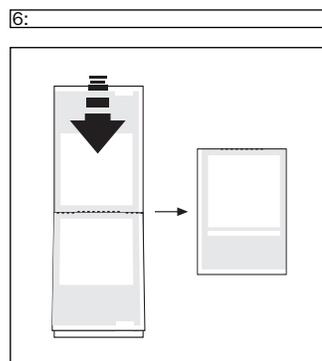
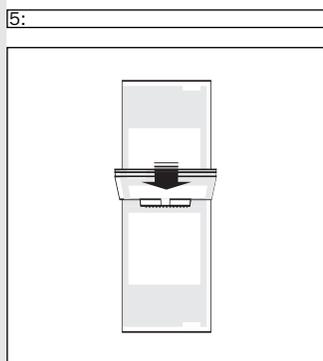
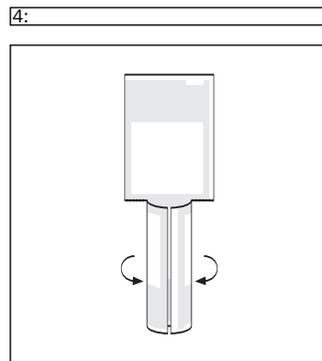
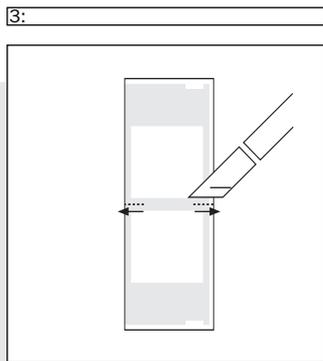
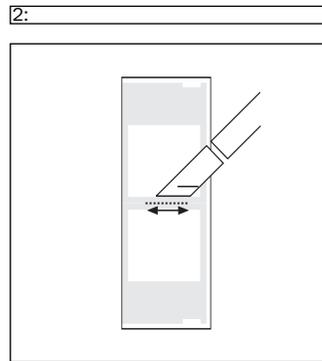
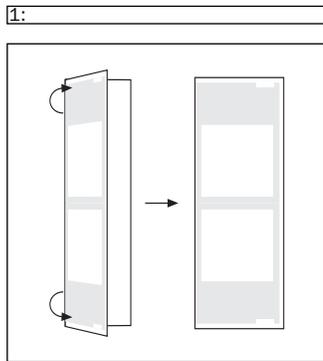


Construction



- 1: First, fold each sheet in half along the vertical axis.
- 2: Using a craft knife or scalpel, cut a horizontal slot along the centre dotted line of the first sheet. (pages 1/2/13/14)
- 3: Then cut along the dotted lines on all the other sheets. Make sure to cut to the very edges of the paper.
- 4: Stack the folded sheets in ascending order with the even numbers at the top. Curl the bottom half of the second page (pages 3/4/23/24).
- 5: Thread the curled page through the centre slot of the first page. Repeat this process with the third (pages 5/6/21/22), fourth (pages 7/8/19/20), fifth (pages 9/10/17/18) and sixth sheet (pages 11/12/15/16) with the even pages in ascending order.
- 6: When all the pages have been threaded through, check the pagination. Finally, fold the booklets in half along the horizontal axis.

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ALWAYS THE PASSENGER, NEVER THE PILOT

September 2001: I am an untrained naïve subject. In taking part in a movement experiment on a parabolic flight, I'm the counterpart to a trained naïve subject, aerial artist and dancer Morag Wightman. The scientist who has assigned us our roles is Dr Anthony Bull, a bioengineering researcher at Imperial College in London. He has devised a preliminary study of different movement control techniques in microgravity conditions. He wants to address two questions, spinal control as a response to gravity, and movement control in the absence of gravity. We are instructed to perform different tasks for each parabola – standing up from sitting, standing up with eyes closed, standing up and extending an arm to the side and so on.

