

Body, movement, dance and weightlessness
Kitsou Dubois

Extracts from the doctoral thesis of Kitsou Dubois, defended in 1999.

I suggested to Kitsou Dubois that we publish some extracts of her thesis here. She agreed. This text is testimony not only to research in the field of art-and-science with all the rigor required by university requirements, but especially Kitsou Dubois has been able to translate into words, just as she does in her choreographies and installations, the emotion, the perception of experience in micro-gravity and the impact that this entails on her “terrestrial” works. In her thesis, she explains her approach and shows us choreography at work, underlining how micro-gravity is part of a broader movement of contemporary dance.

The thesis was defended in 1999, and only the choreography *Gravité Zéro* is presented here. Since that time, with *Trajectoire Fluide* and her installations —*Trajectoire Fluide, Upside Down* and *FILE/AIR* (see the text "FILE/AIR, the ambiguity of limits" by Kitsou Dubois and Eric Duranteau in this same issue) — her work is no longer just to make the spectator “perceive” what micro-gravity is, but explores the “incorporation” into “terrestrial” works of a sign system and a philosophy of dance and of life that have been influenced by micro-gravity.

I selected the extracts, and I have eliminated the notes and references.
Annick Bureau

First emotions

The experience of parabolic flight is at the same time marvelous and melancholic. It is an extraordinary experiment on the presence of a perfect state of dance. Wonderful because you find yourself in a state that corresponds to these few magical moments, or “right” moments, each dancer was able to live in his or her experience, but that he or she is always trying to find again. This moment filled with poetic force in which the gesture regains a sacred meaning, because it is so near his/her own death. This moment in which the entire cognitive and perceptive complexity of the performance of movement come into harmony. This moment is inhabited by an ephemeral sensation, that the dancer values because it expresses the desire that the magic of bodily things is linked to their disappearance. In weightlessness, this moment comes out of a sensation of eternity.

The dream of flight has been attained. It becomes reality. It is marvelous and melancholic at the same time. After all, how can you infinitely reproduce a moment without reducing it to banality? How can you regain the sacred meaning that the concept of ephemeral confers upon the dancer’s “right” movement? The instant has to be reappraised, the goals moved, other motivations found. It is an entire artistic quest that needs to be reformulated. The time and space of this infinite movement needs to be reconsidered. The body is freed of all restrictions; no longer is there any feeling of

accident as a break, a rupture, a fall. No longer do you need to make an imperceptible tremor visible, all movement escapes because you have the intense feeling that everything is movement. You find yourself in a euphoric state, in which the pleasure of the movement experienced in itself and for itself shows through, outside any purpose. Pleasure of being and existing in motion, pleasure with a high sexual content, if, according to Freud's definition, we understand sexuality to mean anything that gives the body pleasure.

Through the pleasure another thing that shows through is the extent of the whole sign system to be invented in a universe that will soon be part of our cultural consciousness. The sensitivity of the choreographic art has a real role to play in the analysis and invention of a sign system in this new space and time. This should be done before industrial society, with its concerns about profitability and the subsequent feedback control that it imposes on the body and on the human impulses, organizes in its own image the behaviors in places that some of us will have to encounter in the space stations.

What could be more wonderful for a choreographer than to invent tomorrow's sign system? Is there such a grandiose scene in the entire history of the performing arts?

1 - Space

The space that I have experienced is in fact both small and large at the same time. Small, in that the location that I had, just like the other experimenters, measured 2x2 meters. The floor, the walls and the ceiling were those of an airplane, slightly curved and totally padded to avoid injuries during the 2G periods. The environment was off-white, and there were windows, but they were covered. There was a handrail, a kind of orange-colored rod marking the line between the walls and the ceiling. This handrail is a reference point to identify the position of the ceiling. We moved around within other experiments that we could see and hear, since there was no separation. This enabled the doctor and the pilots – using a camera – to have total visibility throughout the compartment.

We came from elsewhere. From a dance studio, via a swimming pool, we got off at a military airport.

