ARCHITETTURA IN UNIFORME
Designing and Building for the Second World War

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Rome, 18 December 2014. The Architettura in Uniforme. Designing and Building for the Second World War explores the various ways in which architects worked during the Second World War, such as testing new construction materials and techniques, inventing new forms of camouflage and propaganda, and designing gigantic structures for production and war tests as well as for concentration camps, modernizing both techniques and design methods. The exhibition is curated by Jean Louis Cohen, conceived and realized by the Canadian Centre for Architecture in Montreal, and adapted by the Cité de l’Architecture et du patrimoine in Paris and by MAXXI in Rome (from December 19, 2014 to May 3, 2015).

MAXXI Architecture, directed by Margherita Guccione, presents this exhibition based on decades of archival and field research, recounting a period of in-depth study and the deep transformation of architecture between 1939 and 1945, a period in which four continents were ravaged by the Second World War.

Many architects took part in the fighting, while others continued their professional activity serving the needs of the moment; the technical modernization that started in the 1920s was carried forward via innovative research and programs. The war deployed all kinds of constructive, visual, organizational and managerial techniques and tools in architecture.

Major architects of the Modern Movement have been involved in the many programs prompted by the war, from Auguste Perret and Le Corbusier to Walter Gropius, Mies van der Rohe, Richard Neutra and Louis Kahn. Original drawings are on display.

With large-scale building projects such as the Pentagon, or the Oak Ridge atomic plant and the planning of forbidden territories, the scale of design expanded; urban, architectural and landscape design went through major changes, which played an important role in criminal undertakings such as the concentration camps at Auschwitz.

Since 1945, modern architecture has reigned undisputed around the world, except for a brief period in the Soviet bloc: visions of the world to come were drawn up and new cities were imagined. After the war architects used the methods elaborated in those years for residential and urban purposes, making clear how the war had transformed not only the way of designing and constructing buildings, but also the conceptual foundations of architectural practice.

“In addition to clarifying the events of a historical moment overlooked by most of the historical narratives, and to highlighting unknown or misunderstood projects, the exhibition casts light on the ethical challenge that the war represented for the architects,” says Jean-Louis Cohen, curator of the exhibition. “From war criminals, like Albert Speer, to resistance fighters like Polish-born Szymon Syrkus, who survived by working as an architect for the Auschwitz camp, a broad spectrum of the human experiences of those years is reviewed here.”

“This exhibition perfectly expresses the idea of how important it is to move away from the stereotypes of history and rekindle people’s attention toward a crucial period in twentieth-century architecture and its effects on the culture that followed.” These are the words of Margherita Guccione, Director of MAXXI Architettura, who adds that “the very rich exhibition path that reveals how architects were mobilized during the war years, integrated in this edition by a considerable number of Italian materials, is the result of a great deal of research and collaboration on the part of the Museum of Architecture with two of the most prestigious international institutions, the CCA of Montreal and the Cité de l’Architecture in Paris.”

CCA Director Mirko Zardini added: “The CCA’s exhibitions and programs investigate often overlooked ideas that can inform and advance the contemporary architectural debate and practice. Architecture in
Uniform tackles a vast gray zone of our discipline and offers new perspectives; the war served not only as an accelerator of technical innovation, but also engaged architects in a military structure with precise social, political and moral responsibilities, the effects of which are still felt today.

Within the scope of the immense repertory of experiences that make up the narrative of the exhibition, an inventory of 14 themes defines the exhibition narrative, and illustrates the extent to which architectural activities varied through the fighting nations, from the United States to Japan, from the United Kingdom to France, from Germany to the USSR.

The themes of the exhibition include the personal trajectories of architects such as Ernst Neufert who sided with the Nazis, and of those fought in the resistance, such as Lodovico di Begiojoso; the ways in which cities such as Rome, Milan, or London responded to the air raids; the gigantic development of factories, as illustrated by the designs of Albert Kahn; the contribution of Erich Mendelsohn to the experimentation of incendiary bombs; the research developed in the realm of visual perception for the sake of camouflage, with the exemplary schemes of Hugh Casson. Communication and propaganda, which used media such as poster art and film, are considered through the work of designers such as Norman Bel Geddes. Finally, objects designed for wartime uses by Charles and Ray Eames, or which were disseminated during the war years, like the Willys Jeep, are emphasized in the galleries.

