On Movement and Vantage Points—
the Strollologist's Experience (1999)

Those who addressed you prior to me have spoiled you doubtless with their polished lectures. My lecture is a patchwork of loose thoughts, partly on the current state of affairs, partly about how things were back then in Ulm. For our objective here after all, is to revive the spirit of Ulm. I can see now, in my mind's eye, the remarkable ruins of the library in Ulm, which was stocked to two thirds with volumes on mechanisms and gear trains, and to one third with aesthetic books of the kind we actually wanted.

Well, Ulm is in fact a history of insights into what happens when one seeks to use rational methods—by which one does not progress from one certainty to another but rather, from a certainty to a growing sense of doubt. In my opinion, Ulm epitomizes this approach. Ulm has various tendencies and orientations, of course, and also much to its credit. I'll tell you straight off, where I stand. I follow somehow in the steps of Horst Rittel, a mathematician who came to Ulm then spent some time at the University of Stuttgart then disappeared off to Berkeley before finally, regrettably, dying of cancer in Germany.

A position which attempted namely to make a science of decision-making in design, and actually always progressed, not from one certainty to another but rather from doubt to doubt—design here in the sense of an attempt to remedy a problem by recourse to inventiveness or organization. And then, there are those difficulties inherent to human thought—and in particular to human thought in a collective context, which is to say, in a team. And design teams

are the issue here, for the designer works with other people. The point therefore, is to reflect as a team on the methodological approach and so-called solutions.

The first thing is: it is very difficult to define problems. One never knows exactly, what problems are. Parameters must be set before one can remedy them; yet they are essentially without limits, and merge with further problems. Problems have blurred contours. And the design process strips them to the essentials.

I have cited an example. The fact that elderly people can no longer live with their offspring is a problem. A parameter is therefore set, namely to place old homeless folk in an old folks' home. This serves in some way to limit the problem. Problems cannot be remedied. They are wicked—to cite a mathematical term Rittel used very frequently. One cannot remedy them; one can only limit them. And the more one seeks to limit them, the more fatal the solution. There are small solutions and small improvements, and then one tries for the total solution, which is like cracking a nut with a sledgehammer.

I have cited an example. To avoid mosquito bites, one can span a net in front of the window, or one can drain all the lakes in the vicinity: the major or the minor solution. The remedy for a problem depends on constraints, on certain conditions—and mostly on the cost factor: a thing may only cost this or that much. Therein lies the discrepancy between the objective and the problem.

An example: a route to a school involves crossing a major road. Various solutions are possible: an underpass, an overpass, intersection lights, or whatever. And there is a constraint, since the remedy for the problem may not cost more than one hundred thousand Deutschmarks. So the discrepancy here is: a child could be run over—and: the budget may not exceed one hundred thousand Deutschmarks.

Then the interventions: the allocation of pros and cons. Interventions do not solve the problem; they simply allocate pros and cons differently. So, the driver must step on the brake, and the school-kids can cross. Someone benefits, and someone loses out. Most design solutions are a matter of assuring certain population groups either advantages or disadvantages. I am not talking here about a design for porcelain cups but about the sum of decisions taken to remedy a problem.

One piece of wisdom that can be traced back to the pre-war national economist, Gunnar Myrdal is: it is never a case of objectives and means. Objectives and means are one and the same thing. Or vice versa. And to say, "That is my objective and this is simply my means," is to spout ideology.

Take the prohibition of cannabis for example, and its enforcement by the police. One can say, "All young people are kept under control in order to stamp out cannabis." Or one can say, "Cannabis is stamped out in order to keep young people under control." So the means and the objective are interchangeable. The police say the one thing, of course, and young people think the opposite.

Decisions—precisely because they are so complex—tend towards simplification the minute they are reached in collective contexts (for example, when a planner has to present his proposals to policymakers). And such simplification leads namely to so-called simple solutions. At the local government level—so my theory—everything culminates in construction. Therefore, the problem of old people leads to an old folks' home; the problem of blind people leads to a home for the blind. Thus, attempts are made to remedy problems by erecting a building. This amounts to a reductive phase in the decision-making process, which is inherent not to the matter in hand but to the collective context.

And here, the role of naming the problem comes into play again.

Who is empowered to give the problem a name? Problems are so general, and they have blurred contours. One never really knows exactly, which one should remedy, and which not. One problem, for instance, is that it always rains on Sundays. In this case however, nobody can prompt a decision-making process—not because that would be impossible, but because no political party or group would ever take it up as a cause. There are problems one can name. In the summertime, young people hang out and sweat; therefore, we need a swimming pool. That is an identifiable solution. So, now we are back where we began. There are many problems; their contours are blurred; they are intermingled, and to name them isolates them from one another, and then so-called solutions are applied to them.