We're on the Russian Ilyushin-76 MDK (a military transporter plane) as part of the MIR 001 flight, organised by The Arts Catalyst. The plane takes off from Star City on the edge of Moscow. Strangely I barely remember the take off. A friend once proposed the idea of an artwork in which the viewer gets to repeatedly experience the heightened moment of exhilaration as a passenger when a plane rapidly accelerates down the runway and takes off. In what seems like no time at all, the Russian pilot puts the plane into the first of ten parabolas, each effectively exposing the Ilyushin to the stresses of ten take offs and landings to achieve the 25 seconds or so of weightlessness.

I attached two flat screen monitors on this disused apparatus with the loop video. The footage plays forwards and backwards, the pilot and me are slowly going in and out of synch with each other, locked in our own loops. Views of our faces alternate with temporally opposing kaleidoscope views from down a plane wing. These edited moments of vulnerability and fear, a confident pilot and a terrified passenger, seem lost inhabiting a space once used by helicopter pilots for testing out night vision goggles.



AERIAL STORIES

NOTES ABOUT GRAVITY, BODIES AND THE VIEW OUT THE WINDOW

LOUISE K. WILSON

You're a passenger in a small plane flying somewhere over the north of England. It's an aerobatics plane. It has a clear canopy so your head feels like it's in a clear bubble and you can see for miles and miles. This makes you feel exposed and barely contained within the vehicle. You are sitting next to the pilot. It's a beautiful late afternoon in early autumn; some dark clouds and 'weather' are visible in the distance with intense light rays brilliantly illuminating lakes. For a brief instant you see a complete rainbow (something only seen from the air).



On the edge of the Airport is a small Aero Club, a creamy Art Deco building, incongruous amongst the big hangars near by. In the bar flying instructors, student pilots and others gather. It's a good place to drink and look out onto the airfield – if you can't necessarily see all the planes taking off and landing, you can certainly hear and feel the vibrations from jet engines. One afternoon, after a flying lesson, I got chatting to a man who asked if I'd like to go for a spin in his small aircraft sometime. I said yes – though I was getting a bit blasé about flying, the feelings of sheer joy and anxiety from my trial flying lesson weren't as strong as on repeated flights, and I didn't want to lose the memory of those feelings.

We met up and he asked if I was easily frightened – he said we could do some aerobatics. It turned out his plane was a very different beast from the little trainer-type airplanes I'd been up in so far. It was a Slingsby Firefly. It had long elegant wings, was 'stressed' differently to withstand a range of positive and negative G-forces and had a clear canopy so you could see for miles above, in front and to the sides. We took off. We firstly did a barrel roll (the plane spinning round and over on its side, as the name suggests). When asked if I'd like to try a 'loop' next I said no as I was feeling a bit sick. The thought of it was terrifying. I said ask me again later on – I know I'll regret it if we don't try it. On the approach back to Newcastle Airport he said we could do it now? Yes.

Do we want to do a loop? The pilot says. The checklist is gone through... “we'll level out at five hundred feet and then do the checks. Ok... rolling out and starting the loop... pulling back...” He pulls the shoulder straps tight, says to keep your body tensed, look straight ahead, don't move your head. He puts the plane into a little dive then pitches the nose upwards. Coastline and fields give way to sky. There's a beep, beep, beep sound as the yellow stall warning button flashes. The plane continues going upwards. The g-forces force you to keep looking; you're immobilised and can't do anything else. More and more, then the land reappears coming out of the loop, it's not reassuring looking at the ground upside down. The g-forces seem to increase then just as quickly return to normal, the plane levels out, you feel less heavy and you're flying straight ahead again. The horizon is in front, the sky above and around, the countryside below. You fly back to the Airport.