After a session in a depressurization chamber to test our resistance to stress, we wandered around the Zero Gravity Caravelle. (1)

And now here we were inside, sitting on seats at the rear of the plane, for take-off and landing. Once the Caravelle reached its destination within the authorized military air zones, the parabolas could commence. There were just under 30 of us, all in orange pilots' jumpsuits. Everyone – men, women, scientists, astronauts, parachutists, doctors, sometimes a journalist or a special invited guest – was concentrated, worried or excited.

Then we were at the right height, at around 12,000 meters, and we could release our safety belts and move round in the spaces allocated to us. The pilots' voices give a commentary and, suddenly, they announce that the plane is climbing for the first parabola. Plastered to the ground, we did not feel any heavier, but we did feel "stuck."

And then 30 seconds later, the matter of space changed totally.

The walls, the floor, the ceiling were still there, but it was as though they were no longer there. Is that what gives the impression that the body was dilating, or is it the inside of the body escaping?

No, it is the organs that are changing places; they too are liberated from gravity and move and look for a new spot in the internal space of our body.

It was as though they had their own movement plan. Did they have one on earth to which we never paid attention?

And then the ground, from which we all want to escape and to which we are so attached, where is it, up there, down there?

I am so used to dancing with it, it is a real emotional link that I have with it, and now I don't care where it is.

"It's as though you were in water and there was no more water," Bertrand Lombard would say on the return flight. Is that why the first reaction is to swim? Even though I swim I realize that there is no water, and that this movement would disorganize me completely, with no support, and no depression.

And what had happened to the various parts of my body? The front, the back, the side, the upper part, the lower part. The front existed because I could see it, but I could not go forward unless I lent on the back. Otherwise, I could not move. I could not see the back, but I simply always need it. I no longer worry about the back, about what is happening behind, since I can't lose my balance. In any case, it is as difficult to go forward as backward. The top is me, that's for sure – I recognize myself.

Uh-oh. I had forgotten the lower part of my body. What was my foot doing? It is tickling the lens of the camera, now it is in a parachutist's hair. I will have to make sure to pay particular attention to the lower part of my body.

And the walls: they are both near and far at the same time, since if I knock them, they push me back instantly. If I want to touch them, they also push me back, and if I want to stay near them, I have to attach myself to them. With the floor, the ceiling, it is the same phenomenon. No longer can you trust anything.

At last, I land. Well, on nothing, there is no support, just on the listening of my new body, of this new space. I put myself in a "dance state", to understand this exchange between the inside and the outside. It is not necessary to produce movements, since everything is moving. The most difficulty is the motionlessness in "free floating," as it is called by the initiated. In that state, you don't touch the walls of the compartment any more, where you feel even the passage through the skin of the micro-movements between the body's interior and exterior. It is a merging state; is my body extending into space, or is space penetrating me?

Everything is so different, but still I can talk, listen, I feel and breath normally. Everything is identical, yet nothing is.

Then I can exist in another way, I can be me or rather, I can rediscover myself.

Warning! The pilot has spoken. He is going to dive again. Three seconds to get back to the ground quickly, to grab something so I can lie down. Just one second before I weigh twice my weight.

2 - Time

The airplane's speed is the temporal envelope of the situation in which we find ourselves.

The plane makes six series of five parabolas each. There is an interval of time of 4 minutes between each series. Then 30 seconds of 2G, 25 seconds of 0G, then 30 seconds of 2G, and lastly one minute of 1G, then the next parabola begins, identical in length.

The concept of time is extremely precise. Such precision qualifies the nature of the time we spend in parabolic flight.

The parabolas follow each other, they reproduce the same organization of time, like rhythm that recurs. This rhythm arises out of technological and scientific constraints.

Yet, within these very short time intervals, there are conflicts of sense and phenomena of adaptation that make perception of time extremely subjective.

You could almost speak of "phrasing," as the term is used in modern dance. The phrasing arises as much out of various perceptions of weight, of the dynamic forces required for displacement as of time itself.

Within the compartment, the passage of time is signified regularly by the pilots' information. The sensation of duration, nonetheless, remains extraordinarily associated with the sign system and with perception. There is a change to the internal rhythms and the conflicts of time to be managed in any instant. For example, when the body is in free float, the sign system is slowed down. You can take infinite pleasure in feeling the movement going around inside your body without ever losing balance. Here, time can be drawn out without consciousness of duration. An eternity.

