

OPEN
DESIGN
SCHOOL
Matera

Users Manual

About this Manual

The Open Design School Manual has two primary purposes. On the one hand it outlines the principles and philosophy that inspire the ethos of the school, contextualising them within a historical framework of design pedagogy and practice as seen from a 21st century perspective.

On the other, it is a set of practical instructions laying out the steps necessary to launch a new Open Design School and make it operational. It is influenced by and borrows from many other prior experiments, initiatives and theoretical investigations (some but not all of which relate directly to design practice), and in turn it is meant to be freely modified, updated and distributed online.

This document is intended as a manual outlining the key features of the Open Design School as a model.

It recognizes that complex systems are difficult to create ex nihilo: in order for them to be stable and effective, they must evolve progressively from the implementation and adaptation of simple systems, a principle also known as Gall's Law:

a complex system that works is invariably found to have evolved from a simple system that worked. A complex system designed from scratch never works and cannot be patched up to make it work. You have to start over with a working simple system.

For this reason, this manual is meant to serve as a repository of prior knowledge and untested instructions that can be useful in the creation of just such a "simple

system”, in the full knowledge that much of it will be disproven, altered, amended and replaced in the coming months and years, as hard experience gradually takes the place of research and speculation.

Introduction

The Open Design School, a learning platform for the 21st century

The Open Design School project was born as part of the cultural program of Matera European Capital of Culture 2019. It was conceived as a strategy for maximising the long-term benefits of the ECoC programs to the citizens of Matera, in the hope that the process of preparation for this major international event could in itself become an opportunity for developing new networks and new economies within the city, as well as between Matera and other cities. However, the project is not specific to Matera. It is intended to offer an alternative to the “outsourcing” and traditional public tender process in any city where there is an opportunity to do work, public or private, and the desire to turn this work into a formative process for the citizenship, a generator of new economic opportunities and a platform for the active, collective reengagement of public space.

Although it is conceived as an institutional model that is not place-specific and can operate in any context, the Open Design School as a is directly inspired by the challenges and opportunities facing Matera, a city expected to host half a million visitors between now and 2019. Matera2019 is an exciting opportunity to revive the creative industry of Matera, a city with a long tradition in furniture design which is now in crisis, as a creative engine not just for the South but for all of Europe.

Why?

In recent decades, one of the pillars of twentieth century Italian cultural identity - the design industry - has experienced a deep crisis. Although the causes are many and complex, the consequences of the collapse of the "craftsmanship economy" - a particularly significant component of the Italian economy throughout most of the 20th century, driven by tradition and pride in local specialisms, a complex and widespread culture of "making things" ranging from ubiquitous and highly skilled carpenters and blacksmiths network of "distretti produttivi", or productive districts, in which advanced technology and craft converge - are clear: a loss of contact with the basic act of "making things" which has always been a point of pride of Italian culture, and that favored a highly creative and artistic approach to industry.

Additionally, one can argue that the conditions of this kind of creative work has shifted. The drive for the expansion of marketplaces towards total integration on a global scale is reflected on the one hand in an increased complexity of manufactured products and a need to economize on this complexity through a search for economies of scale, and on the other a contraction of the portion of the design and manufacturing process any single individual or company is responsible for. This hyper-specialization, in which in order to survive the designer/craftsman/manufacturer must become increasingly entrenched in a specific niche or field, inevitably increases the distance between creative subjects and their final output, similarly to the way in which worker on an assembly line inevitably

becomes specialized in a certain action or process, separating her or him from identifying meaningfully with the final product.

The Open Design School is not a nostalgic attempt to rewind the clock to a glorious past in which European economy was a leader in manufacturing. It is rather an attempt to find a new future for that tradition, reframing it within the context of the 21st century's networked culture and economy. As such, the Open Design School is an attempt to formalize into an institution the principles of "open culture", with particular emphasis on the role of design as a form of collaborative cultural practice in a process of community development.

Why we need an Open Design School

In Italy, as in most other developed economies throughout Europe and elsewhere, the 20th century was a century of profound change.

Globalisation brought material abundance and international standardisation, but also stagnancy and unemployment; universal education brought general literacy, but ultimately failed to reduce inequality; industrialisation brought wealth and efficiency in production, but also disrupted centuries-old social patterns structured around the practice of making things. At the beginning of the 21st century, throughout the "developed world", comparative material wealth goes

hand in hand with an increasingly disengaged relationship with the process of production. The simple, primordial act of making things, of taking control of one's environment - formerly one of the distinguishing features of a country like Italy, famous for being the custodian of a significant proportion of the world's artistic heritage - is regarded as risky, complicated and best left to professionals.

As a consequence, a sense of deep disengagement separates citizens from their civic realm, disincentivizing them on multiple levels from the possibility of direct action towards its improvement. By the same token, a lack of confidence in their creative abilities permeates citizens in general and the younger generations in particular. The rise of the maker movement and the popularity of fab labs is perhaps an early indication that this generational crisis has reached an apex and that the pendulum might now be preparing to reverse its course, but such is the vastity and complexity of the econo-bureaucratic apparatus disincentivising individuals from substituting their own efforts to the convenience of readily available products and services that few take the trouble.

One of the primary methods that can be used to address this issue is to create and maintain the "climate of confidence" which has an integral role in the framework. Not everyone is going to become a designer or an electrical engineer – and it is not the vocation of these spaces to encourage them to. However, a form of sociality structured around collaborative creativity is crucial to cultural innovation and experimentation. The goal of many fab-labs is to provide training for an assortment of techniques in a supportive environment that fosters creative risk-taking.

“For newcomers and long-term project holders alike, participation in community life is another significant aspect contributing to increased self-confidence and individual creativity. Teamwork is a natural by-product at a Fab lab because each individual has his or her own special area of expertise (electronics, woodcutting, sewing, or the simple desire to learn and participate). Peer learning is a common approach at Fab labs. Intra- and inter-Fab lab exchanges are common, with co-operative projects drawing on the skills and expertise of users from different labs¹”.

Questions around the validity of institutionally-sanctioned learning are not new, and have been questioned for centuries. Leonardo himself referred to himself as *omo senza lettere* — an “unlettered man” — because he had not received the kind of liberal arts schooling that led to the university. He himself argued it was his lack of indoctrination into the reigning dogma taught in these institutions that liberated him from mental restraints. Unimpeded by the accretion of misconceptions that had fogged the lens of the educated, Leonardo was able to ask key questions and seek fresh answers. Although he could not quote learned books, he promised, *“I will quote something far greater and more worthy: experience, the mistress of their masters.”*

So what does the Open Design School actually do?

