

The books providing a framework for the development of theory in design practice, have been to this point: *Models and Constructs* by Norman Potter, *Hacker Spaces* by Sarah Davies, and *You are not a Gadget* by Jaron Lanier. The last book on our list is *Designing programmes* by Karl Gerstner.

The books have all, in some way or another, been suggested to me by practitioners. Something that I insist on, as I insist on that practitioners think and read books. Norman Potter came up in a tutorial relationship to Ane Thon Knutsen, now PhD in graphic design, who did a typographic study of Virginia Woolf.

*Hacker Spaces* I discovered in the wake of a series of conversations with Trond Mikkelsen, who was the head of the dFORM workshop at the time, but now is at the head of all the workshops at school. We talked about his scanning and modelling of whale bones in Svalbard, and the work he exhibited there.

The two first books on our list are related in the sense that one is biographic (Norman Potter) while the other is ethnographic (Sarah Davies). The common point being that their methodologies are *immersive*. They descend into their subject matters as fish in the water. They are based on field-inquiries.

Then Jaron Lanier—the reference I got from Nikolai Handeland whom we will hopefully visit for our yearly *snowflake workshop* at the end of January—brings us a discussion of digital technologies that emulate immersive experiences (VR), contrasted with systems that are fed with human metadata (AI).

The framework of this lecture is the Zwicky Box. It is a contraption invented by the Swiss-Bulgarian astronomer Fritz Zwicky. And used systematically by Karl Gerstner, whose book *Designing programmes* we are going to look at today. It features a systematic approach, but not like the ones critiqued by Lanier.—

The Zwicky Box looks like a Rubik's Cube, but works with a cabinet with drawers that can be pulled out in 3 directions. Apparently it is like a 3D coordinate system—with width  $x$ , height  $y$  and depth  $z$ —but something odd happens when you make a coordinate system (which is a mathematical entity) physical.

For instance, you can find a variety of objects in it, that result from combinations of 3 that the Zwicky box presents in 3D. It is a way of presenting *categorisation* in a certain way. Also what Gerstner calls *programmes*. Items spit out of the Box do not have to be 3D. In

fact, they can be anything from dimensions of a type design to a colour scheme.

If the subject matter of the Zwicky Box was *riso-printing*—we have a risk-printer in the publishing workshop—the variables combined would be *weight*, *size* and *colour*. The Box would then feature a wide sample of different combinations of weight, size and colour. And then you would collect these in the drawers.

You could have a library of samples—featuring the variation that you are interested in—as big as you want, but in a completely systematic way. People who are into logistic and security, for instance in Sweden, have been using the Zwicky box for such purposes. Zwicky himself used it to catalogue his observations of the sky. Resulting in a theory of Black Holes.

You can't see them—just as you can't observe what the physicists call *dark matter*—but you can *intercept* them from observations if these are carefully categorised and are in sufficiently high numbers. In this aspect the Zwicky Box may remind of your Black Books. They can help you to chart the unseen.—

A catalogue from an exhibit at MoMA in 1973, shows the kind of jobs that the Zwicky Box did for Gerstner in field of interest. The reason why he is sharing this is that he believes that it also can be used by others. My sense of its field of application is that you have to start catching interest in something *specific*.

And then to understand more about this—in practical terms—by making it more *precise*. I think that this is particularly obvious in his development of colour schemes. But let us test the box. Here I have one of my stories of 0, that might be a candidate for precisely that. It is a story about what children want.—

I was travelling to the South Atlas Mountains with my better half—Mariann—and had brought with me what in my repertoire is the equivalent of a mystery crime book: the author was speculating on the whereabouts of the Ark of the Covenant, the one in *Raiders of the Lost Ark*, leading him to Ethiopia.

When I had come to a passage where he was trailing up the upper parts of the Nile river—called the Blue Nile (lake Tana)—Mariann and I went for a walk in the mountainous plains up from the Ourika valley where we lived in Agatha Christie styled luxury hotel, that we had read about in the *Wallpaper* magazine.

In the midst of an otherwise desolate highland plane—with bushes of Rosemary, snow clad mountains towering over us and the cobras hibernating safely underground—we suddenly

cam across a group of boys that we playing football. It was a bit surreal actually. But they also spotted us and followed our trail.

If we stopped, they stopped. But eventually they were growing more bold. On a previous occasion, in the same area, the children had been asking us for *stylo!*, which is a ball pen in French. So, this time I have brought a pack of 150 ball-pens from Claes Ohlsson to give away. I offered one each to the boys.

