essay: energy, architecture, transition: oswald mathias ungers, ibus and the search for good architecture
kim förster

the illustrations in this book show the designs for 5 different types of solar houses developed by oswald mathias ungers as well as images of the references he selected in order to anchor them in architecture history.

all images are reproductions from: ungers, oswald mathias, et al. *5 energie-häuser. entwürfe für eine klimagerechte und energiesparende architektur*. cologne: studio-verlag für architektur, 1980. their order of appearence follows the original publication. the subtitles are based on the information provided there.

in 1980, OSWALD MATHIAS UNGERS spoke in front of the federal german chamber of architects (bundes architektenkammer) as one of the experts at a symposium for energy conscious architecture, where he defended his contribution to the architectural competition “auf der melkerei,” an ambitious new development in the german town of landstuhl.[1] having proposed several typological designs for ECO-SOLAR HOUSES, he presented the task as an architectural, rather than a technological one, to make use of passive solar energy, providing sustainability and happiness.[2] the main argumentative framework at the time in the context of the second oil crisis in 1979/80, which hit germany due to production

1 oswald mathias ungers, in *in dubio pro vita. energiebewusste architektur. aufzeichnungen eines expertengesprächs der bundesarchitektenkammer am 18. juni 1980 mit statements der architekten, ed. bundes architektenkammer* (bonn: ministerium für raumordnung, bauwesen und städtebau, 1980), 83. the occasion for this event was a meeting of the german government with king khalid of saudi arabia.

2 in the field of political economy, the relationship of happiness and sustainability have been discussed with regard to unhedonic concerns for the environment, see for example john o’neill, “happiness and the good life,” *environmental values*, vol. 17, no. 2 (may 2008): 125–144. in architecture, “the cult of happiness,” manifested in a recent wave of studies in behavioral economics since the 2008 crisis, has been evinced in the exhibition “our happy life. architecture and well-being in the age of emotional capitalism,” curated by francesco garutti at the canadian centre for architecture, may to october 2019; see the publication of the same title, published by the cca and sternberg press.

short-cuts and uncertainty after the iranian revolution, was an economic rather than a political one: to save energy, especially the costs for energy, by transitioning to renewable energy sources through design. both events, the competition and symposium already show—and UNGERS' project might be exemplary, if not paradigmatic in this respect—that there had been a shift in ecological consciousness among architects. in contrast to contemporaries, UNGERS himself did not buy into technical fixes of machines plugged into or attached to architectural boxes, like prostheses, such as solar collectors or heat pumps. instead, he argued for an architectural approach, even beyond what the building industry was capable of. he also seemed to have bigger questions in mind, by placing the autonomy of architecture alongside energy-consciousness, thus indirectly asking what is GOOD ARCHITECTURE, and by extension what then constitutes a GOOD LIFE. in the end, UNGERS' proposal was awarded and got a special prize—however, the only typology suggested for realization, the EARTH MOUND HOUSE, was never built. seen from today's perspective, as we are facing human caused climate change and extreme weather events, his design might appear in a new light, as it comprises valuable ideas regarding architectural agency for transitioning. in times of global warming across

the world, the title of the symposium at the bundesarchitektenkammer, "in dubio pro vita," acquires an entirely new meaning, with a capitalist economy effected extinction of all life on earth being perceived as a real possibility.[3] in medical terms this principle, to do everything to save the patient's life, is nowadays challenged by the patient's decree or by active euthanasia, i.e. the decision made by the individual, the expert or those responsible to end life. in political terms, we seem to still need to come to terms with what it would mean to translate the living will or the mercy killing into ecogovernance, be it corporate, governmental, architectural or urban, in our new epoch of the ANTHROPOCENE.

1 energy

UNGERS, who previous to the landstuhl-competition acted as one of the planning directors for the international building exposition iba in berlin, had no prior experience with alternative energies or ecological approaches.[4] yet, the berlin debates,

3 as george monbiot recently brought this seemingly catch 22 to the point in *the guardian*, that the decision is that either "we stop life to allow capitalism to continue, or stop capitalism to allow life to continue," see: george monbiot, "dare to declare capitalism dead—before it takes us all down with it," *the guardian*, 25 april, 2019, www.theguardian.com/commentisfree/2019/apr/25/capitalism-economic-system-survival-earth.

which had brought forth ECO-CONSCIOUSNESS in architecture and urbanism, from above and below, might have had an impact on his work.[5] when UNGERS was invited to join the competition for landstuhl, together with six others, he teamed up with berlin based IBUS INSTITUT FÜR BAU-, UMWELT- UND SOLARTECHNIK (institute for building, environment and solar technology), a private engineering firm specialized in low and medium energy technology, which had just been founded by hasso schreck, a professor at the tu berlin, who himself was active in the context of the iba.