This application of solutions was also one of the tasks in Ulm. And in the first phase—I'll structure this somewhat here—it was endeavored to introduce a clear conceptual approach in order to deal with problems, all the way through to design solutions. This step-by-step approach was named ZASPAK, which is an acronym of the following German words: Z for objective (Ziel): name the objective; A for analysis (Analyse): analyze the problem; S (Synthese): synthesize one's analysis; P (Plan): formulate a plan; A (Ausführung): move towards implementation; and K (Kontrolle): monitor the result. Sounds totally rational, does it not? So, ZASPAK means, name the objective, analyze the problem, synthesize the analysis, formulate a plan, implement it, and then monitor the result.

Then, as we discussed yesterday for example, there are the doubts to which ZASPAK gives rise. We spoke about how a problem might be solved. As a first step I proposed, "Name the objective." Thereupon someone pointed out, quite rightly, "One doesn't know at the start, what the objective is. One knows at the end, why one has done

a thing, but to name the objective at the start is possible only when dealing with very simple tasks. In the case of more complex tasks one can only really identify the objective at the end."

This has an impact on analysis. Which is to say: analysis was the latest fad at the time, back when databanks and data compilation first came on the scene. So: to analyze a problem gives rise to far too much data, more than might be used effectively afterwards.

Then comes synthesis. That is a wonderful, mysterious word. How one proceeds from analysis to synthesis was never really explained; one simply set out to synthesize. This means: the waste-paper basket soon fills up.

Synthesis culminates in a plan. The plan is implemented then monitored in the light of the objective. The monitoring phase occurs very late however. By that time, one has pretty much done everything. Even if the monitoring process reveals that this or that was pointless, it is actually too late to be of any use.

I would now like—and this is actually the unstructured part of my lecture—to name several tasks. You will say, "Those are not design tasks, strictly speaking." They are simply the tasks involved in the human decision-making process yet in my opinion, they underpin a theory of design. For they remedy—or "solve"—problems.

I wish to name some of them here; the simple tasks first, then the more complex ones. A simple example is a family, asking, "What shall we do tomorrow afternoon?—It's Sunday." The two suggestions are, firstly, "Let's go to an art museum" and secondly, "Let's visit our sick aunt." One is aesthetic, the other ethical.

Yesterday we were told this is one and the same thing. We are faced with a problem. And this problem—whether to visit our sick aunt, or go to an art museum—is not one we will be able to solve, because these activities, these decisions do not co-exist on the same level: for one of them tends towards aesthetics whereas the other

is most definitely an ethical decision—so here, we already have a problem that cannot be solved.

I once carried out an exercise with my students. We wanted to see how much thought the population really gives to alternative solutions. And we made our preparations. We said: our way of measuring time is actually pretty strange. These twelve hours—why not have twenty-four of them, and be done with it? And then, when do they change? At midnight: a strange time, when most people are in bed already, while others are not. The time could change in the gray light of dawn, for instance, and then once again, in the evening. And instead of twelve hours, it might just as well be ten. That would make more sense. That was the case in fact during the French Revolution, and then it was revoked. Some very rare clocks that measure ten hours of a hundred minutes each do exist. In short, we thought this was a simple solution. But we had this problem: if the first ten hours of the day begin in the gray light of dawn, and the ten hours of night begin in the evening, then summer and winter would not be the same, of course. So we said, the hours are not always the same length. By daytime, there are ten hours. One divides the time between dawn and the evening into ten hours. And it will always be announced, how long the hours are. And they are accordingly shorter by night in the summertime, and longer in the wintertime.

We hit the streets, armed with this plan, and we spoke to passersby. Students went around in pairs, asking, "Do you have a moment? We have a problem. People are up in arms, and no longer satisfied with time. We have come up with a proposal, and we would like to hear your opinion on the matter." Well, we had actually expected to be given a good clip around the ear, or for irate people to respond with "What nonsense!" That was not the case at all however. Instead, very many people took a great deal of time to give the matter

some thought. Inevitably we heard the questions, "Well, what do Norwegians do? They suddenly have an incredibly short day and a very long night. So, when they work a six-hour day, do they actually need work only a few minutes? How does that work?" Then someone says, "Yes, they can. But they can also work the night shift, and be paid the night rate. Then the hours are terribly long." The strange thing was that many people also offered another solution: our students had to listen to incredible theories on how to improve timekeeping. We see, things *are* given thought, and the only thing lacking is decision-making. We have an outdated, centuries-old system of time. All our watches and everything else run to its rhythm, and so on. We cannot change it now, but we are not really happy with it.

