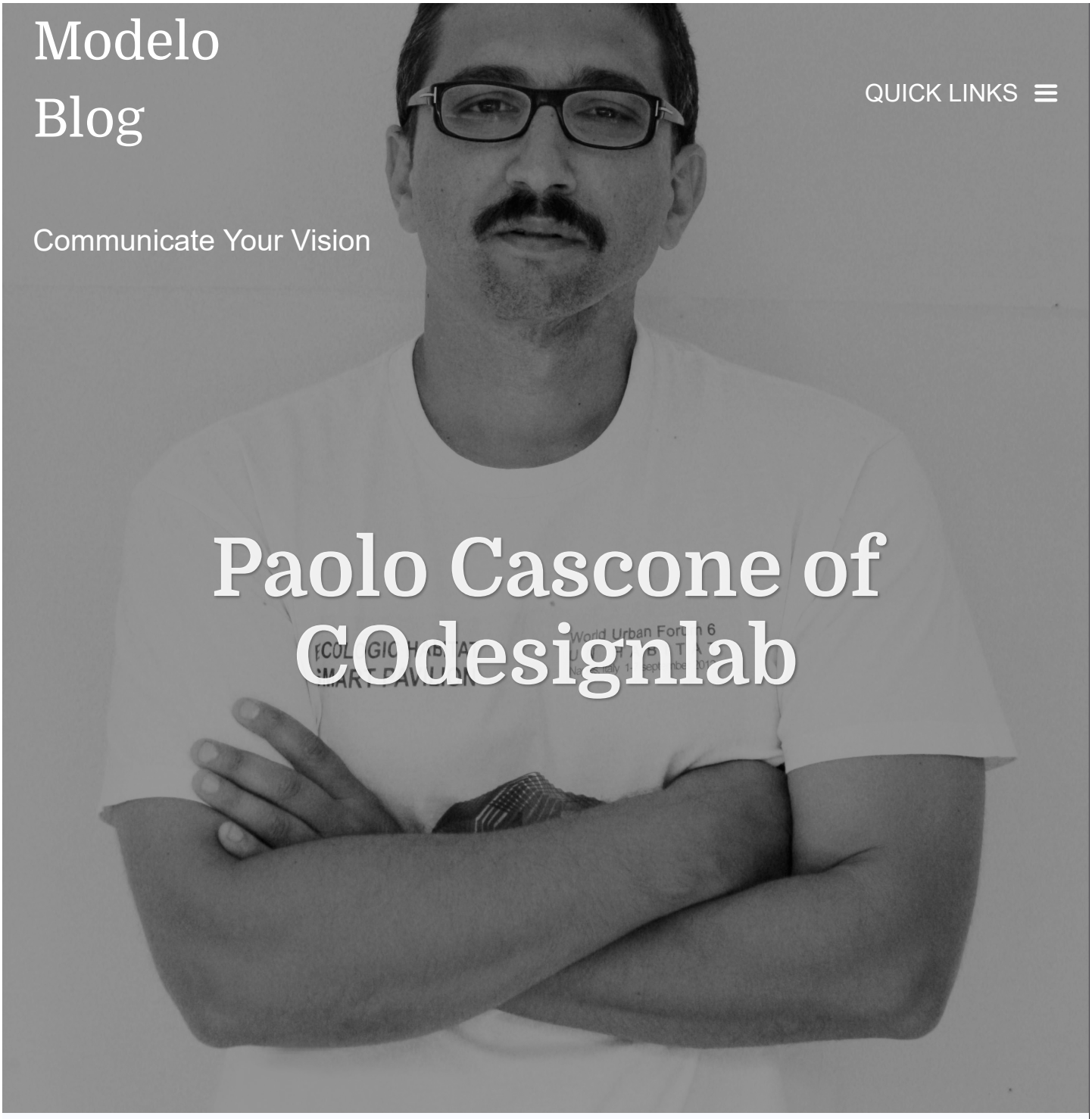

Paolo Cascone of COdesignlab

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Paolo Cascone was born in Italy in 1976 and grew up between West Indies and east Africa. He graduated in architecture in Naples and started his research between advanced design, digital fabrication and self-

construction during his masters at the Architectural Association in London in sustainable design. He continued it while accomplishing a Ph.D. in environmental engineering at the University of Rome. In the past few years, Paolo has developed interdisciplinary projects with international firms and applied research in the field of environmental parametric design and smart construction. He has been teaching as an associate professor at the ENSA Paris / Malaquais and at the Ecole Speciale D'architecture of Paris, where he founded **COdesignLab**. In 2013 he founded the Urban FabLab research laboratory of urban ecologies and digital fabrication in Naples, Italy. He is involved in teaching and research with the Architecture Computing and Technology laboratory of the Milan Polytechnic. Recently, **Modelo** had the opportunity to learn more about Paolo's unique approach and design philosophy.

