the Meander) Paris: Firmin Didot frères, 1835. Personal copy of lithograph.

the Meander River, Dinar (Celaenae in the fifth century BCE), was of strategic importance: its pass connected East and West. Xerxes' Persians headed west in 481 BCE to conquer the Greeks; 150 years later Alexander the Great headed east from Macedonia to conquer the Persians. These classic power shifts between the East and the West kept meandering along the river that gave the process the name.

Near the Meander's mouth on the Aegean Sea was the prosperous port of Miletus. In the sixth and fifth centuries BCE, it was a cultural center, booming and bustling with celebrated musicians, poets, engineers, mapmakers, and philosophers, such as Thales, Anaximander, and Anaximenes. Aristotle called Thales of Miletus the first Greek philosopher. Thales considered water to be the

beginning, an originating and guiding principle or *archê*. Heraclitus was a native of Ephesus, a prominent city close to Miletus.

The Meander River had created a fertile valley. However, in another meandering twist of history, the very same agricultural development that made the region prosper and provided food for military and mercantile caravans, enhanced erosion and silt formation in the basin, and the once so powerful harbor city Miletus became a landlocked town. Over the centuries, the Miletus Bay silted up with alluvial deposits from the very river that nurtured its importance. The economy of the once-prominent harbor city collapsed. Nowadays, the ruins of the city lie some 10 kilometers from the Aegean Sea.



Miletus Bay silting evolution map, Eric Gaba, 2009, (CC BY-SA 3.0).



*Winged goddess thought to be Metis, in a scene depicting the birth of Athena. Detail on black-figure amphora from 550-525 BC in the collection of the Louvre. Photographer Marie-Lan Nguyen. (CC BY 3.0).*

# Meander and Metis

The very twisting and wandering character for which meandering became so well-known bespeaks a way of thinking that has been long ignored, belittled, even considered counter-productive, precisely because it connotes complexity and multiplicity instead of linearity and unity. In its polymorph character, adjusting itself to the circumstances, meandering is structurally comparable to the ancient Greek notion of applied or real-world and practice-based intelligence, or *mêtis*.

In Greek mythology, Meander and Metis (*Mētiς*) were brother and sister. According to Hesiod, Thetis and Oceanus had three thousand sons, river-gods or *Potamoi*, and three thousand daughters, the *Oceanid*, each of them patroness for a specific spring, river, or lake. Only the foremost were mentioned by name: among the sons, Meander, among the daughters, Metis.

Metis was, initially, an important deity, the first spouse of Zeus, and represented wisdom, skill, craft, and cunning—a highly praised combination. However, Zeus fearing her powers and her offspring, swallowed her, but she had already conceived Athena, who was born fully armed from Zeus' forehead. Metis faded from Greek mythology, eclipsed by her daughter, Athena, goddess of wisdom. Metis symbolized practical intelligence in politics, practice-based knowledge in military art and medicine, the skills of the artisan crafts; all these forms of experiential wisdom, rooted profoundly in the intimacy of specificity, were called *mêtis*.

In *Cunning Intelligence in Greek Culture and Society*, Detienne and Vernant argue that *mêtis* escapes simple definition—it “always appears more or less below the surface, immersed as it were in practical operations” (1978, 3). Its way of knowing, its kind of intelligence and “its field

of application is the world of movement, of multiplicity and of ambiguity. It bears on fluid situations which are constantly changing and which at every moment combine contrary features and forces that are opposed to each other” (20).

According to Detienne and Vernant, *mêtis* is “at the heart of the Greek mental world in the interplay of social and intellectual customs where its influence is sometimes all-pervasive” (1978, 3). However, despite its pervasiveness, *mêtis* is never explicitly thematized or analyzed in ancient Greek philosophical texts. While there are many treatises about logic, there are none about *mêtis*. The intellectual world of classic Greek philosophy, in contrast to its everyday mental world, was a dualistic world with a dichotomy between being and becoming, the intelligible and sensible, the unchanging one and changing multiple. In this framework of thought there was no place for *mêtis*, which “is characterised precisely by the way it operates by continuously oscillating between two opposite poles” (5). The mode of thinking of *mêtis* does resonate profoundly with Pre-Socratic philosophers, specifically with Heraclitus.