On the other hand, when you are pushed back from a wall, the push can cause a high and constant speed since gravity is no longer there to slow it down. The time required to establish supports so that you can move in a specified direction is remarkable for the difficulty it represents. When the support is found, the speed gained by the push is much more rapid than on earth.

The weightless person has to act with great subtlety, which is rather joyous. Then, since the speed is constant, our brain has difficulty assessing duration. There again is eternity... Lastly, the time to recover from the motion when the person arrives at destination will be of yet another type, since he will need to avoid being projected once more in another direction.

At the start of the flight, however, the duration in 0G seems very brief. The subject is still reflecting on what is happening to him, while he is "stuck" again to the ground in 2G. Gradually, as the parabolas progress, and then the various flights, adaptation to weightlessness causes the 25 seconds in three dimensions to become time intervals that are increasingly vast, to develop a sign system. All these distortions of time and

space contribute to the difficulty in establishing a memory of the motion once ones comes back to earth.

Relationship between the space of the body in weightlessness and on earth: what representation of motion?

Each movement in weightlessness leads to a totally unexpected displacement. Movements are fluid and without end. You have the feeling that the movement began before its preparation and that it continues after it. That is why falling does not come into the equation, because, without willingly trying to, you cannot break or fall. You are not maintaining yourself in opposition to a force (gravity), but rather you let yourself be taken by the environment.

The incessant dialog that our brain maintains with the "flesh" that animates it is doubtless put off by this. All the bodily messages need to be organized in a different way. Some of these messages, quite typical ones, cease to reach us whilst new ones appear, and they need to be arranged.

When, for example, on earth, you want to create a movement from a support, in the initial phase of the movement you establish a desired direction with a plan of accentuation that will provide the illusion that the gesture being danced is as though suspended.

The true trajectory is always a parabola, which ends on the ground. However, the accent will leave the perceived trace of another trajectory. The dancer's brain has organized all this information.

In microgravity, the trajectory is continuous. There is no longer this aspect of the throw that conveys the idea of a projectile that is sent and that requires a reception space. The trajectory is linear in a restrained area such as the compartment of the airplane or, in orbit, outside the space station. The intentions of the movement for a throw or an impulse – within the dancer – will not be organized in the same way. What is acting? Is it my body or the environment?

Can one still be considered the resident of this body that is known but not entirely recognized, or is it really, in this case, a foreign body that will need to be reinhabited and reappropriated? Is not this momentary disincarnation the opportunity to check the relationship of dependence that unites the body and its area of action, and therefore conditions the intimate understanding that one can have of it?

Consequently, different methods of approach are possible. The first is to analyze, from an external viewpoint, the modes of use of this new area and the novel capacities it offers. That is what we did when we relied on the observations of the various scientific approaches.

That is not enough. You have also to seize the opportunity of living through the experience of acquiring a new perceptive modality by following, inside the subject, the way in which the world appears to him.

So, by fully involving myself, since to date, I have already taken part in nine parabolic flights, I will attempt to verbalize a thought that came from my philosophy of life and my experience as a dancer and choreographer.

The dancer's philosophy is not limited to "sending myself into the air." We think that we have already clearly expressed that in this research. However, via concepts of pleasure and euphoria that we have used to describe the emotions experienced in OG, the need appears to shift the goals: it is no longer sufficient to be in the movement; we need to set up a sign system.

The most disturbing event is that weightlessness has revealed the reality of my imaginary space as a dancer. The pleasure of the circulation of the movements within oneself, the existence of an impossible body or the concretization of other trajectories are unheard-of experiences. They exist in an "extra-ordinary" way on earth, and in a continuous way in weightlessness.

Nonetheless, this easy reproduction, as I was saying above, banalizes the extraordinary quality of the lived experience of perception. To maintain the strength of the feeling of being in such an absorbing environment, we need fundamental elements of the esthetic of dance on earth. These are the bases of a structuring of motion. They will give a framework to the act of building to create, on earth, the tensions to free ourselves from gravity and, in weightlessness, the means to have tensions exist.