The Open Design School pilot project in Matera will establish a research, design and production laboratory embedded within in the city. The primary purpose of this

¹ French document (ADD REF)

program will be to provide Matera European Capital of Culture 2019 with a workshop through which the city will be able to self-produce the infrastructure necessary to enact the programs throughout Matera and Basilicata. Instead of relying on specialized companies and a traditional tender process, which typically leads to a "parachute in-parachute out", one-size-fits-all approach to infrastructure and services, the Open Design School will bring together highly capable teams with multidisciplinary backgrounds combining all the skills necessary to carry out all phases of a project, from conception to production, locally. It is our intention to outsource as little hardware as possible for the programs of Matera2019, using the need for stages, signage, lighting, sets, public furniture, transportation and temporary accommodation as an opportunity for collaboration and the exchange of skills. The Open Design School, in other words, will mobilize networks of craftspeople in Matera and throughout Europe to collectively examine new ways of solving old problems while establishing a paradigm for re-embedding the tradition of making things into the heart of a city.

On a practical level, the Open Design School will operate much like a design office or a business: its participants will operate much as employees, carrying out a professional service for a client, who will provide a brief and a budget. It will typically seek to follow a project through from beginning - conceptualisation and design - through to production. Although its early clients are likely to be primarily Matera2019-related, the ODS intends to work with other clients, including private businesses, individuals, public administrations, etc.

The project's main goals are:

- Local economic regeneration through an emphasis on learning and innovation.
- The use knowledge and traditional craft experience, combined with new processes and methodologies made possible by new technologies.
- Strengthening of international networks, and cultural and professional exchanges.
- To seed into the city's culture - at all levels, from student to professionals to the pensioner - an awareness of design's potential and importance in improving the quality of community life.

The Open Design School is therefore:

- An enabling device through which towns, cities and community groups can respond directly to their collective environmental needs
- A social network and antidote to the bubble syndrome of professional over-specialisation, through which disciplinary boundaries become inhibitors of innovation: participants are actively encouraged to solve problems they weren't trained to solve.
- A paradigm for a new platform of learning based on informal exchange and collaboration rather than structured, top-down transmission of information.

How will it be structured?

The Open Design School is conceived as a network, a thinktank and a public institution of learning for the study of design in a spirit of creative and generous synergy between art, science and technology. It is proposed as an entity built around the idea that knowledge sharing should be central to city life in any city. For this reason, the school will not be structured through traditional vertical hierarchies that separate the "professors" from students. It will be rather a horizontal platform where all will learn and all teach: a place of interdisciplinary exchange in which participants learn through prototyping and testing. It will bring together designers, artists, craftsmen, web developers, graduates, students, professionals and academics from both the local context that from Europe. It will be a place of radical innovation in the field of art, science and technology, a place without rigid hierarchies for learning and experimentation in an atmosphere of mutual enrichment.

Finally, it will offer young designers the opportunity to devote themselves to research, theory and to the formulation of a wide range of possible futures and, at the same time to gain experience in the field, without abandoning their cities and their communities.

Future

The Open Design School will be the first design platform in Europe conceived from scratch around the principles of "open culture", with particular emphasis on the role of design as an important form of cultural practice in a community reconstruction process. Inspired in part to the models of the Bauhaus, Black Mountain College, Taliesin West, and other design and architecture schools where the practice has an equal emphasis on theory, it is a school where you learn by doing, in a continuous creative exchange process between art, science and technology.

The Open Design School is based on the idea that knowledge sharing should be central to civic life in any city. For this reason, the school will not be structured through traditional vertical hierarchies that separate teachers by students. It will be rather a horizontal platform where all teach and learn all: a place of interdisciplinary exchange in which you will learn through prototyping and testing. Will bring together designers, artists, craftsmen, web developers, graduates, students, professionals and academics from both the local context that from Europe. It will be a place of radical innovation in the field of art, science and technology no rigid hierarchies, in an atmosphere of mutual enrichment. Finally, it will offer young designers the opportunity to devote himself to research, theory and to the formulation of a wide range of possible futures and, at the same time to gain experience in the field, without abandoning their cities and their communities.

The Open Design School born and developed as a collaborative network that connects urban centers across Europe by implanting in their urban social space centers open to all, dedicated to the exchange of knowledge around the design. Depending on the projects that will form multidisciplinary work teams tackles. The teams will make up roughly a third of the site participants, one third of the country where the project is located, and a third participants from other European countries.

What the Open Design School is

The Open Design School is first and foremost a platform for the creation of a community based on the values and ideals for the future of Matera, Italy and Europe outlined in the Matera2019 bid-book. It sets out to mobilise people of all ages and backgrounds to usefully contribute to the implementation of an ambitious cultural program while learning new skills and meeting new people. In doing so, it borrows elements from a broad range of existing institutional typologies - from the university, the design studio, the workshop, the research institution, even the farm and the parliament.

In a historical context of austerity and waning funding for arts, culture and education, we are compelled to think creatively about how to fund learning, experimentation and research beyond the prescribed frameworks. Thanks to several decades of success, the European Capital of Culture program mobilises vast resources, many of which are related to the purchase or rental of hardware, the upgrading of infrastructure, the improvement of public

space, the production of media and promotional content, the design of temporary and permanent interventions related to cultural activities.

The Open Design School does not propose to change this - it simply suggests that these necessary investments can have a secondary purpose as an opportunity for learning and engagement on the part of citizens themselves.

The Open Design School is intended as a model or paradigm that will be incubated in Matera but can and should be replicated elsewhere. Is a paradigm for an institution that builds self-reliance, engages citizens, and rebuilds confidence in communities. It is a scalable model that is designed to adapt from just a handful of people working on a simple project to dozens spread across multiple teams. If it were to succeed in establishing itself as a decentralised network of independent platforms it would benefit from network effects both in terms of visibility and its effectiveness in developing a repository of knowledge and open source designs.

What the Open Design School is not...

The Open Design School is not a degree-awarding institution and does not offer any kind of certificate. Its value is in the benefit it brings to participants in the form of new knowledge, and to the public in terms of new infrastructure and services.

The Open Design School is not specifically intended as a way of saving money - many of the projects and designs

it undertakes could likely be more cheaply obtained via conventional means such as tenders, rentals or private commissions. We believe however that many aspects of a project's legacy and value cannot be measured in economic terms alone, if at all. The Open Design School aims to introduce a more holistic, long-term attitude to the process of cultural investment, seeking to emphasise the benefits of secondary impacts such as skills creation and networking as much as the immediate goal at hand. The Open Design School is not a volunteer program - its participants are professionals who are paid to carry out work as set out in the briefs attached to each project.

Some Principles

These basic principles - which are provisional, and intended to be updated - offer a more granular insight into the Open Design School's proposed structure and philosophy. Many of these points will deserve further examination, comment and development as practical experience is acquired.

1.

THE OPEN DESIGN SCHOOL IS NOT **A SCHOOL.**

Antithetical as this statement may sound, it is critically important to draw a distinction between the ODS and conventional design schools in which - even in the most progressive cases - knowledge tends to be transmitted “vertically” from skilled individuals who are “experts” in their field down to unskilled subjects, the students. In addition to this, the concept of “school” generally implies a sandbox environment that is safely separated from reality of practice. In the ODS, learning occurs horizontally, through exchange between skilled participants whose abilities are applied to solving real-world problems and challenges through a hands-on process of making.