The next planning problem is a very common and trite one: we are planning an intersection. Every city council has to deal with this. Engineers identify the objectives. The objectives are: to reduce the risk of accidents, to increase the speed of traffic, and to keep costs low. The reduction in accident risk is relative. We know every city keeps statistics on accidents, and documents them on city maps. This means one can say: this type of intersection has many small accidents, and this type of intersection has fewer yet more severe accidents; that type of intersection has actually proved its worth, but it was very complicated and expensive to build, and so on. What is not discussed—either by the expert committees or parliament—is the question: How many accidents are we prepared to tolerate? Which could so easily be answered, thanks to the available statistics. Do you want five accidents per year, or eight, or ten? And then one might say: Would you prefer lots of little accidents, or…? All that is implicit in these questions. But of course, this is not discussed. The strange thing is that no one says, "We want no more accidents"—but merely acts as if that is what is meant.

The reason this interests me brings me to the next problem now concerning our communities, namely mad cow disease—for the maxim here is: We want to be absolutely free of disease. While, in the case of accidents, one says there are one hundred thousand accidents to eighty million people, one says fifty million cows equals zero mad cow disease, i.e. no mad cow disease. This is obviously a total solution, and leads to correspondingly high costs. Then the European Union proposed that Britain should kill and burn all its cows. Then it was figured out, how many billions that would cost—and no one wanted to pay for it. But the amazing thing in this case is, that people wanted nothing less than a total solution. The distribution was very strange indeed: in England, tens of thousands of cases; in Switzerland, seven hundred such cases, I believe; and no cases at all in France, or so one says—so France says. And the less said about Germany, the better.

Everyone knows that the English have smuggled cows. This means: Ireland was not under sanction, so cattle could be shipped there from England, and likewise from Ireland to Europe. So it was not very difficult to bring English cows to Europe, and it is therefore highly unlikely that any country had zero cases.

Well. Then came the news: mad cow disease is the same as Creuzfeldt-Jakob disease and can therefore be passed on to humans. A totally unclear hypothesis led people to hazard a positive claim, namely that Creuzfeldt-Jakob disease had affected only very old people—and later, in two or three cases in England, also young people. People said, "Aha, now that is the result of mad cow disease."

While people tolerate hundreds of thousands of road accidents, in this case they tolerate only a zero solution, which is to say total freedom from disease. Of course, I wouldn't want to catch it either. But it amazes me, how much more protected one is. Already, to catch Creuzfeldt-Jakob disease from a cow is extremely unlikely

in Europe, on the continent. One is more likely to be bitten by a crocodile in Rotis!

But it has consequences nonetheless: in the United States now, no one with a UK stamp in his passport may donate blood. One must show one's passport before donating blood and, if one has visited the UK in the previous decade, one cannot donate blood—which amounts to a massive intervention in the face of a monstrous improbability. I'm simply contrasting that and traffic problems.

Yes, now we are doing something really big. We are planning the just war. Two just wars are currently underway. So, we are planning the just war. We have objectives too. The objectives are parallel: to liberate Kuwait, and to liberate Kosovo; and then to bring Saddam Hussein before an international tribunal and to bring Milošević before an international tribunal. Then: do not lose face—do not lose face here. Something must be done here—and something must be done there. And of course, we also finally get to try out our weapons.

The entire business is subject to severe constraints, to restrictive conditions. You see, the problem has far-reaching repercussions; it cannot be isolated. The Chinese do not want to join in; the Russians do not want to join in. In the first case, it is the Kurds one may not hurt, in the second case, the Montenegrins. It is very difficult to decide what to do. We are all aware of that.

I am not speaking in favor of the war or against the war. I am saying, we are planning the just war, and we face enormous difficulties in doing so. Success is not in sight. Both wars are ongoing. One can say: Kuwait has been liberated; Kosovo has not been liberated. As far as the secondary objective, Saddam Hussein / Milošević, is concerned, the result is largely contrary to the original intention. Both men's power has increased exponentially, as a result of these wars.