LIQUID GEOGRAPHY:
Topographies and Tales

AERIAL STORIES

NOTES ABOUT GRAVITY, BODIES AND THE VIEW OUT THE WINDOW

Louise K. Wilson

www.diffusion.org.uk
Series Editor: Alice Angus

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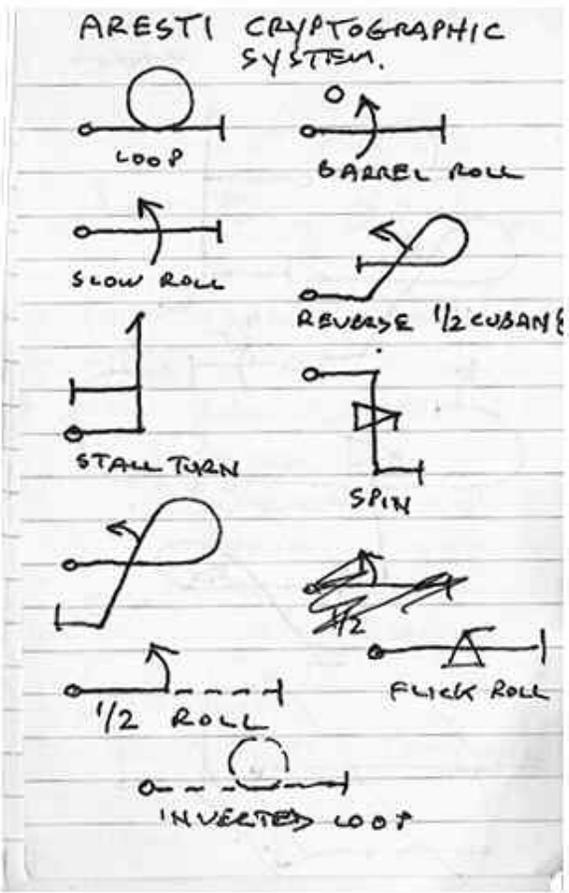
DIFFUSION eBook design by Studio Tonne (studio@studiotonne.com)

This publication is one of the second Liquid Geography series commissioned by Proboscis alongside the Topographies & Tales project in March 2005. Topographies & Tales is a project concerned with relationships between people, language, identity and place and includes a short film, a set of StoryCubes, this series of Diffusion eBooks and a two day Creative Lab. The project research has taken place as part of collaborative ventures in Scotland with Glenmore Outdoor Education Centre; in London in the Proboscis Studio; with the Canadian High Commission in London and in Dawson City, Canada with the Klondike International Arts Centre. The eBooks and Creative Lab demonstrate and investigate partnerships between the arts, academia and civil society organisations concerned with issues of identity and place. This publication is designed to be freely available to download and print out. Under no circumstances should any version of this publication, whether print or electronic, be sold by any third party without prior permission in writing from the publisher.

Later in the Aero Club bar, the pilot makes a little drawing of a typical aerobatics display in my note pad. He's showing me the universal language of aerobatics manoeuvres, called the Aresti Cryptographic System. These diagrammatic reductions of aerial swoops and spins are linked to form sequences. Each manoeuvre has a number giving its difficulty rating. The pilot explains how a planned aerobatics display for competition has to fit into a predetermined rectangle of airspace. This is obviously invisible but the judges on the ground will know what space the plane should occupy. I comment on the disarming simplicity of one figure he draws, it's not called a 'loop the loop' he says, just a loop.

- (1) <http://www.geisware.com/rcmodeling/aerobatics/arsti.htm>
- (2) Hucks, B.C. *How I Loop the Loop*, Programme & Souvenir 1914.
- (3) See www.theportable.tv/
- (4) *Artists Airshow*, The Arts Catalyst, 12 September 2004.
- (5) Ryklin, Mikhail, in: *The Russian-Soviet Cosmism in 0-Gravity in Space Art*, *Anomalle digital-art* No. 4, 2003.
- (6) La Frenais, Rob, *Zero Gravity A Cultural User's Guide*, The Arts Catalyst, 2005.
- (7) From a telephone interview with a pilot from RAF Marham, September 2001.