We had our lunch, and they were like playing as though haphazardly about 10-15 meters away. When we finished we start on our way home. Eventually, they started to ask us for sweets (*bonbons*) in French. We had pens, this time, but no bonbons. But then they switched the topic from sweets to *money*.

*Donnez l'argent*, in the local-styled French. The boys we burgeoning adolescents and they eventually started to be aggressive to me, and fresh to my lady. At the beginning I tried to be polite with them, since we were visitors and this was their country. But in the end I found that I had to be strict!

As we approached the hotel, they disappeared into the hill-tracks. Safely back at home I returned to the comfort of my book, and the tales of the author from the upland Blue Nile. As I turned a page, he relates an episode when a bunch of children came out of nowhere to demand *pens*, *sweets* and *money*.

As I was thinking about the Zwicky Box, it struck me that asking for pens, sweets and money are dimensions of being a child. At least in some parts of the world. Still a surprising discovery—and the usual coincidence—given that Morocco and Ethiopia are really far away from each other.

So, it is difficult to ascribe it to 'local culture'. More like a lingo of children that one could find many places in the world. A little bit like *memes*, though *not* on the internet. Of course, one could arguably claim that asking for pens is *shrewd* introduction to the other two, since pens are needed to go to *school*.

"I am a good child who goes to school and by asking for pens, I am embracing education". Then there are the question of sweets which all children should have to be loved. And in the end: who would deny a child som pocket money? One could further reason that our children do not ask for this because affluent.

They would simply get it from their parents. On the other hand, this is really a children's thing, and is not calculated like the previous lines would indicate. I found a number of

children too young to have any idea of school, yet still asking for stylo, or a pen, during our previous visit to the South Atlas resort.

*But could one collect different items, that still are connected in same way?* Obviously, there is a considerable bargaining power in children. If childhood is working towards *who we are going to be*, then it is all about *aspiration*. Who we are expected to be, and who we'd want to be (against parental will when adolescent).

Precisely for this reason childhood has grown into a *huge market*: school gear, the sweet tooth and everything that money can buy. It can be invented endlessly and yet not exhaust the need, for as long as there are children. Here, programming is for aspirations, and the market has evolve into a chief educator.

So, this is perhaps the chief difference between time-travelling on the African Continent, and the lives we live with our children here. The need to evolve does not readily take on a theoretical direction. The matter has to be exposed and discussed, in order to wake up the desire for such a thing.

Karl Gerstner is one of the few who has cultivate the desire to pursue his own practice as a graphic designer into hatching those authoring aspects of design, that can come from theoretical understandings. So, from this perspective, there is a direct link between theory and creativity. Its *middle-out* funnel.

Simply because it doesn't simply rely on the Zwicky Box as a closed system—like a machine or an automat—because it invites *play*. But a form of play that invites precision and where even minor choices can have a tremendous impact. So, it doesn't eliminate art nor play, but within systematic constraints.

So it is a *between space* defined by 3 variables—the 3 directions of the drawers—and in each one a sample. The sample is not determined by the 3 variables but simply *constrained* by them. So, there are also aspects of each sample, as in any collection, which is *unique*: materially, shapewise, colour.

However, on a more critical note, the Gerstner's usage of the Zwicky Box is not entirely unproblematic. Given that, as we have seen, that it can be used to categorise and programme in just about *any* domain. It seems to do the job in any area if you are sufficiently intelligent and are willing to put in the work.

In any domain with 3 variables it will allow you to collect and combine. And the complexity will be sufficient to enable to generate an

output. The sum total of making it work will hatch theoretical understandings in time. *In sum, Gerstner establishes a usage for the Zwicky Box as a way of educating oneself.*

That is, to educate oneself as a designer in a research-based specialised practice. Which is why it is of to us interest here. Who wouldn't want a simple *machine-like* contraption like the Zwicky Box to warrant life long learning in a professional career as a designer, that integrates research and theoretical insight.

However, to my mind, Gerstner's use of the Zwicky Box is a little over the edge to almost becoming a product. Not a design product, but a product for designers, as it were. Which, of course, is not bad in itself. However, there are aspects of the box which might indicate a more critical use, and hatch new repertoires.