2.

THE OPEN DESIGN SCHOOL IS A DESIGN STUDIO.

In many ways, the ODS is more akin to a multidisciplinary design practice than a school. Its members are skilled professionals who are recognised and experienced talents in their fields, and form a team which is highly suited to complex research, design and innovation projects that require rapid immersion and wide vision. The ODS does not produce abstract speculations or research - it is a platform for the production of concrete solutions to specific problems set by paying clients.

3.

THE OPEN DESIGN SCHOOL IS A FACTORY.

As technologies become more advanced and professions become more specialised, the designer tends to become more and more distanced from the actual act of making. Over time this distance results in a loss of familiarity with material behaviours, production processes and ultimately a more impersonal, arms-length attitude towards the process of creation, which in turn results in less inspired designs. The ODS intends to short-circuit this process by eliminating the distinction between design and making, transforming production an integral part of the design process.

4.

THE OPEN DESIGN SCHOOL IS A PLATFORM FOR LEARN

Unlike a school, which immediately evokes the idea of a place specifically intended for “young people”, a learning platform is intentionally age-agnostic. The ODS is intended as a way to address the unjust and counterproductive notion that “adults” are barred from learning, exchanging knowledge and meeting people.

5.

IN THE OPEN DESIGN SCHOOL,
EVERY PARTICIPANT IS A TEACHER
AND
EVERY PARTICIPANT IS A STUDENT.

Generosity with one's knowledge and the curiosity to learn are the two fundamental prerequisites for becoming part of the ODS. For this reason, people who are both curious generalists (skilled at a broad set of valuable things—the top of the T) and also experts (among the best in their field within a narrow discipline—the vertical leg of the T) are the most suited to becoming team members as these qualities tend to balance each other out. An expert who is too narrow has difficulty collaborating, and a generalist who doesn't go deep enough in a single area ends up on the margins, not really contributing as an individual².

6.

A TEAM CAN BE EFFECTIVE WITHOUT A LEADER.

Simple as this statement is, this is obviously one of the most difficult principles to successfully implement without triggering collapse due to group dynamics and the human impulse of self-assertion. A fundamental step in achieving a functioning team is to recognise that all social groups, whether formal or informal, have some sort of structure, and that structure can be designed, and should be mutable over time. It's also important this structure is explicit rather than implicit.

7.

BRINGING IN A NEW TEAM MEMBER IS THE SINGLE MOST IMPORTANT DECISION AT THE OPEN DESIGN SCHOOL.

Given the operating structure, each new member can either fundamentally enhance or compromise group dynamics. It is preferable for teams to expand slowly rather than suddenly, allowing group dynamics to adjust and giving people time to understand what personalities and skill-sets will complement the team.

8.

ONE THIRD
OF EACH TEAM
IS FROM THE CITY OF
MATERA.

Achieving a balance in backgrounds and places of origin is as critical as balancing skill-sets. Making a point of selecting no less than a third of the team members from the local community is not only a way of making sure the school (and Matera2019) doesn't become alienated from the place it is intended to serve; it is also a way of ensuring teams can work efficiently, have access to local knowledge and do not get caught in the trap of operating as outsiders.

9.

ONE THIRD
OF EACH TEAM
IS FROM
ITALY.

Drawing a third of the participants from the rest of Italy ensures Matera2019 fulfils its aim to reinforce connections with other cities, and allows for a balanced selection of talents that might not be present in Matera.

10.

ONE THIRD
OF EACH TEAM
IS FROM THE REST OF
THE WORLD.

As a European program intended to tie Matera into international and interdisciplinary networks, selecting a third of the team from international applicants (European and non) allows the ODS to fully realise its potential as a global network, bringing new long-term connections and opportunities to the community of Matera.

11.

**TEAM MEMBERS
ARE CREATIVE PEOPLE OF
ANY AGE AND FROM
ANY BACKGROUND.**

Another way in which the Open Design School differs from a conventional design school is the composition of its teams. Although the type of work at the ODS is probably most appealing to young, energetic individuals, the quality of its output (and the social balance of the teams) will benefit enormously from diversity in age, culture and background.

12.

THE BEST IDEAS
ARE BORN
AT THE DINNER TABLE,
NOT IN
THE MEETING ROOM.

As an institution devoted to reciprocal enrichment through interaction, the ODS recognises that not all problems can be solved around a meeting table. Casual conversations and chance encounters can be as productive in achieving a breakthrough as marathon work sessions.

13.

THE OPEN DESIGN SCHOOL IS NOT JUST FOR “DESIGNERS” - AT LEAST NOT DESIGNERS IN THE CONVENTIONAL SENSE OF THE WORD.

The Open Design School is a galaxy of talent—architects, accountants, pattern-makers, artists, electricians, photographers, sculptors, builders, editors, carpenters, lawyers, filmmakers, community workers, psychologists, writers, illustrators metalworkers, engineers, data analysts, animators and more.

14.

MEMBERS OF THE OPEN DESIGN SCHOOL EXCHANGE KNOWLEDGE THROUGH PRACTICE.

The ODS aims for the atmosphere of an atelier where manual activity takes precedence over sitting at computers. The aim of the school is to physicalise the learning experience as much as possible, and encourage continuous exchange and dialogue, testing ideas as one goes along and adapting the outcome on the fly. The ODS tends to challenge theoretical dogma empirically rather than accepting it as established fact.

15.

THE MOST IMPORTANT RESOURCE FOR THE OPEN DESIGN SCHOOL IS **LOCAL KNOWLEDGE.**

One of the greatest resources in terms of the ODS's effectiveness is local knowledge, particularly in order to counteract the "parachute-in" syndrome. In order for it to be effective, it is crucial that the ODS is not perceived as an outsider organisation by the community.

16.

THE OPEN DESIGN SCHOOL FAVOURS SIMPLICITY OVER COMPLEXITY.

Inspired by a philosophy of frugality and pragmatism, the ODS favours simple and elegant solutions that avoid needless aesthetic expressiveness. The way in which a structure or product is intended to perform should dictate its appearance more than anything else.

17.

THE OPEN DESIGN SCHOOL PRODUCES **REAL-WORLD PRODUCTS, NOT ABSTRACT IDEAS.**

The projects the ODS engages in should have a clear brief and a real prospect of actual implementation. This is one of the key differences that separates the ODS as an atelier from the typical school, which works on the principle of “simulation”.

18.

THE OPEN DESIGN SCHOOL WORKS IN AND FOR THE PUBLIC DOMAIN.

The process described in this manual is not suited to all types of projects; it probably works a lot better for developing an urban wayfinding system than designing a private luxury villa. All projects of the ODS enter the public domain on completion and can be borrowed, modified and reused by anyone else.

19.

THE OPEN DESIGN
SCHOOL
WORKS IN TEAMS.
EACH TEAM
WORKS ON A
SPECIFIC PROJECT.