The narrative then moves on to the stories of internment, the Nuremberg Trial, installed by landscape designer Dan Kiley, to finally reach the architecture of the postwar period and the programs devoted to memory.

Particular emphasis is dedicated to Italy, both before and after the armistice in 1943, told by period newsreels, photographs, projects and other documents, including the images of the David of Michelangelo wrapped up in protective material against the bombings, the notebooks of Bruno Zevi and Ludovico Quaroni, the projects for Tirana of Gherardo Bosio, the Littorina (an aluminum and wooden bicycle made to respond to the scarcity of materials needed by the war effort), the Monument to the Fallen at the Fosse Ardeatine, by Mario Fiorentino and Giuseppe Perugini, and many more.

The 14 themes of the exhibition: Architects in uniform - War on the cities in the cities - The home front and autarchy - The industrial front: producing and providing accommodation to the workers - Fortifications and war projects - Anti-air raid protection - Camouflage, that is, designing the invisible - At the service of communication - Four macro projects - Architectures of occupation - Architects and prisoners - Nuremberg Trials - Imagining the postwar period and recycling the military technologies - Architecture of memory

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The press kit and images of the exhibition can be downloaded from the Reserved Area of the Fondazione MAXXI’s website at http://www.fondazionemaxxi.it/area-riservata/ by typing in the password areariservatamaxxi

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Jean-Louis Cohen, Building for the Second World War
By Luca Molinari

Interview with the curator of the exhibition Architettura in Uniforme. Designing and Building for the Second World War, open at MAXXI in Roma from 19 December 2014 to 3 May 2015

After the two editions of the CCA in Montreal and Paris your exhibition is now coming to the MAXXI in Rome. How has the show changed over the last three years and what important developments will we be able to see in this Italian version of the event?

Since its inaugural presentation in Montréal during the spring of 2010, the exhibition has been shown in an expanded form in Paris, where I have added many documents relative to Jean Prouvé’s wartime work, including 3D objects such as the bicycle or the furnace he produced at that time. I have also introduced a significant number of drawings – and a model – relative to the reconstruction programs of the Vichy regime, and last but not least, a complete section dealing with the designs made by French architects in the German war prisoners’ camps.

In the case of the Roman venue, I have developed an identical policy. Instead of adding an autonomous Italian section, I have “injected” materials relative to Italy in nearly all the sections: posters and samples relative to autarkical policies, photos of monuments protected against air raids, camouflages schemes designed by Pietro Porcinai, and projects by Luigi Cosenza for “military cities” and the development of Campania. I have used films from the Istituto Luce archive and issues of wartime magazines to add depth to the italianization of the discourse.

Your research work has finally dealt with a historical phase which, for too long, has been seen as lacking in significant works and as a transitional phase. What are the new features of your work and how would you define the Second World War in terms of the studies that have been carried out?

The Second World War has all too often been considered as sort of white spot in the history of architecture – as a period of stasis, or one in which the only preoccupation was planning for reconstruction. I have shown that the war determined a change in the scale of projects, with mega-buildings such as the Pentagon, or the gigantic factories designed by Albert Kahn as well as those built by the Austin Company. There was also a change in the vastness of the territories devoted to production and experimentation, such as Oak Ridge and Peenemünde, and in the massive infrastructure developed for the criminal programs of the Nazis.

Another fundamental change deals with the technologies used. The combination of lightweight structures, air conditioning, and fluorescent lighting, gave birth to the “windowless factory,” which is the model for all the “big boxes” we know.

At the same time, I can’t overlook another fundamental issue, the one of the ethical position of the architects, who had to decide – when they had the choice – whether or not to work for the forces of barbarianism, and in what role. A few were real criminals, a good number were cynical, and the majority simply indifferent. Very few joined the resistance. These attitudes unquestionably shaped their post-war destiny, if they survived.

One of the most interesting elements in your work is that linked to the war as an extraordinary technology and experimental laboratory. What were the important consequences for post-war life of the war itself?