4 on ungers' involvement in the iba, see "puschl puschi," *der spiegel*, no. 17 (21 april, 1980): 132–133. ungers was, as the research and publication project "the city in the city" in the framework of the summer academy of 1977 shows, interested rather in urban redevelopment and urban typologies at that time, designing urban villas as infill to revitalize the city. see: oswald mathias ungers et al., *the city in the city*: berlin — *a green archipelago: a manifesto (1977)*, ed. florian hertweck and sebastien marot (zurich: lars müller publishers, 2013). see also: o.m. ungers et al., "urban villa," *arch+* 181/182 (2006): 172–173. he eventually stepped down from the iba-post to be able to pursue building.

5 after the berlin "tunix" congress in january 1978, with which the political left repositioned itself after germany's autumn of terror in 1977 had brought forth an environmental debate, diverse eco-solar approaches were displayed during the "umweltfestival berlin" in june/july 1978. on "tunix," see: anina falasca, annette maechtel, heimo lattner, eds., *wiedersehen in tunix: ein handbuch zur berliner projektkultur, berliner hefte zu geschichte und gegenwart der stadt #7* (2018). on the eco-solar architecture in berlin theorized and experimented with as pilot and demonstration projects during the iba, see: kim förster, "the green iba. a history of renewal, ecology and solidarity," *candide* 11 (2019): 9–50.

ECOLOGY was just beginning to emerge in germany, long after frei otto had already described his private house of 1969, as the mother of all passive solar architecture, a project ungers was aware of.[6] a publication of 50 contemporary projects illustrated this evolution, however technologically rather than architecturally, by placing solar panels on the roofs of buildings as status symbols.[7] throughout the 1970s, the idea to save energy through solar architecture continued to spill over from the us, where a NEW PROFESSIONAL FIELD of energy-conscious architecture had developed in parallel to countercultural approaches after the 1973 energy crisis, with architects claiming a pioneering role.[8] in europe, the thread was taken up differently in each country, including in german speaking countries.[9] in switzerland, in the mid 1970s, PETER STEIGER's group plenar (planung—energie—architektur) started, with the support of government funding, experimenting with architectural solutions and floor plans, re-introducing climatic buffers at the fringe and core spaces, for a winter retreat.[10] the trans-disciplinary exhibition "umdenken umschwenken" (1975), which was

6 cornelia escher and kim förster, "i was 'dr. tent'. frei otto on adaptability, ecology and economy in architecture," *arch+* 211/212 (2013): 72-80.

7 axel urbanek, *fünfzig deutsche sonnenhäuser* (gräfelfing: sonnenenergie verlag, 1979).

curated by staff and students at the eth and university of zurich, not only organized an eco-house competition, but collected many practical examples for a transition to encourage ECOLOGICAL THOUGHT and ACTION, eventually also exhibiting solar panels, which had just been introduced on the market.[11] the exhibition,

8 the american architect douglas kelbaugh became somewhat of a media star in 1975, as he toured in buses showing his own passive solar house he built in new jersey, arguing in the *new york times*, that his house is the first one to utilize a trombe wall as as an eco-solar architecture for energy storage in north america. see: giovanna borasi and mirko zardini, eds., *1973. sorry, out of gas* (milano: einaudi, 2008). however, eco-solar architecture, of course, has a longer history, also in europe. the cca in 2007 in the framework of the exhibition "1973. sorry, out of gas," curated by borasi and zardini, also exhibited ungers' designs for the landstuhl, putting them in the context of early eco-solar houses such as martin wagner's contribution to the competition on "the growing house," organized in berlin in 1931, see martin wagner, *das wachsende haus / the growing house. commentary from tom avermaete, franziska bollerey, ludovica scarpa, tatjana schneider* (leipzig: spector books, 2015). in the 2019 berlin-exhibition "licht luft scheisse. perspektiven auf ökologie und moderne," shown at ngbk in berlin and curated by sandra bartoli, silvan linden and florian wüst, the solar houses of ungers have been put in the tradition of leberecht migge's and elisabeth elsaesser's experimental self-sufficiency project on the "sonneninsel" of 1933.