The “team” is the operating unit of the ODS. Each team is assembled according to the skills required to complete a project and can evolve, adding new members or downsizing as the team sees necessary to achieve completion.

20.

WHEN A PROJECT ENDS, THE TEAM IS DISSOLVED.

When it completes a project, the team's work is finished. Its members can join another team if there is a need for them.

21.

**THE ONLY METHOD IS
WORK. IF YOU WORK
IT WILL LEAD TO SOMETHING.**

The ODS works empirically, testing ideas to see how they work and adapting them as it goes along. Having the flexibility and openness to adjust on the fly in response to the environment leads to a more “human” design.

22.

THE OPEN DESIGN SCHOOL
IS A SOCIAL SPACE,
OPEN TO THE CITY.

It is important the ODS does not become isolated from its context. Holding events, lectures, performances, activities for children, workshops and classes regularly in the space helps to make the community feel ownership not just of the space itself, but also the designs it produces.

23.

THE WORKSHOP IS THE HEART OF THE OPEN DESIGN SCHOOL.

The ODS should feel more like an atelier than an office - the beating heart of its activities is the workshop, not the office.

24.

MEMBERS DON'T WORK ALONE.

Sharing the working experience intensifies the benefits of reciprocal learning, and is also more productive. It is safer, and leads to a more convivial working atmosphere. Learning to work together effectively is one of the primary aims of the ODS.

25.

EVERYTHING IS AN **EXPERIMENT.**

The ODS does not simply look for the easiest solution. Each project is an opportunity to directly challenge conventions and build better city for the benefit of all its inhabitants. In the process of creating such a city we are constantly shifting back and forth in between concept and action in order to test our ideas and further improve them.

26.

FAILURE

IS A NECESSARY STEP
TOWARDS

INNOVATION.

The fear of failure is one of the greatest inhibitors of innovation. Recognising it as a necessary and useful stage in the process of challenging conventions and developing new attitudes towards the city liberates teams to think more ambitiously about their work. Screwing up is a great way to find out that assumptions were wrong or that your model of the world was a little bit off. The ODS continually looks for ways to test beliefs. It should never be afraid to run an experiment or to collect more data³.

² From the Valve Employees Handbook

27.

NOTHING IS TOO
BIG OR COMPLEX
FOR THE RIGHT TEAM
TO BUILD.

Building really strong teams is hard, but the right team can be phenomenally effective in solving even the most complex problems.

28.

THE OPEN DESIGN
SCHOOL ONLY BUILDS THINGS
THAT THERE IS A
REAL NEED FOR.

The ODS is a tool for communities to improve their environments and is effective primarily where there is a real need. The sense of civic engagement and “usefulness” is the main driver that animates its work, and without that sense of commitment it is unlikely to produce useful results.

29.

ALL WORK SHOULD BE COMPENSATED.

The ODS is conceived as a learning platform, but first and foremost it is providing a service to the city. Members of the teams are professionals whose work is recognised as having value and is therefore compensated. Compensation is equal for all participants.

30.

LEARNING SHOULD NOT END AT SCHOOL OR UNIVERSITY.

In its role as a platform for learning, the ODS is an attempt to break down the notion that learning is something that takes place solely during a predefined period of life. The ODS argues for recognising the value of learning that never ends, especially in a time of accelerated technological change such as the present.

31

NO TURISTS.

In order for a team to be truly effective, the commitment on the part of all its members should be equal, and total. If some members participate on a part-time basis, or to only be overly selective in what aspects of the ODS's work they participate in, this will likely to undermine team spirit.

32.

THE OPEN DESIGN SCHOOL DESIGNS OPEN SYSTEMS.

"Modular construction systems provide a circulation of parts and components. Our ambition is to create puzzles instead of static objects. The system should generate objects of which it is not entirely clear anymore who designed them. An object evolves as it is taken in hands by more designers."

(From OpenStructures, www.openstructures.net)

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"WE'RE BREAKING ALL OF THE RULES.
EVEN OUR OWN RULES.
AND HOW DO WE DO THAT?
BY LEAVING PLENTY
OF ROOM FOR X QUANTITIES."

(John Cage)

These rules are there to be broken, amended, adapted and rewritten. There is no substitute for experience and collective intelligence.

34.

NOTHING IS MORE IMPORTANT THAN **SAFETY.**

As a space for building things - some of which can be very large and complex - there will naturally be (legitimate) concerns about safety. Our first duty is towards the safety of all, the public's and our own: no project, event or activity is more important than the collective protection from danger. Secondly, incidents or reckless behaviour can cause these concerns to become an inhibitor to our ability to operate effectively. All members of ODS have a collective duty to recognise the critical importance of security before everything else. Many of the fields the ODS works in are highly specialised and professionalized, and tend to "lock out" non-professionals. Prioritising individual and collective safety at all stages of a project, from development to public use, is a key precondition for the ODS being able to operate freely in the long term.

Precedents

R. Buckminster Fuller AT Southern Illinois University of Carbondale

Carbondale IL, USA

1955–1970

“From 1955 to 1970, the newly founded Department of Design at Southern Illinois University in Carbondale launched a series of overlapping modes of experimental teaching and communication. The industrial designer Harold Cohen had been recruited away from the New Bauhaus in Chicago (where he had just become head of product design) to be the first director of the school. He immediately took advantage of being off the usual map to challenge normative modes of education. The students were constantly thrown even further off the map. The first exercise—called “Who Are You and What Are You Thinking?”—simply dropped them off in the isolated wilderness for three days with just \$10 and an emergency whistle. The idea was to understand through their absence the human extensions that they would be designing for the rest of their lives. Back in the school, design projects quickly took the form of applied research tasks, such as emergency housing in cardboard, and soon students were working on global issues. [...]

A dome house was built for him a year later and highly promoted to simulate his residence, but Fuller’s presence remained that of a permanent nomad, dropping in for eight-week workshops in between similar workshops he was holding at other schools across the continent.

Starting in 1948, he had effectively invented a new kind of school made up of his parasitic workshops within other institutions, a kind of parallel processing machine. In 1961, he tried to expand and formalize this network, treating Carbondale as the central hub of a global research net. At the UIA congress in London, he called for all design schools in the world to abruptly stop teaching studio for a decade and work together on a definitive image of global resources, based on the research being done at Carbondale. [...]

A month before the announcement in London, Fuller had made a key public lecture suggesting that the university itself should move into a dome without any internal divisions. It started with his calculation that he had been teaching 50,000 students in 106 different universities and ended with his arguing—in terms very close to those used today about online education—that the classroom of the future would be exponentially larger and electronic, using computers and two-way television.”

(Excerpts from a text by Mark Wigley for Radical Pedagogies: Reconstructing Architectural Education by Beatriz Colomina, Britt Eversole, Ignacio G. Galán, Evangelos Kotsioris, Anna-Maria Meister, Federica Vannucchi with other PhD Students of the School of Architecture at Princeton University.)