James Scott emphasized in his seminal work, *Seeing Like a State*, the significance of *mêtis* for the social sciences and fields such as geography and architecture. He invokes the term *mêtis* “to conceptualize the nature of practical knowledge and to contrast it with more formal, deductive, epistemic knowledge” (1998, 6).

There may be some rules of thumb, but there can be no blueprints or battle plans drawn up in advance; the numerous unknowns in the equation make a one-step solution unimaginable. In more technical language, such goals can only be approached by a stochastic process of successive approximations, trial and error, experiment, and learning through



experience. The kind of knowledge required in such endeavors is not deductive knowledge from first principles but rather what Greeks of the classical period called *mētis* (...). Usually translated, inadequately, as “cunning,” *mētis* is better understood as the kind of knowledge that can be acquired only by long practice at similar but rarely identical tasks, which requires constant adaptation to changing circumstances. (Scott 1998, 177–178)

Scott describes how this kind of knowledge had become backgrounded in modernity with rather devastating consequences. “The utilitarian commercial and fiscal logic that led to geometric, mono-cropped, same-age forests also led to severe ecological damage” (1998, 309). In a twenty-first century trajectory from homogenization to biocultural conservation the importance of *mētis* is re-surfacing again; this time, as I argue, in consort with meandering.

The meander confounded early lawyers concerned with boundaries and scientists concerned with the mechanisms of meandering streams. Meander symbolized irregularity, complexity, ambiguity, and instability. In the latter part of the twentieth century, precisely these “meandering” qualities brought out the value of multiple perspectives in arts and sciences; the weak ontology of becoming became as valuable as the traditionally more privileged strong ontology of being; the inductive, analogical, and emergent, as valuable as control and generalizability (O’Connor, Copeland, and Kearns 2003, 99). The understanding of probability and complexity provided new forms of explanation and new ways

to operate even within fields long founded on “ideal” characteristics and laws. The meander came to be seen as an irregular waveform, at once subject to and generating random processes and forms.

Various characterizations of ingenuity and of emergent and analogical thinking bear deep resemblance to the *mētis* of antiquity. Dreyfus and Dreyfus speak of *expertise* in terms of “intuition [that] is the product of deep situational involvement and recognition of similarity” and note: “how experience-based holistic recognition of similarity produces deep situational understanding” (1986, 29, 32). Similar concepts characterize the notion of ingenuity and engineering design: explicitly pragmatic, contingent, visual in character, satisficing, messy, holistic, whimsical, learning from failure (O’Connor, Copeland, and Kearns 2003, 104).

Hapgood describes the first phase of engineering design as a “metaphorical traversal through solution space,” in which “failure, imagination, and stuckness” are at play. The traversal and design process is “idiographic and unpredictable” and often beset with “painful trials or iterations.” For Hapgood, the engineer is a “tinkerer who engages in activities within an artistic and subjective context” (1993, 96). O’Connor and Wyatt use the term “thinkering” to blend Hapgood’s tinkering together with Dreyfus’s deep situational involvement into “engineering discovery by doing” (2004, 12).

The efficiency of meandering lies in its affordance of the time and broader horizon necessary for “thinkering.”

## Re-meandering

Re-meandering has become a popular practice in ecological restoration: meanders are introduced even in places where there never were meanders.

Rivers are resurfacing in the public imagination as places to congregate, and as cultural and ecological corridors, creating a cultural

rejuvenation around urban renewal projects. Also in rural areas, river restoration is underway: the re-meandering of watercourses and restoring of floodplains are being carried out—sometimes even by the same engineering firms that straightened the waterways in the early or mid-twentieth century. New adaptive management regimes are seeking to work *with*, not against, rivers.

Meandering is dependent on the complex interaction of many material vectors. It is a symbol for how power operates in the everyday, lateral traversing, picking up material and depositing, re-activating in the process. Meandering stands for an ethics of adjustment, a politics of engagement, enabling deliberation, a sense of experiment: tinkering, thinkering, emergent, and

transient. Meander brings the social, political, technological, and natural together in an ongoing dynamic. The Law of the Meander is not the straight line but the sinuous back and forth, symbolized linguistically by the prefix *re-*, the notion of the again and again, the experience one gets in *mêtis*, the exploration through wandering, the essay in Montaigne’s original sense of trial and attempt.