We don't want to be too sophisticated at this. It is enough to note that the tag that indicates the contents of each drawer-space—containing a *one off* sample—readily can be considered as a set or an element. If it is a set it contains something else than itself. If it is an element it is contained by something else.—

So, if I have stuck a photo of each of you on the end of a drawer arrangement in a Zwicky Box (ZB), it shows that you are members of a class. On the other hand, your faces also are used to tag work that you have done—different assignments in the course—the book presentations and the design comments.

The books you have presented also are like this. They are contributions to a series of presentations that you have *generously* produced in class. At the same time the books are worlds unto themselves, that are made up of *unique* combinations of non-same elements. The same holds of the *comments*.

In the design-comments you are rather in a *transpersonal* field because it goes from someone that you have interviewed, to a comment that communicates two ways: as a return to the *person* whom you have interviewed, and to the *class* in which we share them in a crowdsourcing session.

This is the kick-off in February. We use it to prompt our memories of this term *theory 1*, to kick off the next game level in *theory 2*. But then the whirlpool is no longer your relation to the interviewee, but the class. Something happens *between* the comments as we bring them together in one session.

Such a procedure is surely not unique to the theory classes, but what we do here is to

retrace our steps to describe and analyse our process. This we do to establish a foundation for theory development: *that you, MA students in design, are developing theory from your practice*. But what is the source of theory?

Well it comes from these *not too hardwired* ideas, that are not realised at this point, that you have been working on for future legibility. This is how we have defined your assignment with the Black Books. If you have done it in this accordingly, through a way that you have determined, it will serve you well later.

It is a challenge to leave something yet unrealised with an uncertain future, for a present limited to a readable output, on the assumption that you will be able to return to it, and get something out of it one year from now. Yet, that is what I am asking you to do. Live with *uncertainty* and still have a *focus*.

So, when I will look at the Black Book elements within the triangle of your portraits, your book presentations and your comments, I will have the elements I need to make up a crude but still *specific* personal profile. The Black Books are likely to bring *precision* to that personal profile, and also my comments.

In sum, the Black Book itself adds *precision* to a *specific* profile that you have developed in class, collaboratively with each other, and individually. Then my comments add a new level of precision. Both in what it allows me to intercepts as I am working on them, and also to you when your get my comments.

Usually. At any rate I think this should give you a notion of the *system* in the theory courses with me, that hatch and develop at new levels in 3 consecutive terms at KHiO. Moving on from the identification of specific designer profiles unto 2 consecutive levels of precision we will do more than once.

It is based on a principle developed by philosopher and mountaineer Arne Næss, and is called—in the verbatim of his translator David Rothenberg—*precision* (in Norwegian, *presisering*). The idea of theory development as moving from the *less precise* to the *more precise*, is a legacy from him. Exquisite!

This means that a theory does *not* have to generalise—going from the specific to the general—but that, in order to benefit from a theoretical inquiry, it is *enough for you to become more clear about what you do: practically, reflectively, theoretically*. Which is where Arne Næss introduces *ecosophy*.

In his vision, ecosophy is a 'personal philosophy'. Which means that the three-step going from the specific to the precise, *we are more likely to develop ways of working with deep-ecological connections, both to each other and in environmental terms*. Which is why I am spending some time on this here.

Because if we work to develop *personal* theories—that come from your practice and work as designers—then the chances are, if Arne Næss is right, that our *class* will develop a *deep ecology*, with connections that run across the class and make it connect as a whole. I have seen this in previous years.

So, what kind of critique of Karl Gerstner's use of the Zwicky Box does the turn to Arne Næss provide for? There is an observable difference, at this level, between the book *Designing programmes* and the *MoMA catalogue*. In the latter it appears an all-purpose method, while the book homes in on difficulties.

Which means that it there is more friction in it. After all, the subtitle 'instead of solving problems programming for solutions' can mean to quite different things. On the one hand, it can mean programming *before* going for a design solution, *rather than* jumping directly to the solution. This is the catalogue.

However, it can also mean that we *do not* opt for design as 'problem solving' at all, and instead think of design as smart ways of programming for people—the people we design for—to solve their own problems. This makes more sense to me (though not necessarily to you) because of one thing.

And that is *ownership*. We are in a critical phase now, where ownership has surfaced as something important in our class. To me, the discussion we had last Friday is precisely about this. So, we are about to turn a page bringing us *from* theory 1 to theory 2. But this is of course *not only* about us.