Bauhaus
Weimar, Germania
1919-1933

"The Bauhaus represented a school of thought founded on the belief that the difference between industry and craft is due, rather than to the different nature of the tools used in the two sectors, to the different types of organization of work in two areas: on the one hand the division of labor; on the other, the total control of the entire production process by the single craftsman. [...]

Trade and industry, in particular, began to look with interest to the artists. There was a sincere desire to integrate the functional efficiency with beauty and formal elegance, these qualities, which the technician was not able to provide. The industry then began to purchase the artists' projects. But these paper patterns proved unreliable: the artist was too divorced from reality, too abstract and too inexperienced for the technical aspects of the production is to be able to reconcile his own conception of the poem co industrial process. On the other hand, the industrial and the coach were not farsighted enough can understand that the fusion of form, efficiency and economy who wished to obtain in a single product was not feasible if not integrating the entire production cycle timely and accurate collaboration of an artist with the requisite skills. As a designer of this type did not exist, it was necessary to set the future formation of the artistic talents on a solid practical basis to acquire the factory environment, combined with a precise knowledge of the design laws.

[...]

The Bauhaus workshops were in fact places where they were planning new models for news articles or improved, with a view to mass production, existing prototypes. To create forms-type that would meet all the technical requirements, aesthetic and commercial needed a team of quality first, a group of people with a solid background of general culture, broadly competent on both the practical and mechanical design side, and on that of his theoretical and formal laws. "

(Text excerpted from "The New Architecture and the Bauhaus", Walter Gropius, 1935.)

Black Mountain College
Black Mountain NC, USA
1933–1957

Black Mountain College was founded in 1933 on the grounds of a YMCA summer camp on the outskirts of the small Western North Carolinian mountain town of the same name, about twenty miles from Asheville. With minimal structure born of both ideological inclination and economic necessity, Black Mountain's experiment in education was ground-breaking and brief. [...]

If the College was a "galaxy of talent," to use a semi-ironic phrase by former student Ray Johnson, as an institution it was also characterized both by periods of bitter dispute and evanescent harmo-ny. Experimentation, and its close relative interdisciplinarity, were key themes of this conversation. Seemingly everyone who attended Black Mountain College shared a desire to experiment, but they did not necessarily agree on what this meant. In particular, competing approaches to experimentation were advanced by the College's most notable faculty members during its heyday in the mid 1940s to early 1950s: the visual artists Josef and Anni Albers, composer Cage, and architect-designer Buckminster Fuller. Simultaneously, visual artists such as de Kooning, Kline, and Motherwell, and poets such as Olson and Creeley, were developing visual and literary rhetorics of expressionism that subsequently came to dominate the post-WWII cultural landscape. In contrast, the vocabulary of the test developed at Black Mountain experienced a somewhat deferred reception, coming to prominence only later in the 1960s in part through responses to the work and pedagogy of figures

like the Alberses, Cage and Fuller. [...]

The fact that Black Mountain College is frequently cited as a source in contemporary music, visual arts, and architecture practices that explore what experimentation can mean today, suggests that working “experimentally” in a cultural practice can foster a shadow venture: using the academic microcosm to pose models of testing and organizing new forms of political agency and social life.

(Excerpts from a text by Eva Diaz for Radical Pedagogies: Reconstructing Architectural Education by Beatriz Colomina, Britt Eversole, Ignacio G. Galán, Evangelos Kotsioris, Anna-Maria Meister, Federica Vannucchi with other PhD Students of the School of Architecture at Princeton University.)

**Global Tools - Ettore Sottsass Jr., Alessandro Mendini,
Andrea Branzi, Riccardo Dalisi, Remo Buti, Ugo La
Pietra, Franco Raggi, Davide Mosconi, Archizoom,
9999, Superstudio, UFO Italia
1973-1975**

“Global Tools was a decentralised experimental educational program that was proposed as an alternative to the institutional model of the university. [...] The three notes for a didactic typology published in Casabella No. 379 detail the research, which, according to Superstudio, would call for “life as permanent global education” with particular reference to Deschooling Society by Ivan Illich, a text in which the Austrian pedagogist and philosopher states that the training of young people never happens in the school context but elsewhere, in times and places beyond the control of the school. Along the same lines, Andrea Branzi writes: “From the school as from the prison, nothing good will ever be obtained: all those who believe that one day a school can exist that will teach how to make a revolution do not understand this truth. The same can be said of the city that functionally formalizes society at the point of its social transformation, immediately presenting itself as an autonomous, non-transformable cultural and generative legacy: history has taught us that the city can never be a revolutionary instrument if not through its own failure (barricades). [...]

Global Tools was imagined as a school of arts and crafts and an anti-disciplinary attempt to establish a platform for the free exchange of different ideas and experiences: a place suited for the stimulation of individual creativity and the development of human potentialities. All within

the more general perspective of continuing education, seen as “the only possible goal beyond the end of institutional- ized education.” This initiative, intended to open up a period of experimentation among classes and students, was to have implemented a wide range of innovative processes in its functioning, from the viewpoint of both educational tools and also that of content. The educational tools would have to coincide with the direct experience of techniques and construction, the recording of original work processes, and with direct frequentation of the places where such experiences might take place. “A school of formation, not of information.” The fundamental idea of Global Tools would thus be that of giving rise to experimentation capable of constituting an advanced laboratory for industry (into which innovative professional contributions would be brought, as well as the input of culture), and an example of new kind of education without students and without teachers.”

(Text excerpted from “Global Tools 1973-1975: Towards an Ecology of Design” by Silvia France-schini e Valerio Borgonuovo, SALT, 2014.)

The Public School

los angeles, New York, Berlin, ...

2007 - present

The Public School is a school with no curriculum. It is not accredited, does not give grades, and has no affiliation with the public school system. It is a framework that supports autodidactic activities, operating under the assumption that everything belongs to everyone. The public itself offers the courses, and everyone can decide whether to participate or not.

The public school was started in Los Angeles in the basement of the Telic Arts Exchange in 2007. This is how it describes its activities:

"A curriculum is the set of courses and programs offered at a school or university. It's the content of what is happening. It's true, the school can not exist without content. But it may very well exist without an institutionalized program that decides which content is being offered.

The word curriculum, derived from the Latin root, currò, which means integrated into a program of study is the idea of a quick movement through a body of knowledge in the context of a school. "Running or move quickly." is a race. To do without a curriculum would be to move in groups, perhaps slowly, and departing from the course whenever it seems appropriate.

The trial of those who decide the curriculum is increasingly driven by the market. It replaces its objectives to ours. It does not allow the possibility that we do not know what our objectives. It excludes the opportunity to change our mind and learn something new. It neglects things that can only be realized slowly going in and out of an idea, action

or practice, or a whim, with a profitable result in mind. A school without a resume can remove those constraints, which often border on coercion, and by doing so to carve out a kind of vacuum that needs to be filled.”

Taliesin West School of Architecture
Arizona, USA
1937 - present

The Frank Lloyd Wright School of Architecture was formally launched in 1932, when twenty-three apprentices came to live and learn at Taliesin. The sources of this educational philosophy have roots that date back well beyond the 30s.