The Meander River no longer functions as a Mediterranean thoroughfare, but the notion of meandering has re-emerged as valuable. Meandering is not a symbol for closure but one of ongoing change and exchange, of identities that **shift over time**.

## There It Is

The narrative arc of the Los Angeles River provides an exemplary, and at the same time cautionary, tale of the intertwinement of re-rivering, meandering, and beginning anew again and again (Klaver and Frith 2014).[5]

As urban planner and writer John Arroyo emphasizes in his thesis, “Culture in Concrete: Art and the Re-imagination of the Los Angeles River as Civic Space,” “artists have taken to the River as a creative venue. Their actions have re-defined the River and have allowed us (and impel us) to re-imagine the River as the civic space” (2010, 3). They have flourished in “the un-designed, unplanned, and the spontaneous nature of the River space” independent of any formal urban planning or intervention (3).

River revitalization plans often come with gentrification and a complex re-drawing of the public and private: when the old abandoned, neglected, polluted, dangerous riverside becomes “beautified,” poor communities all too often are elbowed out to make place for a new upper middle-class

population. As Kibel states succinctly: with any of these projects one needs to “consider the questions of who makes decisions about our urban rivers (...) and who ultimately benefits from or is burdened by these decisions” (2007, 15). The danger of commodification is a sanitized and controlled space—lacking the conceptual and social “messiness” of poor neighborhoods or abandoned and waste places, which function as meandering space. Foucault calls these places “heterotopias:” “unique, non-traditional, and differentiated ‘other places’ where the constraints of typical regulations and rules were suspended” and which therefore entice the imagination, spontaneous reactions, and transformative powers (Arroyo 2010, 66).

It is too soon, yet, to say which ways the re-imagined Los Angeles River will flow. Price sums it up succinctly: “the revitalized river will be a product of continuous compromise and negotiation” (2008, 552). In fact, this is the definition of the politics of an engaged community that fosters the ongoing deliberative process of civic life,



*The Forsaken River. After it was channelized in the 1950s, the Los Angeles River looked more like a “deserted freeway” than a river. Unable to access the river, many Angelenos grew up unaware that Los Angeles had a river at all. Image courtesy of Irene J. Klaver, 2006.*

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engaging in ongoing debate, meandering like a river, taking time to examine ramifications, to explore various trajectories, to also hear the voices of the less powerful and take their concerns seriously in order to create the river as a common space.

*See the full version of the brochure image [here](#).*

In all its hybridity, the Los Angeles River crosses boundaries of race, class, and human and physical geography, concrete and earth. As a re-meandering but still mainly concrete river, it is a symbol of a new twenty-first-century paradigm of hybridity in water management

and environmentalism. Mulholland's dedication speech for the aqueduct resonates in the background "There it is..." this time without the entitled imperative of the twentieth century, "take it!"

In conclusion, I re-turn to Heraclitus to summarize our meandering through human relations to rivers. Returning to the two Heraclitus fragments—"as they step into the same rivers, other and still other waters flow upon them" and "one cannot step twice into the same river" (Kahn 1979, 52–3)—we can say the philosopher reminds us that paradoxes are not necessarily confounding or useless. Close examination and



*Aerial view of the Los Angeles River adjacent to a meandering highway. Image courtesy of Brian C. O'Connor, 2014.*

shifting perspectives show us we can step into the same location, the same coordinates in a three-dimensional space, and we would at different times encounter different water, different sedimentary material being carried and being deposited, even different materials in different formations on the river bottom. Likewise, components of the riversphere will have changed, some nearly imperceptibly and some beyond recognition. While we are not able to return any river or system of rivers to exactly some former configuration, the words of Heraclitus can help to remind us that we might take steps that reduce homogenization, that enable distinctly “other and still other waters” to flow through our riverspheres.