In parallel to the emergence of new building types, the war has led to the development of new technologies, based on materials that would be recycled after 1945. Aluminium was important here, and would be used significantly in the production of furniture after the war, and then there were different kinds of plastic, which was developed in a series of forms. But an age-old material such as wood was also reinvented, I would even say transfigured, thanks to pressing technology and the use of phenolic glues that allowed for the creation of long-span laminated structures. I could also say that glue was one of the most important new materials to emerge out of the war. Besides building materials, the war also determined a new attitude in respect to the usage of buildings, and this was most obvious in the case of Great Britain. The birth of operational research, that was first intended to improve the effectiveness of weapon systems, led to a similar scientific approach towards housing and education, and this was translated into the construction of post-war buildings.
The end of the war and the changes it provoked in post-war mentalities can be seen as a key opportunity for the rethinking of modern culture on a scale which could not have been contemplated during the years of the avant-garde. How can we look back on those years between the 1940s and the early 1950s in light of the experiences of the war? Which energies and ideas were freed up by the end of the war and what were produced by these energies and ideas?

The effects of the war were complex and contradictory, as Robert Venturi might have said. Modern architects were legitimized by their presence in wartime programs, and the nostalgic discourse that prevailed before 1939 in most countries faded away. In one of the vitrines of the exhibition, I have shown one of the first post-war issues of L’Architecture d’aujourd’hui, which celebrates the Mulberry floating harbour, built following the Allied landing in Normandy of 1944. The experience of mobile, prefabricated construction would have a profound impact on housing and school design. This could be seen by campaign developed in the United States, when the end of the war was not yet in sight, to imagine cities expected in 194X, building types such as shopping centres, or modern hotels, were imagined and became extremely successful after 1945. Also, the prestige of the most celebrated pieces of military equipment – such as the Jeep, which will be the piece featured at the entrance of the gallery at MAXXI – had a deep impact on public taste and contributed to the success of modern forms.

The war had a radical impact on the imaginary and ideas – and how did this large-scale collective trauma influence modern architecture?

The experience of architects was rather different in various countries. In the case of Germany, wartime projects allowed for the development of modern factory architecture, which continued to be produced in peaceful times, and was extended to buildings not meant for production. In the United States, whereas modern architecture was excluded from public housing before 1941, the war allowed Richard Neutra or Louis Kahn to experiment with radical forms, and this had an impact on their post-war work. I would say in very general terms that the war contributed to the emergence of new ideas and languages, and that the dream of mass production shaped in the 1920s was finally realized. In short, Fordism was the great winner.

There are also other, contradictory, aspects. The ruins of the bombed cities was a significant factor in the emergence of a narrative favouring picturesque urban design schemes, whereas camouflage led to a rediscovery of colour, as explained by Hugh Casson, a brilliant camouflage officer of the RAF, and future architect on the 1951 Festival of Britain.

The war was a kind of laboratory which led to a new generation of designers? Who were the designers and planners who were most heavily influence by the conflict?

The variety of experience gained in a few years in this field was striking. The impact of wartime experience was very strong on designers engaged in visual manipulations for camouflage purposes – as in the case of Casson. The experience of the Spartan spaces of Italian submarines was essential in Marco Zanuso’s thinking about compact kitchens and domestic settings. His time in the U.S. Navy’s construction battalions helped in Bruce Goff’s imaginative structures, whereas Charles and Ray Eames produced poetic interpretations of wartime prefabs. One could also say that a boyish fascination with cars and airplanes would prove to be a source for the technological fantasies of Archigram and the Metabolists.