In 1931, Frank and Olgivanna Lloyd Wright circulated a statement to an international group of distinguished scholars, artists and friends, announcing their plan to form a school at Taliesin in Spring Green, Wisconsin to "learn by doing." The instruction at Taliesin integrates painting programs, sculpture, music, theater and dance "as essential aspects of architecture."

Each of these elements of the fine arts is part of a broader education: "The

Dramatic Arts would have studied with the essential structure of all great literature, "while" Music is the study of sound and rhythm as an emotional reaction to the character of nature." Students, or "apprentices", complete their education in the spirit of Tolstoy's "What to do": "The whole power work and cooking for the student body as much as possible should be done by itself. . . work in the gardens, fields, laundry, kitchen,

cleaning ... all you need to be responsible in turn among students according to a plan in which all do their part "

At first, Frank Lloyd Wright had few commissions through which to teach apprentices, and put them to work in the construction, operation and maintenance of the school. Apprentices extract the stone, and sift the sand from the

Wisconsin River adjacent to make mortar. They cut the trees and sawing them into lumber, and along with the brick, build the largest study, now in the National Register of Historic Places, which still serves as the learning center on campus and spring as an active architectural firm.

Valve Software
Bellevue, Washington, USA
1996 - present

“Hierarchies are great for maintaining predictability and repeatability. They simplify the planning and make it easier to control a large group of people from the top down, which is why military organizations rely on them so heavily. But when an entertainment company has spent the last decade that recruit the smartest talented people on Earth, tell them to sit down and do what they're told is to cancel 99 percent of their value. We want innovators, and this implies the establishment of an environment where they can flourish.

That's why Valve is horizontal. It's our way of saying that we have no management, and no “lead-er”. We have a founder/president, but even he isn't your boss. This company is yours: you have to bring opportunities and steer it away from risk. You have the power to give the green light to new projects. You have the power to declare a job done and ship the finished products.

Every company will tell you that “the customer comes first”, but here this statement has a weight. If you are thinking, “Wow, this all sounds like a lot of responsibility,” you are right. And that's hiring a new person is absolutely most important that you will ever do at Valve. Whenever you interview a potential employee, you will need to ask not only if it is talented, but even if he or she is able to direct this company, because that's what he'll do. [...]

We hear that people at other companies devote a percentage of their time in self-directed projects. A Valve, this percentage is 100%.”

(From the videogame company Valve Software's manual for new employees. In 2016 Valve, which has about 400 employees, recorded the highest profit per employee of any work American companies, including Facebook, Apple and Google).

**Sigma group Timisoara,
Romania
1969-1980**

The Sigma Group was an experimental group active in Timișoara between 1969-1980 and consisting of Ștefan Bertalan, Lucian Codreanu (matematician, from 1970), Constantin Flondor, Ioan Gaita, Elisei Rusu (shortly), Doru Tulcan (1969-1978). Its programme was both artistic and pedagogic; its members were teachers at the Fine Arts Academy in Timisoara. The group put emphasis on teamwork and interdisciplinarity (integrate mathematics, cybernetics, bionics, psychology, and architecture in the arts), used variety of media (paper, cardboard, wood, aluminum, glass, stiplax, synthetic materials, photography, film), and was influenced by Bauhaus, constructivism and new trends in art and architecture.

According to Sigma, "If in the past, in a society with relatively stable structures, knowledge transfer from father to son was the dominant model, nowadays we must emphasize the capacity for renewal and rehabilitation. The mutation in education consists of a shift of interest via the transmission of data for the development of skills. The teacher is no longer the sole mediator of the transfer of knowledge from one generation to another, but it is first and foremost the coach of personalities actively integrated in the programming process, the conduct and execution of social progress.

In this situation of education in general, you can grope to define a few elements related to artistic training. Most likely, the ethics of the modern "creator" must undergo a fundamental change since the creator associated with

other energies of different domains of human activity; finds the call to invest his intelligence in shaping the entire space where he and his human companions are made; It opens communication "valves" to benefit the construction of knowledge with a polished effort that we have defined as the pedagogy."

(Excerpt from The harmony of creation-education, Constantin Flondor, 1970)

**Institute for Lightweight Structures at the University
of Stuttgart (IL)
Stuttgart, Germany
1964-1990**

“Based at the University of Stuttgart and housed under the roof of one of his tent structures, the IL was led by Frei Otto from 1964 until 1990. The IL tent, built in a wooded area on the new campus of the university, was an anomaly “among scientific neighbors, who view it as a curiosity, a thorn in the side of exact sciences.” It was here that Otto’s famous models for the German pavilion at Expo ’67 in Montreal and the 1972 Olympics in Munich were designed. The Institute began with just six students, but by 1971, this had increased to 70 as the IL’s experimental reputation brought in young architects from all over the world. The building itself was designed without a definite interior layout, so that groups could assemble and disperse as needed, and seminars were frequently held outdoors. The open teaching organization of the IL attracted a generation eager for alternative methods of pedagogy.

The laboratory environment at the IL encouraged direct experience and playfulness. Student work was largely focused on making and documenting physical models. This ranged from constructing precise measurement models outfitted with tiny gauges, which required intense collaborative work; to playful experiments using materials like eggs, balloons, and shaving foam; to inventing devices to measure soap-film models; to taking field trips to zoos to photograph animals. Otto encouraged new forms of social interaction at the IL: in lieu of a formal teaching

plan there were open discussions and interdisciplinary research groups. [...]

Following this vision for interdisciplinary cooperation, Otto facilitated collaboration between architects, engineers, biologists, anthropologists, and historians. Otto's insistence on large-scale orchestrated research and experimentation as a form of architectural practice remains almost unparalleled in architectural culture.

(Excerpts from a text by Daniela Fabricius for Radical Pedagogies: Reconstructing Architectural Education by Beatriz Colomina, Britt Eversole, Ignacio G. Galán, Evangelos Kotsioris, Anna-Maria Meister, Federica Vannucchi with other PhD Students of the School of Architecture at Princeton University.)

The Arezzo Course

**Ludovico Quaroni, Giancarlo De Carlo, Aldo Rossi,
Manfredo Tafuri**

Arezzo, Italy

1963

For two weeks, the Hotel Continentale hosted workshops, seminars, and debates for students from different cities: Turin, Rome, Milan, Venice, Naples, and Palermo. The seminars were held on diverse topics such as “mobility and integration,” “the politics of development,” “local public institutions and planning,” “legislative aspects of urbanism and planning,” and “the organization of the school of architecture.” Anticipating that the Corso would become an annual event, they planned for each team to return to their home regions to conduct field research before reconvening in Florence five months later.

However, the teams argued so fiercely that they never met again. [...] Bruna Gabrielli, a student in the Milanese group, recalls: “The Arezzo event was...intense. Dinners were occasions to manifest hostility...and to select camps between the opposing parties...I remember the rage with which the clashes took place.” [...]