On becoming an architect

I was 18 years old when I move to West Indies for a while to join my father who was working in Kingston, Jamaica. After my bachelor in classical studies in Italy, I wasn't sure to keep studying theoretical topics and I have got involved in some shooting for the cinema there. This gave me the opportunity to meet up with artisans, artists and designers from very different backgrounds. I was intrigued by the process of designing and construction as a collective practice and I have decided then to become an architect. My very first interest was on Caribbean design and vernacular architecture.

On discovering his voice as a designer

After my Caribbean experience I have continued my studies in Italy in a more conservatory environment struggling to reconcile the theory with the practice. If culturally speaking the historical approach was rigorous and rich of potential inspirations the design courses where too "rigid"

for me, that's why as a student I have focused my creative energies in playing rugby. For this reason while I have started to work, after my diploma, for several architectural firms I have decided to keep cultivating my design agenda by applying for the AA in London. At that time the school was the right place to explore an ecological shift in architecture creating new connections between digital processes and physical contextual outputs. There was a group of very interesting professors, but probably what influenced me the most was the students attitude of making experiments in many different directions.

On starting his firm COdesignlab

After London I had to finish my PhD in environmental engineering in Rome where I have focused my efforts in defining an information based methodology for my design agenda. However, for different reasons, I have been involved in the practice as project manager for a firm in Paris. The opportunity to create my own firm appeared after a while when I have started to teach at the Ecole d'Architecture Paris Malaquais and then at the Ecole Speciale. COdesignLab born as an office for ecological architecture involved in computational process. The studio has been always animated by the collaboration of young colleagues and students, subsequently I have strategically decided to orientate the practice as a laboratory more than a traditional office.

On specific principles he strives to adhere to across all COdesignLab projects

COllaborative approach-COmputational design – COnstruction orientes.

Those aspects inform each of the projects with the aim to follow all the steps from the concept design to the realization of the single component. Each stage of the process belongs to an integrated research agenda that explores many domains from structural morphologies to material systems and digital fabrication. More recently I have also founded the

Urban FabLab, a non-profit project with the purpose to share such knowledge with students, artisans and makers of my hometown Naples (Italy).

On his primary focus as a designer at COdesignLab
My role is to propose a modus operandi able to anticipate scenarios and develop creative solutions. During the past years we have developed many experimental projects that obliged us to be confronted on the meaning of optimization and the role of technology according to local resources. As director my responsibility is to ask our self the right questions, negotiating between contextual needs and possible fields of investigations.

On recent projects that represent his unique approach
A few years ago I had the pleasure to meet Mohsen Mostafavi (my dean when I was an AA student) at the GSD – Harvard. On his table he had a number of the Japanese review A+U titled "Diversified solutions". The magazine had his interview and texts by, among the others, Saskia Sassen and Robert McNeel etc. : "The ecological, the social and the digital best think tankers worldwide". When I have discovered that my project in Mali with Fabrizio Carola (an 80 years old Aga Khan awarded architect) was mentioned in that magazine, I have realized that something unique was growing in my approach to design.

There are many projects that I would like to mention but if I have to choose three recent projects that represent such research by design approach I will say: the African Fabbers project, the Hacking Gomorra project and the Advanced Ceramics project.

The African Fabbers project is an itinerant laboratory of digital fabrication with the aim to transform abandoned public space of African cities in places of production and innovation. The first two steps participated to both the Marrakech and the Dakar Biennale involving

local artisans and students of architecture, design and engineering. In both cases we have developed a process of collaborative design in order to re-shape the space with local materials bridging traditional and digital manufacturing technologies creating the cultural basis for a permanent laboratory. As a matter of facts the next step will be to build a more permanent school of “architectural fabrication” in Ghana in partnership with the NKA foundation.

In the Hacking Gomorra project we have interpreted the topic of “productive cities” exploring the possibility of using digital fabrication process for regenerating the Vele of Scampia, a megastructure located in the Naples suburbia. The bad reputation of the neighborhood reported in the famous book and movie Gomorra has animated a public debate for the demolition of the buildings. We have proposed a more sustainable approach that involves local inhabitants in a bottom up process of renovation of the existing. My believe is that self-construction of small elements hacking the mega structure is the only way to create a dynamic of self-responsibility within the inhabitants. This is with the aim of creating a positive identity of the neighborhood as well as an economic opportunity for integrating a digital manufacturing factory in such huge dormitory. For such “surgical” interventions on the existent buildings, I believe that digital fabrication could play a key role for developing site-specific interventions able to generate collective facilities and the so called “mixité” for customized housing solutions. The skeleton of the existing building is considered an infrastructure were the new low-cost shells will explore the possibility of recycling the material of local demolitions for 3d printing the new components conceived for reducing energy consumption of the entire building. Despite the social conflicts of the area, we would like to present during the next months the project to the local associations of inhabitants and eventually launch a funds raising campaign for the first workshops. The project will be exhibited next April at the Design Week in Milan.