*interview published on Abitare.it, 28 November 2014
INTRODUCTION

The Second World War, which set four continents ablaze between 1939 and 1945, affected the military and civilians alike, and drew on every human resource of the warring nations. Architecture was called upon to mobilize as well and, despite what most histories of the discipline claim to this day, the field of architecture experienced a time full of research and transformation. While many architects took part in combat, some of them pursued their professional work in the service of an intensified industrial production or in response to the requirements of the front. The technical modernization which had been undertaken in the 1920’s was pursued by the Allies as well as the Axis, for example through research into lightweight and transportable structures. More broadly, the war drew upon every form of architectural expertise: knowledge and skills in construction, which were applied to building bunkers and reinforcing shelters; visual skills, which were indispensable for camouflage and helpful to frenzied propaganda of the time; as well as organizational and managerial competences required to advance industrial and territorial projects unprecedented in their scope. Mobilized as a professional group, architects were faced with personal choices as well, especially those called upon to join the criminal politics of the Nazis. In this sense, the war also tested their moral fiber. Some of them were complicit in the policies of extermination, while others were among their victims. Within the vast inventory of experiences, the themes that illustrate the diversity of architectural activities are rooted in the national contexts, from the United States to Japan, via the United Kingdom, France, Italy, Germany, Poland, and the USSR. After 1945, modern architecture would reign uncontested, except in the Soviet block, and briefly even in that case.

The war transformed not only the ways of building, but also the ways of thinking, and after six years of fighting, architects would apply to peaceful purposes the methods developed under the pressures of emergency.

THEMES OF THE EXHIBITION

ARCHITECTURE IN UNIFORM

The distance that divides the Nazi minister Albert Speer, condemned of war crimes at Nuremberg in 1946, from Szymon Syrkus, a member of the Polish resistance who was imprisoned in the Auschwitz concentration camp, is an indication of the breadth of the war. Between the extremes of these two figures - on one side a man of the State, engaged in the exploitation of subject populations and extermination, and on the other hand a victim of these same policies - are to be found tens of thousands of situations in which architects were borne off by the war. Mobilized, deployed on the fronts, wounded or killed, prisoners, resistance fighters, or refugees - architects shared the fate of all citizens in the warring nations. They found themselves entrusted with a very wide spectrum of missions, which made them into far more than simple enlisted citizens. Their professional engagement in the war effort would permanently mark the fates of those who escaped a tragic end.

WAR ON CITIES AND IN CITIES

As early as the 1920s, the writer André Maurois predicted: “the next war will be horrible. The cities in the rear will be completely destroyed by aerial attacks.” The growth of aviation, prophetized by Italian General Giulio Douhet, completely changed previous distinctions between the military front and civilian targets. The chronicle of the war was punctuated by bombings whose intent was to terrorize civilian populations, from the Japanese raids on Chongqing and Shanghai, to the German ones on Guernica, then on Rotterdam, and, during the Blitz of 1940, on London. From 1942 on, the Allies engaged in their own aerial offensives, which would devastate German and Japanese cities as well as cities in occupied countries such as France or Italy. In the face of these attacks, architects participated in the protection of historic monuments, either on the ground, or by drawing up lists for aircraft crews of sensitive sites to avoid.
THE INTERNAL FRONT AND AUTARCHY
Much more than the Great War had ever done, the Second World War extended its hold far beyond the combat zones.
The mobilization of the armed forces and the factories was redoubled by a requisition of habitations. In broader terms, the entirety of raw materials, mineral or agricultural, as well as all industrial materials, were pressed into service for the war efforts of the nations. The exclusivity accorded to wartime manufacturing and the disruption of many traditional methods of conveyance provided a stimulus to scientific research and the invention of new forms and processes. The range of synthetic materials thus extended from fuels to elastomers, and to vast new ranges of products such as plastic. The preoccupation with conserving materials led to a new ethic of the project, based on economy and recycling. This set of converging strategies delineates what one might think of as the first experimental laboratory of sustainable architecture ante litteram.

THE INDUSTRIAL FRONT: PRODUCING AND HOUSING THE WORKERS
The construction of the thousands of factories required for the production of aircraft, of vehicles, or munitions called on an army of designers and draftsmen, from the Pacific to the Urals, in which civil engineers and architects played a leading role.
Deployed on new landscapes, far from existing agglomerations, the factories changed in scale and became complexes that sometimes attained the dimensions of true cities, employing tens of thousand of workers. Made necessary by the strict requirements of the anti-aircraft blackout, and made possible by the combination of lightweight long span structures, airconditioning, and fluorescent lighting, the windowless factory imagined in the United States, would give rise after the war to one of the most common building types outside of urban centers: the “Big Box” which can be adapted to pretty much any use.