In the recent developments at school—the newspaper debates this summer in the autumn—the polarisation amongst the students, that also has involved teachers. The first step to programme any kind of problem at KHiO, concerning critical theory and liberty, is to take ownership of the situation.

And this is the gist of the contents of the last flyer that I did this week and sent to you earlier than usual. If design is programming for solutions—rather than solving problems—it can be that kind of work that creates and develops a space for everyone. For everyone to develop a personal theory in time.

A personal theory does not mean private. It is up for discussion, all the time. But articulating clarity in personal endeavours—as an artistic education unavoidably assumes—is based on an idea of ownership that is developing in time. It is not only our *ideas* and *practices* that becomes more *precise*, but our *ownership*.

So, in an MA, there is a whole *track-record*—a whole story—of how this ownership of ours has evolved. Also how it has been making leaps and sudden turns. The evolution of knowledge theoretical understandings also includes our evolution as people. In my book this is called education. So, let us round up.

The Zwicky Box has a number of virtues which I hope have been demonstrated in the course of this lecture. But it appears that Karl Gerstner has been applying his basic idea quite differently in the book and the MoMA catalogue. MoMA is in NY, the United States of America, and its culture is *utilitarian*.

The book was published in a series of editions in Switzerland. The last edition in 2019. That is, last year. I have lived in Switzerland, and have also visited it recently. It is a country where the climate and life-conditions are stern. Especially, in the mountainous areas. Making a living always means *hard work*.

As I see it, the Swiss concept of design makes a difference between **a)** making a living and **b)** have in a life. Having a life is walking *that extra mile* beyond making a living. It may entail cutting down on the number of elements that you have in your life, in order to do the ones that you keep *really well*. In a natural habitat.

For this reason, the landscapes look quite different from over the border in Italy, where the natural conditions are the same, but where a whimsical variety also runs the danger of making life miserable. Especially, when the going gets rough. When conditions are hard. Natural conditions are not always welcoming.

And we need to take care of them. In sum, as a gardening tool the Zwicky Box has a lot of potential. Which for me is the *book*. While as a way to engineer design solutions, I think that it is rather disappointing. So, my question then is the frame of reference that we have when we develop different careers in the *field*.

That is, the *design* field. We can solve problems in areas that are in demand, with artistic integrity and yet being payed in cash. Alternatively, we can work directly on improving life-conditions, on the assumption that our technologies and environmental conditions are not always very welcoming.

I think that we can be paid for that too. But it also has to do with the *societal development* — the economical and social context — in which we work. As Gerstner demonstrates.

## APPENDICES

1 — KHiO is not any art-school. It is not just an art school inside an old industrial facility. It is an art-school with industrial machines. The concept of an industrial artistic production is dreaming within the walls of an old canvas factory. Perhaps it is a dream-limb of the past — amputated, yet still felt. But not only.

Evidently, the idea that industrial production should be devoted to a steady output of standardised — near identical — products is presently under challenge again, since it is not the machinery that constrains productive processes to be repetitive, but the market. A market of products-services-interactions-systems.

Of course, systems are not as repetitive as interactions, interactions not as repetitive as services, services not as repetitive as products. But even products need not be repetitive as long as the machines can be programmed not to be. So, repetition is today something imposed by the market.

Something deriving from logistics along with offer and demand. It is repetitive. But what kind of repetition are we considering here? Evidently, the concept of repetition is mechanical and runs according to a logic of replacement. If something breaks, you can replace it by something equivalent.

The replacement will have the same/similar specifications and be offered a price-range that makes it acceptable/comparable. So, it is marginally linked to what an industrial facility actually can do. To withdraw industrial production from economic convertibility, does not appear to be an option. So, what then?

For some 18 years back I managed a project at Henie Onstad Art Centre called the *new economy event*. It involved Irish-born John P. Martin from the OECD and Welsh-born David Snowden. One of the ideas that were explored was to conceive money as an *intermediary* — rather than final — value measurement.

An indicator, in our culture, that we are not going all the way to *create* value in the lives we live, but only the line of products, services, interactions and systems offered to these lives. In other words, we are systematically ignorant to how much of the value offered is being realised as value in the lives of people.

And given that common sense says that real value should manifest itself in the lives we live — not in the lives we are offered — it turns out that value at this end is difficult to measure and audit. It becomes marginal, vaporous and obliterate. Though it is decisive for life on planet Earth, it comes down to nothing.