What lessons can we learn from this resolution, from this design? First, it was not possible to extract the problem itself, with its own inherent system, from the overall system. It was not possible to draw a sharp boundary between the problem we hoped to deal with and the rest of the world. This means: the problem is too strongly interwoven with the rest of the world. Second lesson: there is no room for experiments; there are no maneuvers in war—there is only war. And everything one has already done—one has shattered porcelain; and shattered porcelain cannot be glued back together. There is no turning back. We can say: we have done the right thing. Or: we have done something wrong. But we cannot say: that was just an exercise; we will do it properly next time. A problem such as this exists once only.

Now I want to set another task. And I set this task in memory of the mathematician Horst Rittel, who worked in Ulm, as I said, and has since died. This is the example he used to set his students as a planning task. He'd say, "We have a city. The city needs a systematic fire department. And, although the city council has decided to build four firehouses, it is up to you to position them throughout the city. Let us now discuss where the firehouses should be located."

The four firehouses are likely to be located within a circle—if the city is a conventional city and more or less describes a circle on a map. They are thus all equidistant from the city center and the city margins. Four firehouses form a square in the city, a regular one. There is a lobby that says: The square must be as close to the center as possible. That is where the highest values are—the Deutsche Bank, the Dresdner Bank. If they burn down, we'll all be broke. Then there is the justice lobby. It says: But the forest ranger still lives ten kilometers beyond the city limits. He too belongs to our city. If his house catches fire, the fire department must reach it as

quickly as possible. In other words, the circle of firehouses must be equidistant from the city center and the city margins.

Everyone has an equal right to be extinguished; the fire department arrives in a half-hour, or in three-quarters of an hour. Everyone has an equal right—the ranger beyond the city limits, and the Deutsche Bank in the city center. Then along come the insurance companies. Of course they wreck this fair solution. They say, we are actually better off when a house that has burned for twenty minutes burns down completely. That costs us less than having to repair a ruin. So either put out a fire in ten minutes, or forget it—it's pointless. That puts the firehouses pretty close to the center again.

One can therefore propose a few solutions. All of them have something to offer. The fairness argument is always on some level or other—the forester hopes the fire is put out, even if it takes three quarters of an hour—and the money argument amounts to saying, we need one district in which a fire can be put out in ten minutes; and as to the rest, we will drive over simply to sweep up the ashes or spray down the neighboring houses. We have to take decisions therefore, based on arguments made on different levels. That is the problem.

Now we are doing something major again: we want to save the environment. Everyone surely wants to save the environment. The environment—that is difficult to define. The environment is plants, animals, and everything around us; and all of it is dying; there is the Endangered List, and all that. So we want to save it all. There are also people who say, the environment has a history; everything has evolved. So we imagine climbing into a time machine, to take a look at environmental history. And now, let us run by Germany in 1648. It is rather swampy—in this area here, for example, we hear toads croaking everywhere, and so on. We meet a farmer and say, "How wonderful for you. There are still real swamps here, and very rare

toads, and storks everywhere. You have a wonderful environment." And he replies: "We have a terrible time of it. There are marauding soldiers everywhere; the Thirty Years' War has just ended, and all the soldiers are sitting around in the woods. When a farmer shows up, he is killed. And these marshes—we cannot till them. We can only till the hills, because our plows are suited only to this dry soil. We lead a dog's life." So the intact environment eludes us here too.

So, we learned something there. And then we get back into our time machine, and step out in the Ruhr District in 1880. We meet a worker, and say, "These are disgusting conditions in which you live here—the soot, the smoke, the metal oxides in the air. You will not live beyond forty. Your lungs will be ruined by then." He says, "What do you have against smoke? I'm looking for work. I always go wherever the chimney is belching the most smoke, and ask whether they can use me."

The environment is obviously very subjective—or: it needs a subject. We say we are saving the environment—and it is our environment. For some reason we have now set our minds on the fact that species diversity comprises our environment. Yet when we look into the time machine, we see other people had very different environments. Environment in the sixteenth century meant marshland, persistent marauders, deserters and epidemics. Environment in the nineteenth century meant a population explosion and the search for work. And the sole source of happiness was a smoking chimney. And now we suddenly want, yes, to save the midwife toad and the kingfisher.

I am not disputing our plan to save the environment; I am all for the Greens myself. I simply would like us to be clear about the decision-making system that we use here. Our environment has obvious objectives. And these objectives need a subject. The word environment indeed means something that surrounds man, which

is to say, it has a subject. I think it is nonsense, or an oddity of science, to imagine one can write environmental history simply by pointing out that it rained a great deal in 1600, and so on, and so forth. That is not environmental history; it is climatic history. Environmental history is whether people at that time were afraid of something, and of what they were afraid—for one needs a subject. When we say "Let's save the environment," we are saving something that has a variable subject, and a change of subject implies a change in the material with which we must work.