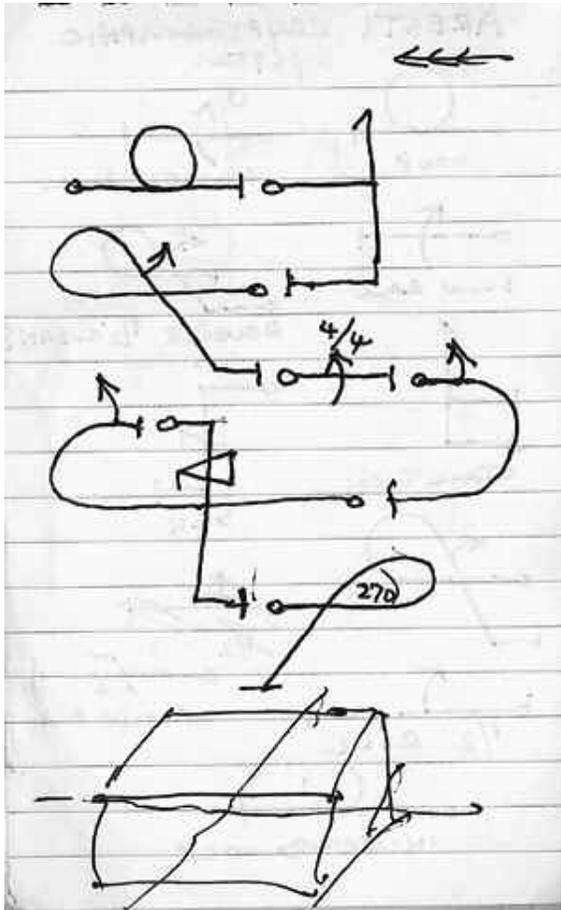
Notes



This is one of the most basic manoeuvres, but not easy to fly well. It has to be perfectly round, entry and exit have to be at the same altitude. The difficulty in flying this manoeuvre well is in correcting for effects of wind drift. In competition, it helps if you don't have to fly first, so you can watch what your competitors are doing and judge the wind drift that you have to take into account.

The manoeuvre starts with a pullup. Once past the vertical, the back pressure on the elevator is slowly relaxed to float over to top of the loop to keep it round. Past the top, the back pressure is slowly increased again throughout the back part till horizontal flight. The plane has to stay in one plane with the wings horizontal to the flight path. Rudder is used to maintain the plane of the figure and ailerons are used to maintain the orientation of the wings. "

Peter Nesterov, a young Russian officer, performed the first loop in August 1913 while out for a joy ride. He was subsequently kept under house arrest for ten days for endangering Government property.



I find time shrinks as well. For me to run through Spadadam I think I'd probably go through and maybe be in there for a couple of minutes doing something in there – evading a missile. You know they've got lots of fake missile systems up there that we use for training. So we go in there and evade from these missiles and come out. For me, we may have been working in there for ten minutes, but it will have felt like two minutes. It's very much low flying, because you're concentrating so hard I find, you tend to lose your natural perception of time and although you're watching the clock and you're very time conscious, it's almost as if time isn't a reality if you see what I mean. "

I gave transcripts of the pilots' descriptions to a local amateur painter, who had been a pilot himself and instructor since 1949, and had made paintings from memories of wartime flights over the farm he was brought up on. He produced four small watercolour paintings based solely on these verbal recollections. He has never been to RAF Spadeadam. His painters are a sort of Chinese Whispers reconnaissance – part remote viewing and part (imagined) landscape painting.

On weekends the roar stops and Spadeadam airspace is open. I have twice flown over it in a small single prop plane, asking the pilot to encircle the base. It seems that the aerial viewpoint offers visual ownership.

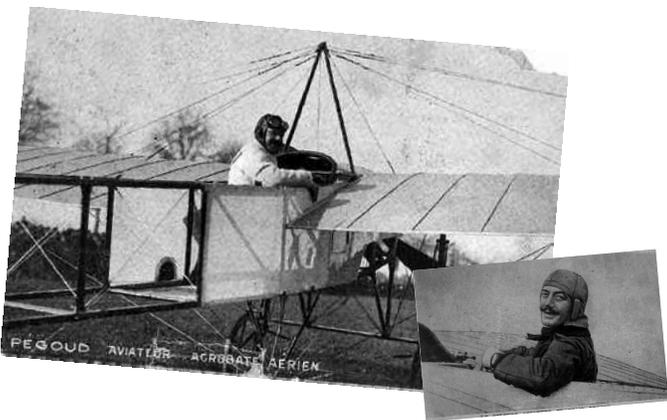
He repeatedly banks the plane and I'm able to video the fake tanks and immovable aged planes amongst the rocket test stands. It's curious how these look so inert and unthreatening when viewed from the gentle flight of the light aircraft.