9 on the countercultural tourism in the usa of french architects see caroline maniaque benton, in *french encounters with the american counterculture 1960–1980* (london: tayler and francis, 2011). also, simon sadler researched how the british magazine *architectural design* in the mid-1970s published eco- and solar projects in the uk.

10 peter steiger et al., *plenar. planung, energie, architektur* (stuttgart: gerd hatje, 1975).

11 kim förster, "umdenken umschwenken: environmental engagement and swiss architecture," in *routledge companion to architecture and social engagement*, ed. farhan karim (new york and london: routledge, 2018), 271–288.

which gave birth to a new scene and established new professional fields in medium technology and energy efficient architecture, afterwards travelled to germany and austria, where it was expanded with local cases. a transatlantic exchange of ideas was further promoted with a special feature in an issue of the swiss journal *bauen + wohnen* in 1977, based on a grant-sponsored tour to eco- and solar projects in north america, featuring both active and passive solutions.[12] yet, the solar houses subsequently designed and built were rather INDIVIDUAL DEMONSTRATION and PILOT PROJECTS, still far away from being market-ready.

the two-stage, limited landstuhl-competition for a newly opened subdivision “auf der melkerei,” master-planned by dietrich weigert should have paved the way for a market-ready launch of solar typologies in germany. the competition was organized in the spring of 1979 in the small town in rhineland-palatinate by the FRAUNHOFER GESELLSCHAFT FÜR ANGEWANDTE FORSCHUNG E.V., a private-public research association, and ultimately awarded in the spring of 1980. the event represented a unique chance to locally introduce (and

12 *bauen + wohnen* vol. 31, no. 07 / 08 (july / august 1977). the feature was researched and edited by swiss architect ruedi kriesi, who previously had been involved in coordinating the architectural part of “umdenken umschwenken” and who would later co-found the swiss minergie-label.

to potentially mainstream) new architectural designs, which favored PASSIVE OVER ACTIVE solutions, with the state, the market, and the individual as the main actors. next to UNGERS, originally seven other architects or groups, six german and one international, were invited to propose designs for transitioning to renewable energy sources.[13] the competition brief specifically called for ARCHITECTURAL APPROACHES to the energy problematic, asking from each of the participants six different typological contributions to the subject of passive solar architecture: a one or two-story single family house, a detached garden court house, with and without a lodger flat, and terraced row houses.[14] the attraction for the town of landstuhl as the awarding authority was, that due to existing subsidy policy it could approach the west-german government to ask for funding for the solar house competition. the community received

13 the invited architects or groups were: peter cook and christine hawley from the uk, with günter bock (representing the international avant-garde), as well as heinrich eissler, wolf hoffmann and rainer gumpf, norbert hellwig from the hamburg planning group me di um, gernot kramer and rudolf wriest, heinz mohl, as well as erich schneider-wessling (together with per krusche and christoph rotschuh) and otto steidle (who eventually collaborated with thomas herzog).

14 fraunhofer gesellschaft für angewandte forschung e.v., *demonstrationsprojekt landstuhl. energieeinsparung und solarnutzung im haushaltsbereich. teil 1: beschränkter wettbewerb solartypologie, melkerei landstuhl*, undated, dam archive, frankfurt.

support from the FEDERAL MINISTRY FOR RESEARCH AND TECHNOLOGY (bundesministerium für forschung und technologie, bmft), under the condition that the competition would be approached as an experiment. the idea was, that the winning entries, decided upon by a jury of architects, energy experts, heating contractors, and representatives from the public sphere, headed by austrian architect OTTOKAR UHL, would be realized by individual home owners, whom were given a lot of FINANCIAL and FISCAL INCENTIVES, to create eco-conscious, energy- and cost-saving family homes. once built and lived in, they would be evaluated with regard to their thermal performance and livability by the fraunhofer-institut in karlsruhe.