PREFABRICATION, MOBILITY AND NORMALIZATION
The mobility of the forces engaged in the Second World War far exceeded the levels of previous conflicts, and led to the development of systems for the rapid construction of prefabricated units.
The inventive energies of architects concentrated on lightweight, modular structures. The greatest successes were ultimately those projects whose precision and simplicity enabled them to be produced industrially. The Quonset hut was the prime example, which was widely used to shelter troops. As for infrastructure, the modular bridges developed by Donald Bailey, built from many possible combinations of a single steel-trussed panel, would ensure the mobility of the allied troops in Europe, where 1,500 of them were assembled. And the greatest success of all was the Mulberry artificial port, whose parts were brought from England by sea. As Albert Speer admitted, this ingenious device alone rendered the Atlantic Wall irrelevant.

FORTIFICATIONS AND WARTIME PROJECTS
Two gigantic systems of fortification were erected in Europe some fifteen years apart: the Maginot line and the Atlantic Wall.
Running along the border between France and Germany, the Maginot line, completed in 1936, constituted a sort of “underground fleet”, whose forts were linked by galleries. The Wehrmacht went around it to the West in 1940, when it had shown itself to be capable of resisting trial by fire.
Henceforth masters of all of continental Europe, Germany undertook at the specific orders of Hitler, the greatest construction project of the century. The Atlantic Wall extended over 2,658 kilometers, with 15,000 works out of concrete strung out from the North of Norway to the Basque Country. In his 1975 book Bunker Archeology, Paul Virilio considered that “absolute war had become a reality, and the monolith was its monument.”

CAMOUFLAGE, OR DESIGNING FOR INVISIBILITÀ
In 1942, Salvador Dali, who was in New York at the time, wrote about camouflage: “‘War of Production’ sounds the note of reality for today, and tomorrow. But in our world, there is still a role to be played by magic”.
This magic, which hid armed forces, factories, and even cities from the eyes of enemy aviators, called on the visual skills of architects and landscape architects, whereas the first experiments in camouflage, between 1914 and 1918, had been conducted by painters. Each warring nation set up a camouflage service, which sometimes led to extremely sophisticated research into the diurnal and nocturnal
perceptions of landscapes, on the effects of sunlight or cloudy skies, because of the potentially crucial role of shadows. A truly scientific approach to architecture was emerging, passing through rigorous testing protocols in the field.

ANTI-RAID PROTECTION
While the danger from the air had already been felt during the First World War, but in a relatively modest fashion, the menace took on new dimensions during the 1930's, with the Japanese raids in China and the Nazi bombings in Spain. Modern architects would not take long to become interested in this new set of architectural and urban issues. With war approaching, architects engaged in several types of prospective reflections. Some of them, like Ernő Goldfinger, made studies of camps for the evacuation of civilian populations. They evaluated the resistance of existing buildings and their basements, in order to transform these into shelters, and went so far as to imagine the creation of artificial grottos for larger crowds. They were especially asked to conceive structures whose primary purpose would be to provide shelter for thousands of inhabitants.

IN THE SERVICE OF COMMUNICATION
With its deep links to production and administration, the Second World War also became a war of information. Information was an integral part of decisionmaking, the conduct of operations, and the persuasion of the masses of fighting forces and civilians. It was extensively developed through the field of visual representations: maps, diagrams, photographs, caricatures, which took specific forms depending on the intended addressees, from political decisionmakers and the military General Staff, to troops in the field and urban populations to be manipulated by propaganda. Its physical forms were equally diverse, from secret documents to public posters, in the press, through exhibitions, and newsreels that inserted glimpses of the reality of war into entertainment spectacles. The contributions of experts in graphics, as well as artists and architects, led to the creation of environments structured around the informational needs of military planners.