Arezzo was set up by Quaroni as an inter-regional, inter-generational experiment outside of the academy, an event that aimed to discover a new interdisciplinary nexus of urbanism to be brought back into the schools. In the end, its historical significance lay in its unleashing of a new generation, as well as a new opposition between an outward looking, interdisciplinary approach and an

intense architectural introspection, which would later claim disciplinary autonomy for the field.

(Excerpts from a text by Joseph Bedford for Radical Pedagogies: Reconstructing Architectural Education by Beatriz Colomina, Britt Eversole, Ignacio G. Galán, Evangelos Kotsioris, Anna-Maria Meister, Federica Vannucchi with other PhD Students of the School of Architecture at Princeton University.)

Hardware

Location

Since the Open Design School is first and foremost a workshop but also incorporates a diverse range of other activities, the choice of location is an important one. Finding the right location will almost certainly involve trade-offs, as some desirable qualities we are looking for in a space may well be difficult to reconcile with others. However, time invested in finding a space that presents a good balance of the following features will be repaid in the long run.

- A lot of time there doing hard work, and there's nothing more The space should be pleasant and uplifting. A lot of people will spend demoralising than working hard in a dark, damp, unwelcoming space.
- It should feel like part of the city, not separate from it. The ideal location is in an mixed-use area with good pedestrian footfall and plenty of other small businesses, shops and studios as opposed to a . It may sound like a cliché, but hiding out in a peripheral industrial neighbourhood with no pedestrian or bicycle access is a sure-fire way to ensure the community - and the participants themselves - never truly engage with the ODS's agenda as a public platform.
- At the same time, the space needs to be sufficiently distant from residences in order to be able to operate effectively without disturbing

the peace of residents. Heavy tools can very quickly make enemies, which can lead to an atmosphere of conflict and shut-down notices.

- The space needs to accommodate a variety of different activities - from a multi-material workshop (wood, metal etc) to meeting spaces, space for public gatherings, informal talks, screenings, performances and dinners. It also needs to reconcile variety of technical requirements - well-ventilated spaces with exhaust systems for routers, a separate kitchen area, sound-insulated meeting areas, office space and shaded outdoor areas.

- A suitable space will have a surface area ranging from 100 to 200 square metres, although size is less important than the suitability of available spaces - a lot can be done with partitions, furniture, platforms and so on.

- The key space is a large central space, which is ideally partitioned, where less noisy, dangerous and/or messy machinery is located.

- Due to ease of use, the laser cutter is often the most frequently used piece of machinery. Jobs can be completed so quickly that many people can use it each day. This should be taken into account, as well as the fact that it requires heavy ventilation.

- In addition to these, spaces are required for computer terminals, workbenches, desks large enough to double as conference tables or carry several laptops, and a break area with coffee machine, snacks, refrigerator, couches, etc.

- A useful reference is the typical plan of TechShops, a network of maker spaces started in San Francisco around 2008. They usually present a large workshop with workbenches, and smaller workshop rooms, each dedicated to a specific type of material (wood, metal, etc.). TechShops also provide space for storage, private workshop space, and a large presentation room. A TechShop is conceived as a cross between a coworking space and a fab ab, and has been successful in operating as a small factory in the cities across the US where it has been set up.
- Other spaces that should be accounted for are: a location for assembly/round table, meeting space, videoconferencing facility, office and kitchen.

Furniture

Furniture such as work benches, cabinets, storage systems, shelves etc should preferably be a universal modular system such as Prokoss by Mobilrot. Systems allow users to reconfigure the space as their needs evolve with maximum ease. These elements should be robust and durable, and although some elements could be built in the workshop itself metal furniture like the Prokoss system is probably a more effective investment. They'll take a lot of beatings throughout their lifetime. For the office, meeting and kitchen spaces, the furniture can relatively easily be self-produced using the equipment available in the workshop. OpenDesk and others offer many designs of desks, tables, chairs and stools that are intended to be self-produced on CNC routers.

Equipment & Tools

Although it isn't possible to predict every kind of tool that will be necessary to complete every future task, the following list of equipment will cover probably 95% of tasks over the first couple of years. Other items can be purchased as an when needed.

Abrasives

- Disk sander, large, pedestal mounted
- Wire wheel, bench mounted
- Vibratory polisher

Signage

- Vinyl cutter, computer controlled

Automotive

- Floor jack and jack stands
- Transmission jack
- Engine hoist
- Battery charger
- Pneumatic tools

Electronics

- Multimeter
- Oscilloscope
- Soldering station
- Power supply, DC
- Signal generator
- Frequency counter
- Variable transformer, Variac

Fabrication

- Cold saw
- Drill press
- Horizontal band saw
- Vertical band saw
- Tubing bender
- Angle iron bender/notcher

Fabrics & Sewing

- Sewing machine, industrial
- Sewing machine, standard
- Embroidery machine, computer controlled

Hand Tools

- Assorted hand and power tools

Documentation and instruction

- Digital SLR camera
- Softbox
- Backdrop
- Studio lights
- Projector

Layout

- Granite surface plate
- Height gauges, digital

Machining

- Lathe, large metal, with digital readout and tooling
- Milling machine, large, with digital readout and tooling
- Milling machine, 4-axis, CNC

Measurement

- Calipers, digital and dial
- Micrometer, digital

Plastics

- Router table

Prototyping

- 3D FDM printer, ABS
- Laser cutter, 60 watt
- 3D scanner

Surface & Finishing

- Spray painting area, ventilation hood

Welding

- Plasma cutter, CNC, 4' x 8' (Torchmate)
- Welder, TIG
- Welder, MIG
- Welder, spot
- Plasma cutter, hand held

Woodworking

- Wood router, CNC
- Table saw
- Compound miter saw, sliding
- Table router
- Band saw
- Belt/disc sander, free standing
- Lathe, 24", 3HP
- Scroll saw
- Drill press, free standing

People

Teams

Team members are chosen based on their skills, their willingness to learn and enthusiasm for teaching and sharing. Team members can be added as needed to expand a team's capabilities, although the introduction of new members is a serious matter that should be considered carefully. In some instances, the work of single team members may end at different stages of the project, and although in general it's desirable for all team members to stay on board until a project's completion, there might be instances, especially in the case of large, complex projects, in which some members leave the team leave a project before its completion.

As previously mentioned, it is important to strike a balance between local knowledge and the fresh perspective of the outsider. The optimal ratio of provenance is one third each of local, Italian and international team members, but these divisions might not always be so clear cut.

The official language of the school is English, as limiting the pool of international participants solely to Italian speakers would severely restrict the pool of possible participants. Although all participants should take the opportunity of their time at the ODS to learn Italian, an effort must be made on the part of all those present to only speak English at all times in order to not involuntarily establish language-based social divisions among participants.

Therefore, all members should be comfortable speaking English in professional and social settings.