there was initial criticism already of the procedure by MAX BÄCHER, one of the jurors, as expressed in a letter to VOLKER HAUFF, member of the bundestag for the social-democratic party (spd). BÄCHER, who had been influential throughout the previous decades, participating in all the big competitions in west germany, having stepped back from the jury due to concerns about the basic arrangement, remarked disparagingly, that millions of deutschmark were being burned through, as a result of "solar typology" becoming the BUZZWORD OF THE DAY to get funding.[15] in the end, when the winners were announced, the comments in the press

by MANFRED SACK, one of west germany's most prolific architectural critics, writing for *die zeit*, were mainly critical of the small-mindedness of the municipality.[16] according to SACK, the most boring yet effective projects were awarded, taking into consideration the provincial and parochial tastes of the future home owners who would invest in energy-saving systems only if their living standards were sustained. and UNGERS, who for SACK had the simplest yet most brilliant ideas, both CONSERVATIVE and PROGRESSIVE, finding a new architectural language, came in his opinion out almost empty-handed, being awarded just the architecture prize of the city of landstuhl.[17] another point of sack's critique was, that what could have been a historic opportunity, was conditioned by the fact that the housing scheme for the "auf der melkerei" estate had been already decided upon beforehand. while for UNGERS

15 max bächer. letter to dr. volker hauff, 31 july 1979, dam archive, frankfurt. thanks to oliver elser at the dam for pointing out the existence of this document. next to uhl and bächer the other jurors were: bertram canzler, ernst conrad, ludwig leo, erich panzhauser, arne strassberger, dietrich weigert. on the competition procedure, see "solartypologie. fragen zum wettbewerb," *baukultur 4*, special issue: energie—architektur—wende (1980): 36.

16 manfred sack, "solar-architektur. die zukunft liegt im vergessen." *die zeit.* (4 april 1980): 15.

17 "solartypologie. architekturpreis der stadt landstuhl für oswald mathias ungers," *baukultur 4*, special issue: energie—architektur—wende (1980): 36.

his RADICALNESS was probably part of his downfall, any competition entry was to be judged against the contextual factors of the already half-way-implemented development plan for sprawl. ultimately, in the context of the ambitious showcase project for landstuhl, which essentially ended in a failure, only 12 houses were built, rather quickly, without a long development and test phase.[18] construction of these houses was promoted by a state subsidy from spd-oriented institutions, as an initiative for individuals to realize their dream home.[19]

2 architecture

the fact that UNGERS self-published and thus further disseminated his designs for FIVE TYPOLOGIES of experimental houses in a booklet after the competition showed that he was not finished with this project and believed in his sustainable design.[20] in their simplicity but effectiveness, they

18 originally the brief envisioned the construction of 60 solar houses out of 400 in the subdivision. the fraunhofer institut für bauphysik evaluated next to the 12 projects built in landstuhl another ten, elsewhere in west germany, which were all based on the typologies proposed in the competition and three conventional houses. see h. erhorn, d. oswald, j. reiß, "solarhäuser auf dem prüfstand" (ibp mitteilung 176, 19, 1992, serie: neue forschungsergebnisse, kurz gefasst).

19 fraunhofer-institut für systemtechnik und innovationsforschung, ed., *48 solarhäuser—modell landstuhl. demonstrationsprojekt des bundesministeriums für forschung und technologie (bmft) zur energieeinsparung und solarenergienutzung in eigenheimen* (karlsruhe: c. f. müller, 1982).

were diametrically opposed to landstuhl's other, often pre-fabricated houses for everyday consumers. within the framework of the competition, UNGERS had decided on designing five variants of eco-solar houses, in which he not only experimented with both energy and climate concepts, but especially with shape and organization of the floor plans, orientation and choice of materials. in the booklet, he showed that his typologized designs were deeply rooted in architectural history through various references. all of UNGERS' proposals were designed to function as "climate controllers"[21]:

— two variations of a WINTER-GARDEN HOUSE, highlighting a climatic buffer. these houses are designed on the basis of a square floor plan to minimize exterior

20 oswald mathias ungers et al., *5 energiehäuser. entwürfe für eine klimagerechte und energie-sparende architektur* (cologne: studioverlag für architektur, 1980). likewise, peter cook and christine hawley exhibited their solar architecture in may / june 1980 at the aa in london and published the proposal for the use of solar energy in a small brochure. see exhibition catalogue: *6 houses* (london: architectural association, 1980). ibus in turn showed the solar demonstration project landstuhl, which they designed in cooperation with ungers and for which they supplied the climate-conscious energy concept, "utilizing simple construction and thermodynamic systems for the minimization of energy needs and maximization of energy supply," in the exhibition "solar 4. architecure and energy" at the amerika haus berlin in january / february 1981 as one of four examples. see exhibition catalogue: *solar 4. passive solar architecture in the us and in the federal republic of germany* (berlin: amerika haus, 1981), 12ff.