FOUR MACRO-PROJECTS
In 1944, the German city-planner Ludwig Hilberseimer, who was teaching in Chicago at the time, referred to “Bigness and its Effect on Life” and affirmed that “The main trend of our time is toward bigness.” Large buildings were inserted into extremely vast territorial networks. In Washington, the Pentagon is the central point in a wide system of highways and parking areas. The atomic facilities at Oak Ridge were only made possible in this location by being tied to the hydroelectric facilities of the Tennessee valley. On the Nazi side, the Auschwitz camp is only one element of a large industrial agglomeration located at the intersection of railways linking it to all of Europe. In order to grasp the workings of these systems and to function at this scale, expanded teams of architects were assembled, operating within the civil and military administrations or as private firms.

ARCHITECTURES OF THE OCCUPATION
The Nazi occupation of Europe, which reached its highest point before the Red Army’s victory in Stalingrad in 1943, was accompanied by a deliberate policy of architecture and planning. While the Germans were content with providing a frame for local administrations in France, Belgium, and The Netherlands, they conducted a veritable policy of colonial subjugation in the regions that they intended to germanize. Competitions were organized in the countries annexed de facto to the Reich. Thus the Luckhardt brothers, prominent figures in the modern architecture of Berlin, would design a monumental university complex for Bratislava. Italy had invaded Albania in April 1939, where it would implement an ambitious program of urban transformation. In Tirana, the construction of the main components of Gherardo Bosio’s regulating plan started before 1943.

ARCHITECTS AND PRISONERS
Thousands of architects from every country shared the experience of prisons and camps. They either died there, wasted away, or occasionally managed to continue their studies through readings and projects invented to occupy their time.
Roman architect Ludovico Quaroni was held by the British, among 20,000 Italians, in a Young Officers Leave Camp, located in the Himalayas, where he designed a votive church for the town of Dehra Dun, and accumulated hundreds of drawings in his notebooks.

The French case was a particular one. Henry Bernard, a winner of the *Grand Prix de Rome* and politically very conservative - he had proposed a monument to Charles Maurras on his own initiative - managed to bring together 448 architects held by the Germans in Pomerania and East Prussia, where the Stabrack camp would become a veritable *École des Beaux-Arts* in exile.

**THE NUREMBERG TRIAL**

In June 1945, the young landscape architect Dan Kiley was given the mission of refurbishing the chambers of the Nuremberg tribunal building, where the trial of the criminals of the Third Reich was held from November, 1945 to October 1946.

Kiley would recount, “We reopened factories, extracted the remains of ruined public buildings, and purchased materials on the black market to construct a venue for the most profound human judgment and newest media technologies.” His design placed the judges and the accused across from each other behind long tables, with spare and simple lines of the tables and chairs.

In addition to Kiley’s work on the spatial principles of the courtroom and concepts for the furniture, the *Presentation Branch* put together films from the concentration camps that were projected during the hearings, in the first trial in history in which cinema was accepted as evidence for the prosecution.

**IMAGINING THE POSTWAR WORLD AND RECYCLING MILITARY TECHNOLOGIES**

Few moments in history have been as eagerly awaited as the end of the Second World War. Aside from the liberation of peoples subjugated by the Axis armies, expectations for a more just and democratic society were shared by millions of civilians and demobilized soldiers.

The world imagined for the postwar period took on an architectural profile, as soon as projects for the ruined cities were developed, that not only addressed the requirements of reconstruction, but were also in a position to start cities anew, taking advantage of the opportunities that are sometimes provided by the *tabula rasa* of destruction. Richard Neutra drew up his own balance sheet for the war from Los Angeles: “New industrial plants and implementation, new useful methods of production and products, improvised substitutes as ancestors of valuable new materials, above all new skills and attitudes have been the best residuum of wars”.

**ARCHITECTURE OF MEMORY**

From the outset of the war, architects had been called upon to contribute to the commemoration of victories. The design of memorials would be an important activity for those who had not been mobilized or integrated into the large offices of industry. Modern architects and the critics who supported them had been hostile to the very idea of monuments, but they revised their positions. In their “Nine points on Monumentality” drafted in New York in 1943, Sigfried Giedion, Fernand Léger, and José Luis Sert imagined new types of monuments, enabling the symbolic dimension to make a return into modern discourse, in the context of a collaboration between architects and artists on equal footing. The megalomaniacal monuments imagined at the same time by the Germans and Russians were still mired in a conservative understanding of that collaboration.