This is my background for asking what Karl Gerstner's two uses of the Zwicky Box might yield in a deeper understanding of outcomes that might help us progress in the direction of a truly new economy: that is, the economics of deep ecology, in world where people seek excellence in living environmentally.

That is, essentially beyond sustainable. Because it is sustainable in the sense of the prevalent understanding of life-styles, markets and production. For instance, could one foresee a project-based industrial production, that would adapt to need and social change, rather than simply cater to offer & demand?

How would it articulate with the current trend in artistic research — of doing research with, through and for the arts? Maybe not so well. How about the rephrasing of artistic research in a more ethically reflected direction? Maria Puig de la Bella Casa proposes to think through, dissent within and for, it might be it.

She is arguing for a critical understanding of care, and what it means to care for the need, will in many cases hinge on the establishment of the need. A need is not given. A need almost always emerges through dissent, the multiplicity of voices, before a caring programme can be developed/established.

Can we conceive the development of a caring programme within what Karl Gerstner has to propose? From the discussion on the body text of this lecture above, care is more articulated in the book than in the catalogue. And, to some extent, could be seen as two rather different projects, in 2 context.

One Swiss (the book) the other American (the catalogue). Evidently, caring for need cannot be based on a pre-established need. What, then, is care in the hatching of need? There will be a dynamic link between hatching need and the development of design, and reflecting the care of need in the care for design.

Could the Zwicky Box be used for the development of an adaptive industry, in which the care for design and the hatching of need feature the principles of a deep ecology? Here deep ecology does not only apply to the mode of production, but for a receptive industry and the mode of consumption as cultural *ethos*.

2—By this we turn the page to a short chapter on Gerstner's possible contribution to the groundwork of what one might call a *receptive industry*: i.e. receptive to problems as a programming agency that does not solve them, but programs them for solutions given people to solve by simply living their daily lives in natural and built environments.

In his development of the uses for the Zwicky Box, it is clear that Gerstner makes a contribution to the history of drawing. And that his historical references are explicitly historical (both in the catalogue and the book, the Gothic arcade and the drawing examples from Albrecht Dürer). It can be partly seen as an extension of [polytechnical drawing](#).

That is, the drawings in his study of a table in the MoMA catalogue can be seen as a heir to *descriptive geometry*. And those close to production prototypes, could be seen in the wake of *technical drawing*. At the same time Gerstner's drawing arguably go *beyond* the engineering tradition in asking what drawing is and does in the age of computer programmes.

Here two genres of drawing come into play: one with an art-school legacy which I would call *analytical drawing* (one that e.g. comes in with his use the Zwicky Box to tease out the analytical dimensions of typography), one that follows in the wake of the possibilities offered by computers which I would call *generative drawings*. Models that produce drawings.

These two categories of drawing—analytical and generative—deserve attention for several reasons. One is the relation between grid and morphological discussed by anthropologist Levi-Strauss closing his structuralist exploration of myth (1971), bridging unto the studies of cultural artefacts that he did later in his life. Going from generative to analytical.

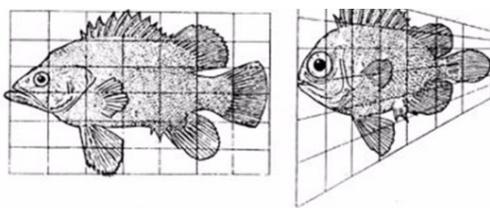
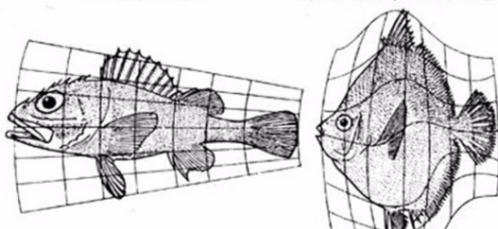


Fig. 150. *Polypriion*.

Fig. 151. *Pseudopriacanthus altus*.



But also to the counter-current to structuralism—interactionism—that was bent on the study of choice and agency, rather than of meaning and myth. This dimension of Gerstner's development of a usage for the Zwicky Box features in the book, more than in the catalogue. That is, the aspects of the problems left to solve once programmed.

That is, solutions produced at the level of social agents/actors. If seen in the framework of Arne Næss' *deep ecology* and *ecosophy*, then 'programming for solutions' feature deep ecology, while the solutions of everyday life—that are unavoidably *personal*—feature *ecosophies*. Here, industries are structural agents. People are generative actors.