21 peter sloterdijk,"atmospheric islands," in *foams. spheres vol. 3: plural spherology* (south pasadena, semiotext(e), 2016), 315–333, see especially 316.

surface, following to the principle of “a house within a house.” the inner house is a stone construction, providing for heat storage in the winter; a glass house encloses the stone house, which introduces a buffer zone for use during the transition periods spring and fall; the outer house is a pergola which is overgrown during the summer months, where plants act as shading from the sun, wind protection and heat insulation; and finally the garden house is a macro zone which as green space surrounds the nested houses.[22]

– the above-mentioned EARTH MOUND HOUSE, highlighting natural insulation, is partially burrowed, or completely covered by earth as the most accessible insulation material. the earth mound house is closed to the north while open to the south, organized around a glassed atrium, which served a ventilating function, and is also covered by a pergola, so that “the dual zoning of the building requires a seasonal use.” a line of trees demarcates the contours of the building, which proposes a specific, in the end quite architectural role for vegetation.

22 this typology was later reviewed by vladimir nikolic, himself by then a leading architect in the field. see vladimir nikolic, *architektur und energie* (stuttgart: fraunhofer irb verlag,1988),118/119.

– a long, CURVING ROW OF TWO-STORY HOUSES, featuring climate control and microclimates. the row house is designed as a long colonnade, which opens to the south, covered by a green roof, with living and sleeping rooms on the interior, and has a winter-garden as climatic buffer and an open-air zone for summer use.
– a concentrated CARPET-HOUSING SCHEME, emphasizing densification based on the principles of solarity. the housing is organized as a succession of stone house, glass house, and green house zones, which provide for stable microclimates almost at an urban scale. here, warm air channeled through a simple ventilation system is stored in the floor and brick construction, heating the glass house. the stone house as the actual living and sleeping area is illuminated and ventilated throught the glass house zone.

what characterized all of the designs is that they attempted to DECARBONIZE energy, in a thermodynamic and material sense, with the aim to provide for optimal comfort.

providing for passive solar energy, while rethinking not only the form and function, but also the materiality of a house, UNGERS disregarded the rather conventional typologies outlined in the brief, to propose more radical eco-solar designs.

the design implemented glass houses, thermal buffers, green facades, movable sun shadings and trombe walls for heating, insulation and regulation; it introduced earth as natural building material and green roofs for thermal insolation and storage, moisture and noise protection. moreover, it established conservatories, passages for micro-climate zones between inside and outside; and it put into practice direct solar gain, the utilization of climatic and topographic conditions for natural climate control and of natural materials for their thermal mass, and temporary thermal protection. seeing the whole range of features, it was not the single use, but the integration of the various eco-techniques, imagining energy transition in architectural terms, why UNGERS was ahead of his time and how he distinguished himself from his colleagues.[23] in his self-publication, UNGERS supported this for him unusual and

23 there were of course other architects in germany who around the same time already experimented with one or the other eco-technique, e.g. rudolf doernach who greened facades and roofs in his “biohaus,” and even built “biotektur,” i.e. using plants as building materials. see: rudolf doernach, *das biohaus für dorf und stadt* (frankfurt an main: fischer alternativ, 1981); per kruschke and maria weig-krusche, who used natural resources as building materials, see: per krusche, dirk althaus, ingo gabriel, maria weig-krusche, *ökologisches bauen* (wiesbaden: viewegteubner verlag, 1982); or ibus, who designed winter-garden-houses for different locations in berlin, see exhibition catalogue: *solar 4. passive solar architecture in the us and in the federal republic of germany* (berlin: amerika haus, 1981).

unique architecture, adding to his previous typological studies, with numerous REFERENCES IN ARCHITECTURE HISTORY, serving to make his projects appear appealing and realizable.[24] the repertoire of references, researched and compiled by architect BERND FASKEL, back then a member of ibus, was reminiscent of BERNARD RUDOFSKY's *architecture without architects*, but also included postmodernist reference projects from PALLADIOS's villa rotonda to paxton's crystal palace, as well ecologically obscure and absurd projects such as the hundertwasserhaus.[25] whether anonymous or notable, traditional or contemporary, this compilation made no difference. it presented UNGERS' designs in a long tradition of simple principles with regard to traditional forms and

24 oswald mathias ungers et al., *5 energiehäuser. entwürfe für eine kilmagerechte und energie-sparende architektur* (cologne: studio-verlag für architektur, 1980).