From our vantage point today, we see competing objectives. Some are in favor of "biodiversity." They want to save certain species. And others say they actually want to save the potentially natural vegetation and biology, fauna and flora. The latter is contradictory, because the potentially natural flora and fauna of a region comprises a fairly limited range of species. Back when primeval Germanic forests stood here, there were relatively few species. You ask, "So how come all the little flowers have survived? There are thousands of species of flowers and insects that feed on the forest." They have survived thanks to disasters. Which is to say, one part of the forest burned after lightning had struck; and another just disappeared, for example after the Danube had sought to follow another route. Huge disasters of a kind we in our Europe can no longer tolerate have occurred in the past. And the flora followed the disasters. This means: little flowers exist only because large trees fell down at some point, and created a gap. Kingfishers exist only because shifting currents created new riverbanks, and new clearings suitable for nesting. And so on.

The question is therefore: How can we preserve biodiversity? Probably we are the ones preserving it already, thanks to the disruptions we cause. It is said already, there are more animal and plant species in the cities now, than on agricultural land. And man, the

disrupter, is a preserver of species. Yet he plays this role unconsciously, and it is a role we could organize much more effectively. But we need to bear in mind that we are engaged here in an activity that has a variable subject and a variable object—hence, in a difficult task.

Where does all this lead? Yes, our planning methods will be more complex than Ulm's "ZASPAK": name the objective, analyze the problem, synthesize—I think I must have put you off that approach by now.

The ways in which we can do all this must take a more collective form, and leave more room for discussion. And they must also include mechanisms that allow decisions to be reached on arguments that engage with a problem on different levels. That means: whether we visit an aunt or an art museum—the ethical and aesthetic solutions must be discussed. And given that some things simply cannot be discussed, our last resort is the vote: Who wants to visit his aunt, who wants to go to the art museum? We as a society cannot solve such problems as these, for arguments about them unfold on different levels and therefore do not intersect, except in the ballot box. And which mechanisms ensue from voting. Aunt museums?

It is fantastic what solutions are offered nowadays. The public hospital, with art inside: its corridors an art museum and its rooms for patients. What is the impact now, of us having suddenly found a solution? Evidently, certain constraints have loosened. This means our previous approach to the issue was: There are hospitals and there are museums. That was a constraint—that set a limit. And now, along comes someone who loosens that constraint. I believe this is an important process: to recognize that so-called constraints are likewise design variables. Admittedly, design variables of a sort somewhat difficult to alter—but design variables nonetheless. And that is certainly something we have learned from this.

Lucius Burckhardt's walking stick with the Universal Stock nail: "It's beautiful here."
Multiple by Andreas Gram & Martin Schmitz.

The other thing we learn is: there was the famous Zwicky Box, which played a role in Ulm also. Zwicky was also a brilliant mathematician. He always made tables: What are the possible solutions, and where is something still missing? One can write up solutions in terms of the way they are formulated, and then see whether they may be combined. That means: You write everything down and then draw a road running right through the table. What is compatible

with what? What is compatible with this? One usually imagines there is only one road. And whoever does not agree, i.e. the client, simply holds another opinion. As I mentioned earlier, we know that different lines of argument do not always run on the same level—there are numerous solutions to every problem. It would be an incredible coincidence, were only one solution to exist. If there is only one solution, that is the realm of functionalism. Functionalism says: This is the one best solution. The best spectacles—so stop designing spectacles: that is the one-stop functional solution to the spectacles problem. In reality, best solutions, optima, do exist; they operate on waves. There are optima and then there are worse solutions. And then on another level, there is another optimum. One pair of spectacles has the best glass, but it is quite heavy; the other is made of plastic, but it is very light and therefore doesn't hurt one. So, there is one thing with two optima. Most solutions have very many optima. And at the start of the design process we really need to invest in the variability range.

And, ultimately, we must find mechanisms by which we might reach a decision. If we do not come to a decision because we cannot discuss things exhaustively then political views are in play; but there are in fact, many things we can thrash out. So my advice is: take a broad approach to design from the start, and make more rational use of paper and printing ink. Thank you.

Jesko Fezer · Martin Schmitz (Eds.)

Lucius Burckhardt Writings. Rethinking Man-made Environments

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