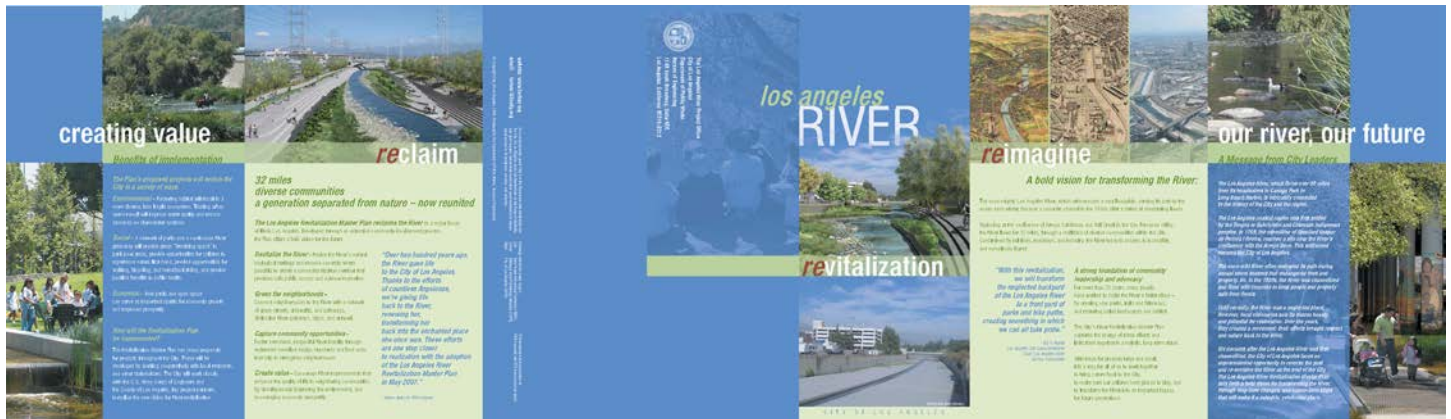
The story-arc of the Meander River gives us a vivid long view of a river in relation to human culture: giving passage to great armies, bearing witness to the beginnings of philosophy, confounding lawyers and geographers, and all but disappearing from memory. The story-arc of the Los Angeles River enables us to re-frame our relationships with our rivers, to revitalize the rivers and ourselves. Such stories re-value the practice of mētis and meander alike and, with the vigor of renewed imagination, re-rivered rivers meander back as experiential and shared places and as powerful metaphors for thinking.

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## Footnotes

[1] This piece builds upon and is a continuation of earlier writings on meandering. At every turn, I set out to make the concept of meandering more robust as a tool for understanding the various dynamics of our relations to rivers. See Klaver 2014b, 2016, 2017, 2018a, and 2018b.



*Re-Imagining the Los Angeles River. In the 1980s, community activists began to re-imagine the Los Angeles River, urging city officials and fellow Angelenos to reconnect with the river and to reclaim it as a place of community and revitalization. Their efforts culminated in 2007 when the City of Los Angeles issued the Los Angeles River Revitalization Master Plan. Above, a promotional brochure explains the Plan’s “bold vision for transforming the river.” Source: Los Angeles River Project, City of Los Angeles, Department of Public Works, Bureau of Engineering, 2008.*

[2] Any substantial discussion of complexity and non-deterministic systems is outside the scope of this paper. Stating it simply: small variations in values hidden by approximations used in the solution of linear equations for non-linear systems can result in large differences in results; interactions between multiple variables, especially when initial conditions are not known, can be unpredictable; and, as Waldrop notes, systems with numerous independent agents can have “a richness of interactions that allows the system as a whole to undergo spontaneous self-organization.” For an in-depth introduction to the notions of complexity and non-deterministic systems see: Gaddis 2004, Barad 2007, Waldrop 2008.

[3] This is not to be confused with the term *Métis*, which refers to a group of peoples of mixed First Nations’ and colonial-era Euro-American ancestry, from the fur trade and afterward, especially on the Canadian and U.S. Plains. They are recognized as one of Canada’s aboriginal peoples with their own distinct Métis culture. The term is derived from French and Latin words for ‘mixed’ (also found in *mestizo*). All of these forms are etymologically related to the Greek Metis.

[4] I want to thank the *Open Rivers* reader for suggesting this paragraph.

[5] This part is based upon earlier writing with J. Aaron Frith on the history of water supply in Los Angeles. For a more extensive account of the re-connecting of Los Angeles to its river, see Gumprecht 1999, Gottlieb and Misako 2007, Price 2008, Klaver and Frith 2014.

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