25 bernd faskel, after founding his own office in collaboration with ibus, also curated an exhibition on "energy-conscious architecture" for the bundesarchitektenkammer, which focussed on site, design and construction, by using the same images, see: bernd faskel, "ausstellung 'energiebewusste architektur'," in *in dubio pro vita. energiebewusste architektur. aufzeichnungen eines expertengesprächs der bundesarchitektenkammer am 18. juni 1980 mit statements der architekten, ed. bundesarchitektenkammer* (bonn: ministerium für raumordnung, bauwesen und städtebau, 1980), 93–137. see also: bernd faskel, *die alten bauten besser. energiesparen durch klimabewusste architektur. was für unsere ahnen selbstverständlich war, müssen wir neu entdecken* (frankfurt am main: eichborn verlag, 1982).

construction methods adapted to the climate.

within the framework of a reassessment of the 20th century's petrocultures' impact on postwar architecture and urbanism, especially in the western world, producing models, which were copied globally, it cannot be denied that UNGERS' design has not entirely been free of problems.[26] UNGERS' landstuhl projects, proposing detached single-family homes, were still based on CONVENTIONAL SUBURBAN TYPES OF LIVING.

they represented a house (in a house in a house) as an object of consumption, both an investment and an insurance at the same time—a common assumption, which he did not explicitly challenge. later that year in the fall of 1980, as the real estate business progressed and architectural projects by name architects became more and more commodified on the art market, UNGERS himself contributed a design to the "houses for sales" exhibition at leo castelli gallery in new york.[27] moreover, the urbanism envisioned for landstuhl,

26 sheena wilson, adam carlson, and imre szeman, "on petrocultures: or, why we need to understand oil to understand everything else," in *petrocultures. oil, politics, culture*, eds. sheena wilson, adam carlson, and imre szeman (montreal & kingston: mcgill & queen's university press, 2017), 3–19.

27 b.j. archer, ed. *houses for sale. architects: emilio ambasz, peter eisenman, vittorio gregotti, arata isozaki, charles moore, cesar pelli, cedric price, oswald mathias ungers* (new york: rizzoli, 1981).

a regulated suburbanization, was still based on MOTORIZED INDIVIDUAL TRANSPORTATION, which was stipulated in the development plan, thus promoting urban sprawl. this spatial organization followed the postwar psychology of abundance and scarcity and what RAJ PATEL and JASON MOORE and others have called "cheap energy," even if it was controlled.[28] nevertheless, UNGERS by offering eco-designs with a reduced carbon footprint had proposed what he considered good architecture for a society beyond techno-scientific progress. UNGERS' designs, which were based on radically ecological assumptions, as they proposed a new relation to energy and matter, would have surpassed the assumptions of mere passive solar architecture. they were not just reducing the active use of fossil fuels, but also consciously or unconsciously envisioning energy-sensitive building materials, construction techniques and insulation materials. he proposed building more moderate, if not MODEST HOUSES, more compact if not collective housing, which follow the environment and were diverse and context-dependent. if realized they would have had the potential to become TRULY ECO-

28 raj patel and jason moore, *a history of the world in seven cheap things. a guide to capitalism, nature, and the future of the planet* (london: verso, 2018).

LOGICAL, at many levels, the local, regional, bodily, interpersonal, architectural and technological: as they had been conceived as ecosystems and living organisms, learning from nature.[29] with many green spaces, growing façades and roofs, the eco-solar houses were even offering contact zones, as spaces for multi-species encounters, which would have allowed humans to live among other critters.[30] while they possess the ability to build on tradition and heritage, UNGERS' designs, being decentralized and adaptable, are nonetheless speculative, making use of the opportunities for innovation and integration, supporting the call for reducing, if not reusing and recycling architecture. by designing with natural materials his eco-solar houses at least to some degree could all become subject to decomposition.