The Public

The public and the local community also constitute a key group in the ODS' day to day activities, and should be considered as crucial to its success as the team members. The main opportunity for engaging the public are open community-oriented events that make up an important part of its weekly schedule. These can take three main forms:

Open talks: scheduled lectures, debates and screenings related to the themes of open design, social practice, and the projects currently ongoing in the workshop.

Open reviews: public presentations of the works in progress at the ODS in which feedback is collected and stakeholders are kept in the loop.

Open Workshop days.

On “Open Workshop” days, which should preferably be on weekends, anyone can use the workshop and its equipment for their own projects. These times are ideal for future users to gain a better understanding of how the workshop operates, learn how and when to use the machines and meet the staff. Public access to the space and the machines should be free, and operate on a first-come first-served basis.

Design principles

Tools for Effective Design

This manual cannot give precise instructions as to how to address each design and fabrication challenge the ODS will take on. Nevertheless it can lay out some design principles that will help ensure the output of the ODS is coherent with Matera2019's overall thrust towards the construction of an "Open Future", and also that it takes advantage of existing knowledge done by others in the same spirit, rather than needlessly starting from scratch.

Designing open systems, especially when it is a team doing the design, production and implementation, implies a very different set of challenges to a centralised, top-down approach, or even a process in which design, production and assembly are all carried out by different teams. A lot has been written about this. One key challenge is how to establish systems for efficient production and collaboration across a diverse range of projects such as those the Open Design School will take on. We could think of these as tools for designing (as opposed to tools for making).

One example of a system that operates as a "tool for designing" is OpenStructures, a design framework conceived and developed by Thomas Lomme and Christiane Hoegner. Many of the ideas and principles underpinning OpenStructures are highly relevant to the ethos of the Open Design School, so we present it here as a tool that could and should, be embraced in the school's

projects but that is more of an example or a guideline than a mandatory standard.

OpenStructures

The OpenStructures (OS) project initiates a construction system where everyone designs for everyone. It was conceived and developed by Thomas Lommee and Christiane Hoegner.

It is an ongoing experiment that wants to find out what happens if people design objects according to a shared modular grid, a common open standard that stimulates the exchange of parts, components, experiences and ideas and aspires to build things together.

The ultimate goal is to initiate a universal, collaborative puzzle that allows the broadest range of people – from craftsmen to multinationals – to design, build and exchange the broadest range of modular components, resulting in a more flexible and scalable built environment.

An open modular system of this kind has the potential to:

- **generate flexible and dynamic puzzle structures rather than uniform modular entities**
- **introduce variety within modularity**
- **stimulate re-use cycles of various parts and component**
- **enable collaborative (and thus exponential) innovation within hardware construction**

All Open Structures should be conceived as interdependent, dynamic puzzles. This means that they should be designed for disassembly and according to the same dimensional framework (the OS grid).

In order to facilitate their design processes several design guidelines have been developed.

These are rules of thumb that need to be considered while designing any OS part or component.

Rule of thumb No 1: *design for disassembly*

Favor assembly techniques that allow deconstruction without damage or loss in order to facilitate the re-use of components.

Rule of thumb No 2: *design with recyclable materials*

Favor, whenever possible, 100% synthetical or biological recyclable materials for your parts and components in order to support infinite material cycles after disassembly

Rule of thumb No 3: *design from the OS grid*

Use the OS grid as a design tool when choosing dimensions, assembly points or interconnecting diameters in order to make your parts compatible with those of others. (click here for more info)

- A. favor part dimensions that are derived from the OS grid**
- B. position assembly points on parts according to the OS grid**
- C. choose part diameters that are derived from the OS grid**

The OS grid is the centerpiece of the whole OS system. It's the common metrical tool that is shared among all participants, which allows them to design interchangeable parts, components and structures independently from each other. The grid is built up out of 4×4cm squares. The borders of these squares mark the cutting lines, its diagonals mark the assembly points and its enclosed inner circles define interconnecting diameters.

To facilitate the design- and building process of open modular objects, an OS-ruler of 60×60cm has been developed next to the basic 4×4cm square. This will allow every participant to apply the grid as a shared design tool while generating new parts, components or structures. Since 60×60cm is already a frequently used standard within both interiors and logistics, the 60×60cm will be especially suitable for designing interior structures. It will also enable the OS-model to integrate with the existing and thus hybridise our current built environment with new Open Components and Structures.

The OS rulers can be applied both physically and digitally as measuring- and design tools. They are free for all and can be obtained and used by everybody at all time.

Safety

Follow these guidelines for general work safety:

- Never work alone. There must always be at least two adults present in the workshop.
- Always wear appropriate safety gear and protective clothing, including closed toed shoes.
- Eye protection is required while operating any machine.
- Know where the fire extinguishers are located and how to use them.
- Never work impaired. Not just from drugs or alcohol, but also from sleep deprivation.
- Know the hazards associated with your work. Be sure you are fully educated on the proper use and operation of any tool before beginning a job. If you cannot do a job safely in the workshop, don't do it. Think through the entire job before starting.
- If you are unsure about how to safely execute the operation of a tool, don't be afraid to ask for help. Have the workshop manager or another team member assist, demonstrate, and observe to help you become familiar and comfortable.
- Do not work in the workshop if you are in a hurry—

this almost always ruins the work and often results in injury.

- Before starting any machine be sure to check that it is set up correctly and fully operational.
- When doing dusty work, face masks or respirators should be worn.
- Keep your fingers clear of machinery - use special tools and devices such as push sticks and paddles.
- Keep the work area free from debris, clean spills immediately and remove all sawdust and wood chips. Do not bring food or drink in to the workshop.
- Clean up after yourself. Before you leave the lab be sure all tools are returned to their appropriate position and all the machines are clean and the floor is swept. Allow a minimum of 20 minutes for the end-of-day cleanup procedure.
- Earphones and cell phones shouldn't be used in the workshop - they are distracting and you need to hear what's going on around you.

Open Archive

Online Logbook

The Open Design School's diary is its logbook. Keeping a logbook of activities is crucial in order to have a record of how a project developed, and keeping this logbook online has the added value of working as a public window onto the ODS's activities.

The more transparent the school can be about its activities, ideas, mistakes and insights the more.

Archive

Digital repositories are widely used as a mechanism for making scholarly works freely accessible on the web. Academic libraries are often involved in the creation and management of institutional repositories that focus on preserving and disseminating the scholarship produced by their institution's faculty and students. Similarly, all Open Design School projects will be archived in a public repository upon completion, with attribution, in order for their continued use and development. There is a choice of platforms, including Github and Gitlab, with version control and a visual record of projects' developments.

Ownership/copyright

Sharing is a hallmark of the Open Design School. Project plans and materials lists are documented and published under an open license allowing others the opportunity to

re-use or modify them, or use them as a point of departure for a different project. The person using the plans must also republish their project openly. A project has more chances of achieving success if it is shared with more people because the concept is enriched and improved through contact with others. Over time, it is intended that Open Design Schools build up a repository of open design solutions with detailed reports on the development and construction process in order to pool the knowledge generated through the network.

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