In the wake of STS (Science Technology Studies) and the emergence of post-humanities, drawing emerges as a vehicle of understanding and ethical reflection that has an interest, precisely because it is *other* than human. It enter receptively and productively—that is interceptively—in the care for and the hatching of need. Earth needs. Human needs.

Other needs. Here the assignment of drawing is not to visualise something that already exists (or, alternatively, to visualise something as though it already exists). Rather, drawing is a contact metaphor for issues that hatch and develop along its rim, alongside drawing, on its perimeter. Then drawing is not a drawing of *something*. But the coming-to-problem.

Drawing, then, is a way of staying with the trouble (Haraway), a regime of care for a trouble with a problem—rather than a solution—on its radar of possible outcomes. Given that who has a problem is already in the space of solutions. Which appears to be rather essential to Gerstner's bold attempt. In this mode, it is given to exploration and discovery.

Here, drawing is not an additive strategy, but an subtractive one. One that takes interest in picking up—intercepting—factors that do not readily come to view, but can be inferred from analysis. This is, for instance, Zwicky's own application of the box on the existence of black holes. When these are drawn, the drawings are entirely theoretical.

Empirically—or, to naked observation—they are invisible. So, clearly drawing is thinking with, dissenting within, and thinking for. In our history at KHiO drawing is a discursive agent of this kind. Unfortunately, it became lost to condominium style quarrels, where attacks on public funding conceals competitive ambition to acquire these funds to narrower advantage. *The need of the precisation of need is lost.*

**3**—After the two preceding sections on deep ecology and drawing—in Gerstner’s realm of inquiry with the Zwicky Box—I will now turn to the question of the artistic propositions that his project may have in store, if seen in a larger context. More specifically in the context of Marcel Duchamp’s two-box works, such as the *Boite-en-valise* and *Étant donnés*.

These are both (1936 and 1969) examples of works involving boxes, where the box operates in two modes: as a display of artistic contents, and as objects in their own keep, as it were. Seen from this concrete vantage point Gerstner’s multiple activations of the Zwicky Box, would have to be considered concretely. That is: a box, in a box, in a box.

Seen in the Duchamp-perspective the Zicky Box, then, features different modes of viewing that are conceptually distinct, as a result of how they operate. *Étant donnés*, for instance, explicitly contained two works of art, dependent on how the boxes are made to operate: separately and in combination, since they feature two sides of the same work.

The first (innermost) artwork in *Étant donnés* is called *Le gaz d’éclairage*, while the second (shutting the door to the first) is called *La chute d’eau*. Looking at the lamp in the first art-work, and then seeing the waterfall when closing the door. The door works like the shutter of a viewing machine, the waterfall—behind the lantern—is seen as an after-image.

The conditions of viewing are different if you start with the door shut, and then open to view: this is the voyeur. While looking into the landscape with the lantern, and then shutting features a different view: that of the regardeur. The difference between the peeping-tom and the viewer. The difference between the two is the presence/absence of the concept.



*Le gaz d’éclairage*

*Étant donnés* are given to see (in plural) but according to two different modes. And this is one meaning of the boxed display. So, at one level, the work is about 2 modes modes of perception and their relation to choices made

by the public of visitors. The two modes have two elements but are differently vectored, with the two boxed works as coordinates.



*La chute d’eau*

The Zwicky Box features the same reversibility but does not result in an opposition—as in Duchamp’s work between the *voyeur* and the *regardeur*—because it features a system of three (differently) boxed directions, rather than two. The same kind of structural assumption would appear in Duchamp’s work if the viewer was included as the third box.



Whether or not this was within Duchamp’s intention of the work—a triple *Étant donnés* rather than a work with two boxes—is not my errand here. It rather relates to the 3 levels of embodiment engaged by the work as a material agent: **1)** the body of the woman; **2)** the body of the viewer; **3)** the body of the compound work [which is conceptual].

The fact that it was worked on for 20 years by Duchamp in his Greenwich village atelier, imbues the work with a provenance troubled by the fact that the exhibition of it was post-humous (according to the artist’s will). The modelling for the female figure was his partner. The work was carried out secretly, while artist had left art in favour of chess.

It is a work about the modalities of viewing under immersive conditions. It certainly is about virtual reality. So, contains the 4 essential layers of the course. How theory, or the project of hatching theory, can be contained by three levels of embodiment joined in all design practice: the production of a work, our receptivity to it and intercepting its concept.