3 transition

as we come to realize that we can no longer sustain our western way of building and living, based on an energy system which is carbon intensive, especially since environmental and social injustice are becoming evident, particularly in the global south, UNGERS'

29 christoph küffer, "cities as ecosystems and buildings as living organisms," in *the material book,* eds. ilka ruby and andreas ruby (berlin: ruby press, 2020), 206–210.

30 donna haraway, *when species meet* (minneapolis: university of minnesota press, 2007).

landstuhl projects can serve as a model, more conceptual than architectural, which may nevertheless assist us in defining STRATEGIES OF TRANSITIONING in our values, principles, practices and actions. while the eco-solar houses would still need to be considered in their historical context, how they fit in, contributed to, and acted upon the architectural and environmental debates in the past, their relevance today and in the future, might be defined by the fact, that UNGERS actually had designed them prospectively at a time, when official instruments of intervention were not yet in place. it is important to bear in mind that UNGERS made concrete design proposals for saving energy and beyond, still favoring passive over active solar, about a decade before an energy supply act and a thermal insulation act, which were already high on the political agenda, were finally implemented in germany. yet, although the debates then were mainly about how individuals could react to the depletion of resources and especially the scarcity of fossil fuels, UNGERS' design in view of the present situation could support far-sighted architecture and urbanism, if the aim is not only to use less HOME ENERGY but less EMBODIED ENERGY (or carbon dioxide), which has become recognized as the most critical and yet controversial issue.[31] collaborating with the emerging energy engineers at that time, un-

gers tackled the actual problem through design (construction and materials), before energy consciousness meant restrictions in building and living, e.g. adding insulation, making windows smaller or making the building airtight.[32] despite complying to the competition's main goal of offering solutions for home owners to save both energy and costs, UNGERS rather thought ahead not only architecturally, but environmentally. as the subtitle of his publication, "designs for a climate-friendly and energy-saving architecture" signifies, he explicitly shifted the focus towards climate issues. although the eco-solar houses UNGERS proposed ultimately did not pass the market test, particularly because they treated attachment to tradition equally to, or even favored it over path dependency, might in a contemporary reading acquire a new meaning beyond the division of pragmatism and idealism, ethics and aesthetics, technology and ecology, and could even function as role models today, as truly innovative, productive and creative. these houses, as they are aiming for energy transition, but also for fundamental social and cultural shifts in regard to what

31 for a discussion of concrete and sustainability with regards to issues of embodied carbon dioxide in architectural history, see: adrian forty, *concrete and culture. a material history* (london: reaktion books, 2012), 69–77.

32 werner sobek, "architecture isn't here to stay—towards a reversibility of construction," in *re-inventing construction*, eds. ilka ruby and andreas ruby (berlin: ruby press, 2010), 34–45.

can be considered sustainable architecture, have in times of crisis become increasingly relevant. precisely because they actively tackle both sides of what proactive and future-oriented, if not visionary architects and engineers, in recent years, have recognized as our double problematic: an EMISSION PROBLEMATIC and a RESOURCE PROBLEMATIC, both of which must be approached architecturally.[33]

new developments relating to the environment, globally since the financial crisis in 2008, are more and more dictated by an emotional capitalism, which capitalizes on the individual well-being, rather than tackling social and ecological questions in a satisfactory manner. despite this, UNGERS' landstuhl projects, which should be seen as an early attempt to ECOLOGIZE and to MODERNIZE architecture, with various experts, architects and engineers acting as equals, maybe because of the currency of the issues they raise, might still provide us with answers to open questions in contemporary environmental debates, not only in architecture and urbanism, but in other disciplines as well.[34] although the time for building and living in eco and solar houses might

33 in germany werner sobek, who since 2000 is director of the institute for lightweight structures and conceptual design (ilek) in stuttgart, today presents himself as perhaps the most out-spoken critic and challenger, not just of the profession, but of the building material industry.

have passed,[35] UNGERS' designs can act at least as a touchstone, if not template in trying to come to terms with the great transition which will have to happen by 2050 (the end of fossil fuels, coal, gas and oil as we know them). politically, the foundation has long been laid, as the the german politician HERMANN SCHEER, then a member of parliament for the spd and a strong proponent of solar energy, outlined in his book *solare weltwirtschaft* (2000)—in terms of what it would take for a transition to happen.[36] scheer, one of the founding fathers of the RENEWABLE ENER-