We carry within us the symbolic experience of weightlessness.

However, the dream of flight gives us the opportunity to experience a body that is not really changed by the experience. The sensation of weightlessness, in such a case, is limited to a body with weight – i.e., an ordinary body – that imagines not being so. In that case, are the internal changes real?

There is a paradoxical relationship between the perception of the body, whether in weightlessness or on earth, and the imaginings associated with these two very highly symbolically charged universes.

In weightlessness, the brain juxtaposes an imaginary perceptual experience with an experience that is lived. However, it juxtaposes them in a phenomenon of Cue Free Inversion, to use the terms of H. Mittlestaedt. It is no longer a question of freeing oneself from gravity, but of recreating tensions. It is no longer a matter of avoiding falls, but of provoking a break, a stop. It is no longer a matter of avoiding being knocked, but rather of grasping on to something to avoid being pushed away.

Now I have an odd sensation within me that these two universes exist simultaneously and, what is extremely bizarre, it is as though they had always existed. Is that because I am a dancer and my perceptual experience is loaded with the symbolism of flight, or is it simply because I am an Earthling with uncertain origins?

[....]

In the absence of gravity, the sensation of a center of gravity persists. It is a reflection that astronauts have made, and Carole Tafforin recorded the same.

This center of gravity would be the point of convergence of the stresses of the body for

the organization of the movement.

We have seen the extent to which the stresses depend on a certain "body state," which is itself the result of a "state of mind." This state of mind provides the solutions to technical problems; for example, when Nijinsky was asked to attempt to explain or convey the technique he used to perform his marvelous leaps, he explained by saying: "It's very simply: you leap and you stop in the air for a moment." This is an example of a state of mind that enables him to find a "state of body," which itself is at the source of technical solutions.

This is how the experience in weightlessness transformed the state of mind of my dancing. I "know" – in my state of mind – that my center of gravity would be rather of the order of a point, rather than of a straight line. I "know" that it is subjective, that it is not material, that it depends on my intensions, on my tensions, that it can move and yet I "know" that I can take support upon it. Then, I "know" that my subjectivity can be a real support for my movement. And therefore, it is by taking into account this subjectivity that I will structure my movement in weightlessness, as on earth.

On earth, each dancer can thus create his/her own references. The basic reference would be of the order of a point or the upper or lower part, no matter. It is then a matter of organizing one's movement by associating this subjective referent to real supports. Conveying this state of mind in which the subjective referent is at the source of a structuring of the danced movement is a way of constructing the bases of an esthetic.

In dancing, we work on the spiral, which is the basis of the search for a fluid movement. On earth, this internal spiral movement always has an outlet on the axis of gravity. In weightlessness, the spiral has no end, it is total and infinite. It is simultaneously the revealer that all is indeed spiral within the body and the discovery of the extraordinary fluidity of the movements. It is a mode of communication from the internal space to the external space, and vice versa. In fact, in weightlessness, you can observe the efficacy of movement such as the rotations and twists to find your "subjective center of gravity" when you are disoriented.

The search for harmony in the movements is highly linked to the mental picture of the movements, and more especially to the trajectory between the contrasts and the oppositions. This trajectory can be visualized as a circulation, a whistle, a breath, a fluid, whose source and ending neither begin nor end.

[....]

While the danced movement is represented in the form of a spiral, the movement simultaneously becomes finished and infinite, limited and unlimited. It is no longer an issue of right/left coordination, but of reorganization of the volumes of the body around a subjective axis. The internal space is then a volume made up of an infinite number of volumes that are reorganized at every moment.

To perceive your body in volume and discover the spiral as a mode of relationship between the body's internal and external spaces, you have to establish egocentric references. Supports are found that will give access to more freedom in the movement.

The dancer will then be able to project his/her "internal vision" to the outside world and let himself/herself be influenced by the outside in a relationship of exchange.

[....]

The space between

Rather than fixing your look on the whole, you can educate to see the voids. "Seeing" the voids is learning to perceive them.

To perceive them, inside the body, the vehicle that allows you not to fixate on the wholes, is the spiral propelled from the subjective reference. The body is then lived in volumes, as I stated above, which dilate, contract, change their shape. The body opens up to the world surrounding it by including the voids just as much as the wholes.