The Advanced Ceramics project started during our work in Africa while we were developing experiments in collaboration with local craftsman on using the desert earth for making architectural components through a 3d printing process. After such experience we have decided to work on a research protocol on material computation and performative design for a km 0 house prototype totally 3d printed. Therefore we studied the ceramic as a material system with a material computation approach. The aim was to take advantage of its physical characteristics for structural components and novel tectonics in architecture. The ceramic components are assembled with an interlocking systems, which creates a structural skin. The skin responds to different environmental variables according to gradients of thickness, porosity and density. The recycled water circulates in the system of internal cavities of the components creating thermal comfort within an evaporative cooling process. In 2015 the work has been selected and discussed in the two most important scientific meetings on both fields of structural (IASS 2015 in Amsterdam) and environmental design (PLEA 2015 in Bologna). In April 2016 the project will be shown at the Milan Triennale for six months thanks to our partners 3dItaly and Solimene Ceramiche. Let me say that I am very proud to work with Solimene, a small but very famous factory, a place of experimentations for many masters of design and one of the most beautiful places of production designed by the mythical Paolo Soleri.

On his design toolkit

The process always starts from what I call a generative intuition, the personal elaboration of a site-specific information that emerges from an analytical research. This intuition is then developed in a systemic way and it is rationalized in order to become driver for the design process. Sometimes it is aclimatic issue, sometimes it belongs to a cultural dynamic or a specific material system. Using information as a generative tool is the challenge. I normally start with an initial prototype, what they call a genotype in biology. A geometric system of relation that responds to specific performative criteria. The genotype is open to an

evolutionary process of morphogenesis. The result is a range of possible configurations that are dealing with series of rules and constraints both contextual and physical. The possible configurations of the initial prototypes are tested with digital simulations and with physical models. Materiality is crucial for each of the projects; we spend most of our time investigating on specific characteristics of materials and possible ways of manipulating them. Digital fabrication is one of the topics of such design to make process. The aim is always to self-produce our scale 1 to 1 prototypes. I also enjoy spending my time in participative process especially when I work for public spaces; we want to build them with the users. For each of the steps I have developed a computational approach that could be easily applied with different parametric tools. Such approach is inspired by an idea of optimization that we can learn from nature. It is not a question of depending on a specific software but to be able of developing a system of cause-effect relations, a specific algorithm to play with. Personally I have started with parametric tools using generative component when I was attending one of the first edition of the smart geometry workshops. That software wasn't so friendly but was perfectly representing the computational culture behind the tool, the idea of creating interdependent tridimensional systems that could eventually respond and self-organize himself according to external stimuli. In this case 3d modeling is not about representing an idea but more about generating a operative model open to possible variations.

On the state of design software today

In the above mentioned meeting with Mohsen Mostafavi he described me as a "post-digital" designer . I like this definition in the way that I use many software but I am not depending to none of them, I am just very opportunist with them. As the work of Gaudi, Buckminster Fuller and Frei Otto etc. shows, working with complexity doesn't belong only to the digital culture. My work in Africa is strategically conceived in order to

test this possible interaction between digital and analogue in architecture.

On the future of architecture in the next 5-10 years
The digital fabrication industry for architecture will grow fast for sure. I am not sure if this will improve the quality of our cities and the sustainability of our economies. I think there is still a cultural problem in our notion of technology. Therefore I am engaged in both research and educational projects both in Africa and Europe: while I am collaborating with the Architecture, Computing and Technology laboratory of the Milan Polytechnic next month I am going to launch with DAMA a master in Architectural Fabrication based in Milan (Italy).

On the future of his firm in the next 5-10 years
COdesignLab has always being part of such change from the very beginning collaborating with both technological partners (roland, wasp, 3dItaly etc.), material producers (wienerberger, aurora, solimene etc) and engineering firms (arup, rfi, etc.). Next challenge will be to develop a start up with my young collaborators totally involved on architectural fabrication a factory delivering finite components for sustainable construction system.

On advice he would give his younger self
My advice? "...never look back!"

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