34 in the debates on an ecological modernization around technological innovation and political intervention (already started as a hegemonic project in the 1980s and taken up at the end of the century), issues of sustainable development vis-à-vis global justice, to make life on earth better, not worse, were contrasted, see: bruno latour, "to modernize or to ecologize? that's the question," in *remaking reality: nature at the millenium*, eds. noel castree and bruce braun (london: routledge, 1998), 221–242; david harvey, "what's green and makes the world go round?" in *the cultures of globalization*, eds. fredric jameson and masao miyoshi (durham: duke university press, 1998), 327–355.

35 only a decade ago, in 2009, the leftist german political party "die linke" propagated exactly the typology of the earth mound house, in particular due to its good thermal insulation, as the most forward-oriented single-family home, see götz brandt and josef pöschl, "das zukunftsgerechte einfamilienhaus," *beiträge zur umweltpolitik* (1/2009), https://archiv2017.die-lin-ke.de/fileadmin/download/zusammenschluesse/oekologische_plattform/beitraege_umweltpolitik/beitraege_umweltpolitik_2009-01.pdf.

36 hermann scheer, solare weltwirtschaft. *strategie für die ökologische moderne* (munich: verlag antje kunstmann, 2000), published in english as *solar economy. renewable energy for a sustainable global future* by routledge in 2004.

GY ACT implemented in germany in 2000 here introduced the idea of what he called SOLAR RESOURCES: resources, which do not need fossil fuels to be produced—in terms of building materials, rammed earth, clay, timber, and stone etc. architecturally, transition is in the best case a conflictual issue, which in the last decade was fought along the lines of energy-saving and zero-emission. WERNER SOBEK, who installed himself in the last two decades as an architect, with slick, tech-savvy designs, which different from UNGERS' eco-solar houses, promote active (not passive) solar energy, at first sight seems to be a proponent of a modernizing tradition. nevertheless with his contributions to the debate, constantly reminding us how central and important architecture in climate protection is at a planetary scale, sobek makes the bold claim in his call for respecting a TRIPLE BOTTOM LINE, to use not only less energy and less material, but moreover to build less.[37]

in this way, "negotiating UNGERS" could mean: facing the challenges of human induced climate change, by speculating with what once had been offered as alternative approaches for the housing market in west ger-

37 werner sobek on sustainable building: werner sobek, "weniger ist mehr (less is more)," *zeit wissen*, last modified 1 april, 2019, www.youtube.com/watch?v=y4zluoppmlc.

many. obviously, UNGERS was more interested in autonomous architecture than in ENERGY DEMOCRACY, otherwise he would have talked about decentralizing the grid and introducing district heating. the earth mound house, probably the most peculiar typology that he designed for landstuhl, is telling in this regard. it proposed the saving of energy, home energy and embodied energy, thereby REDUCING CARBON DIOXIDE EMISSION in the most original way, but at the cost of an ostensibly more secluded life. moreover, UNGERS himself did not follow up on this proposal in his later work, be it the housing projects at lützowplatz (1979–83) and in kreuzberg (1988–89) in the framework of the berlin iba, the museum projects for the dam in frankfurt (1979–84), or for hamburg kunstverein (1976–97), and even less so in the larger scale corporate projects, like the frankfurt fairground (1980–83) and the berlin fairground (1993–99).[38] revisiting ungers' eco-solar houses, however, suggests actively approaching architecture's UNEXPLORED POTENTIAL in transitioning to renewable energy and in transitioning to more sustainable lifestyles. as far as ungers' approach

38 andré bideau, *architektur und symbolisches kapital. bilderzählungen und identitätsproduktion bei o.m. ungers—bauwelt fundamente. band 147* (basel: birkhäuser, 2011).

to sustainable architecture is concerned, both the materiality of his designs, and his move to destabilize merely technical fantasies about harvesting the sun, which from the perspective of architectural history might be termed techno-utopian, if not eco-modernist, as technology and innovation have assumed the task to drive growth, should be taken seriously as alternative. these designs and moves can serve to promote concrete steps toward paradigm shifts regarding the way we build and live as well and fund government projects for science and industry. if the motto „in dubio pro vita“ still applies, architecture and politics, too, will have to take sides.