This relationship of opening up between the internal and external spaces, via the spiral, lets you see the "space between" – between the bodies, between the objects, between the articulations – which is the place of the void and of the creation in which the dancer's presence takes root.

This "space between" is the very matter of dance that I am exploring. It is a real quality of adaptation. It is a work of presence in a fluid universe that searches its roots in gravity and that escapes from it at the same time. It is another way of looking applied to the world. It is an opening of the body and of the mind.

In the "space between," the dancers explores and seeks to express the invisible. S/he will discover the resonance of his/her movement towards something more immaterial than the bodies of the partners, objects or spectators. S/he will dance while projecting his/her dance into the "space between." It is for him/her a way of finding an autonomy compared with an environment that is obligatorily constraining.

In weightlessness, I apprehended the "space between" as a matter from which you can find supports. The void is no longer approached in terms of vertigo or abyss. It is the place where everything is possible. The interior of the body is no longer a fear-inspiring chasm, but rather an infinity of spaces of extreme mobility. The reality is no longer expressed solely by the wholes, since the voids are also a matter.

Weightlessness taught me a look. I "trans-ported" it to earth. This way of looking is juxtaposed with the dancer's look so that it can grab onto the voids in just as concrete a manner as if they were wholes. Another model of body will be born from this look. It will take all its creative force in the transmission to the public, to other dancers, and quite simply, in everyday life.

My role as an artiste on earth is to explore that shadow zones of our perception to bring them back into activity. A little as though we had sleeping, anesthetized captors whom we need to wake and reactivate. The artiste makes them appear on the surface to guide a "wakening" of the senses.

[....]

Future projects

Currently, the project continues. However, weightlessness imposes the constraint of using images of the dancers in flight, since it is concretely impossible to recreate on earth. The theatre scene and the ballet forms do not enable me to transmit in any more depth this other territory of artistic experimentation that is microgravity.

That is why the spectacular form of the next presentation will be more to do with the "performance-installation" so as to be able to use new media that evoke trajectories, tensions between the dancers' bodies, the images of the dancers in flight and the spectators.

[....]

We must open up Space, move our look from the outside to conquer other territories. We must also move the look from the inside, i.e., from the body towards these other spaces of investigation. These new territories must ask the question of the relationship of the body (i.e., of the extremities that are linked to the center) towards these other spaces of exploration.

It is fashionable to say that "cyberspace" is part of the new territories that artists have taken over and which rely on the cognitive sciences to query our imagining by creating virtual worlds. Are these virtual universes inhabited by the contemporary artists developing another body? What is the place of the model of the contemporary dancer's body in this universe?

What is the place of dance in weightlessness?

[....]

Let us observe a child and his mobility, not what is visible but that through which he lives. We will observe that, until one month, he still has references of the world from which he springs. After that, his capabilities regress, as if he had to relearn to evolve in his new environment. He came from a space in weightlessness, and is in the process of landing in a weighing space. He needs time to integrate all the new information coming from the outside world and is developing his motor skills in constant connection between the space of his body and what is outside him.

I cannot resist the temptation of following that observation with the testimony of the astronaut Patrick Baudry, who describes the take-off of the rockett and his sensations in Gravity 4 and more, in contrast with a kind of birth, while he was waiting for the earth's orbit, and that he no longer has weight.

"Time speeds up. Every gesture becomes very difficult. Breathing itself is no longer a reflex, but a deliberate act. Our relationship with the outside physical world must be near that which we will have when we are old: the environment has become heavy, hostile, and difficult. Then suddenly, everything stops. The seconds become extremely long. Time slowed down. The motors stopped: We are in orbit around Earth."

How does a child look upon birth onto earth, and how is an astronaut's perception transformed by his orbital experience? What is the nature of transformation in a virtual universe?

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(1) Editor's note: Kitsou Dubois is here describing her first flight. Since that time, the CNES has been using an A300 instead of a Caravelle. See the text "Weightlessness through parabolic flights" in this same issue. Kitsou Dubois also made flights on that plane, and on the Russian Ilyushin.