

Foreword by Elisabet Sahtouris, PhD, for *Integral Cities*, new edition:

Looking down on Earth's surface from an airplane, whether by day or night, our cities look remarkably like cells—nucleated cells, with their obvious nuclear 'downtown' hubs, scattered smaller concentrations of buildings like cell organelles, flowing transport systems, extensions into the surround like the pseudopods of amoebae.

This has struck me again and again in flying around Earth as an evolution biologist and futurist seeking answers to our big questions on whence we came and where we are headed, all the while teaching my evolving take on them. Eventually I realized that cities were indeed living entities in their own right, and now undergoing a rapid evolution comparable to the origins of the nucleated cells they so resemble.

Thus begins *A Tale of Cities and Cells*,ⁱ in which I trace the origins and destinies of cities as that part of Earth's biological evolution in which our human species reflects the building of nucleated cells as cooperatives by our most remote microbial ancestors. Marilyn Hamilton's conception of cities as intelligent human hives is completely consistent with this view and thus a delight to me in her marvelously worked out details of just how cities *are* living entities.

In the decade since the first edition of *Integral Cities* came on the scene, significant advances in my field of evolution biology further support this conception of cities as intelligent human hives that fail or thrive depending on how much they function like the healthy living organisms they can and should be, and are thus consistent with this book and its companion workbook's analyses and practices for enhancing city health and wellbeing.

Broadly speaking, cooperation has finally been acknowledged for its vital evolutionary role, adding the critical role of internal cooperation in the natural selection of groups to Darwinian competition among individuals, notably in the seminal work of E.O Wilson and Elinor Ostrom, most recently coming to

maturity in the work of David Sloan Wilson. And now Tamsin Woolsey Barker makes explicit, in her book *Teeming*, how our human species is an extremely cooperative social species—a kind of superorganism that has evolved only six times in all evolution, with the ability to create infinite wealth on a finite planet—the ultimate conception of our cities as human hives at a whole new evolutionary level.

My own contribution to evolution biology has been to identify a maturation curve in which species and whole ecosystems move through phases from competitive youth to mature cooperation, as in the greatest evolutionary steps from ancient bacteria to the cooperatives they built as nucleated cells, and from those larger cells to their eventual cooperatives as multi-celled creatures including ourselves, with our own cooperatives in the form of cities.

At the ecosystemic level, biologists and ecologists have long identified highly competitive ‘pioneer’ systems to highly cooperative ‘climax’ systems without noting that sequence as a learning maturation curve. Surely it is high time to recognize the formation of cities as paralleling the cooperative formation of nucleated cells.

Important to note is that these three major steps in evolution are defined by the production of entirely new entities—nucleated cells, multi-celled creatures and cities—each of which begin the maturation cycle anew with their own youthful competitive phases before mature cooperation is once again achieved. The turning point into mature cooperation apparently happens when hostilities simply become more expensive (energy demanding) than cooperation!

Cities with long histories almost invariably grew as naturally adaptive living entities from small cooperative trade centers, usually built at trade route crossings where people peacefully exchanged goods and knowledge. This suggests that humanity completed the evolutionary maturation cycle in countless locations around the world long before empires evolved.

As these centers grew and became the first cities, some of them did enter into competition with one another and the Era of Empire began, eventually swallowing up cities whether they liked it or not. Empires evolved over time

from those ruled by conquering emperors to national empires and most recently corporate empires; all competitive; all thus still in their youthful phase. Fortunately, it is now very obvious that the expense of their hostile competition to people and planet is far greater than cooperating as a human family of city hives would be.

Cities, as the natural living entities they are, have a huge evolutionary advantage over nations, as well as over smaller political divisions such as states or provinces within nations, all of which were established not by growing from small living entities, but by arbitrary boundaries scratched onto Earth's surface, often cutting through, and thus dividing, natural human social/ethnic alliances. Further, cities no longer maintain armies or otherwise engage in hostilities with each other, suggesting they are ripe for peaceful cooperative alliances with each other. This is already exemplified by cooperative alliances of city mayors across national divides and even global, as well as by projects such as the Rockefeller Foundation's intentionally cooperative 100 Resilient Cities project to help cities solve chronic problems, build resilience against disasters and share solutions among themselves.ⁱⁱ

Perhaps the greatest barrier to full cooperation in our human family is our political misunderstanding of real democracy. Nature is profoundly conservative with everything that works well, *while* being radically creative and progressive in changing what does not work well. But we have been conditioned to seeing conservative and progressive as politically divided in opposition to each other, choosing by vote (often manipulated) every few years, which of them will dominate and put down the other! *That* is immature hostile competition, rather than a mature and cooperative division of labor, and may be far easier to move beyond and role model in cities than in nations.

The evolutionary path to cooperation in and among cities is ever more urgent as our rate of congregating in city hives increases exponentially from 3% of us in 1800 to half of us now and an estimated 70% of us by 2050—a rate already that high and even higher in some developed countries. Thus it must

be our chosen mandate to live well in our cities—to flourish *as* cities, internally and externally cooperative.

Every city can enhance its own health with the unique and wonderful tools of this book and its workbook, which enable readers to go deeply into, and thus truly understand, their city’s collective human psyche along with its physical infrastructure and thus to move forward in the way of genuine living entities. Read this book, share it with every ally you can, take it to your City Hall and get moving. There *is* a better world for us all ahead!

ⁱ <https://www.ethicalmarkets.com/a-tale-of-cities-and-cells-by-elisabet-sahtouris/>

ⁱⁱ <http://www.100resilientcities.org/>

Possible insertions or additions:

The internal problems cities face now are the same glaring ones facing their nations and their world—joblessness, homelessness, health crises, unequal educational and other opportunities, racial tensions, environmental degradation, energy grid failures, traffic congestion, political corruption and so on. Thirteen of our twenty largest cities globally, as well as far more smaller ones, are coastal. Their sealevel airports, piers and sewage systems, as well as other infrastructure and populations, are directly threatened by climate change, as is already evident.

Our attempts to create artificial cells in the laboratory are not entirely unlike our recent efforts to create artificial cities by plugging living beings into manufactured infrastructures, as In China and the Middle East. As Marilyn Hamilton shows, we are now faced with the dual dilemma of wild—read ‘natural’—cities that are rapidly losing their infrastructure through decay and lack of resources to renew such and the newly designed cities populated

suddenly by people with no pre-existing connections or relationships, leading to a situation where we have city infrastructure without relationships or relationships without infrastructure. This is precisely why we need to understand the nature of intelligent, functional human hives and how to prevent the hive collapses our bees are enduring as they play the proverbial roles of warning canaries in mines.

Our hope lies in the resilience of humanity itself—in the vast array of opportunities for engaging the citizenry of cities in peaceful means of solving their problems and developing resilience in the face of oncoming disasters.ⁱⁱ Inspiring and building internal cooperation through truly democratic citizen engagement, each city can solve problems and become a healthy partner and role model for other cities.

To restate my case, cities are the most promising human-created living entities able not only to solve their internal problems, but to lead the way in evolving humanity to its second and this time global wave of maturity.

That is exactly what is now demanded of us all as we must navigate this perfect storm of crises we humans have created. Increasingly severe natural disasters due to climate change, the growing refugee crisis due to both climate change and the persisting horrors of competitive warfare, the many problems resulting from an extreme wealth gap, are all inescapable now. We are caught in these stormy waters, like it or not, and have no choice but to navigate our way through them.