In 2001 I phoned two RAF pilots (from different bases) who had flown at low level over Spadeadam at great speed and asked them to describe this and other landscape from memory:

As far as the landscape goes...although you probably think it's quite rugged I suppose if you actually go around it on foot - because you're going at such speed I find that it tends to smooth the landscape out a little bit and what would be fairly sharp hills whatever become more rolling hills...it becomes a feel thing for me, it takes the corners off the world.

As far as general flying goes, ...flying at high speed over landscape I find the biggest thing is the world tends to shrink I think and your eye is not really capable of picking up things. Small things like roads or houses, individual houses, - whilst you see them, unless you're specifically looking for one and trying to navigate your way to it generally you're just trying to take in the big picture. The lay of the land becomes so much more important. You can see huge areas of hills and mountains. I always imagine it when I look at a map that's how it looks when you're actually flying over it. It's very difficult to explain. I suppose it's a god's eye thing where you can see the map grow out of the ground and cities - one city looks like the next, it's a huge grey mass and you tend to navigate on huge features that stick out because smaller features you're going too quickly to see them really... it is a function of training - you get to the stage where you just cut things out and you just learn to look at what we call the big picture. So coastlines, valleys - big valleys, things that you've been down a million times before like Windermere or going down Loch Ness you navigate down them just by feel I suppose.



A month later French aviator Adolphe Pegoud flew the first public loop in a Bleriot monoplane in France. It is said that Pegoud brought a scientific approach to flight and that by recording his experiences and sharing them with others, he had a profound influence on the advancement of aviation. The advent of aerobatics was to give pilots increased confidence in their planes and become the basis for evasive manoeuvres used by combat pilots in the First World War.

Pegoud is also known as the first pilot to intentionally abandon his machine in flight, jumping from an aeroplane condemned to the scrap heap and parachuting safely down to the ground. Before it finally crashed the pilotless plane went through a 'series of fantastic movements', recorded in Pegoud's diary as a dive, followed by a vertical climb, a sideslip, and several more dives and recoveries.

The roar of low flying jets has long since replaced the low frequency rumble of the rocket firings. The pilots who fly over Spadeadam (from all over the United Kingdom and beyond), have generally never been there at ground level and so have never met the station personnel who are trying to outwit them. This land is essentially 'enemy territory' when they are flying over it.

RAF Spadeadam is to the west of Carlisle in Cumbria. This former Cold War site - the test ground for the Blue Streak rocket some decades before - is now the location for Western Europe's first full scale Electronic Warfare Tactics Range and covers about 9000 acres. The landscape is dotted with East German army tanks and missile launchers, procured after recent wars and the fall of the Berlin Wall - as well as clunky life-size versions made out of wood (what are called visual targets). There's a dummy airfield called Collinski, like some latter-day Cargo Cult (as in Cult adherents of the western Pacific who apparently built imitation runways to attract the cargo planes which had supplied the American Forces during the Second World War). The RAF Spadeadam web site says, "The Electronic Warfare Tactics Range fields a wide selection of threat systems that can generate many types of electronic signals for aircraft. These signals stimulate the aircraft's Radar Warning Receiver and jamming systems, causing the aircraft to react to the threats by employing various tactics to 'survive'..."

A DIFFERENT BORDER (SPADEADAM)

The sensations I experience during the looping flights are most extraordinary, and extremely fascinating. In taking the headlong plunge to gain momentum for the turn, the speed is almost terrifying, and one gets some idea what a tremendous force gravity is. The rush of wind is deafening, but as soon as the turn is commenced, the speed drops to normal and remains so, until the loop is complete. Then, if I intend to do another loop, I start another vertical dive.

I think a lot of my success with these difficult experiments is due to the fact that I trained very carefully for a whole month before I stepped into a looping monoplane. I had a chair arranged upside down, so that I could be strapped into it, and I sat in this chair every day for varying periods, until I became used to the rush of blood to the head, and felt as comfortable upside down as in a normal upright position.

Others observed the aircraft becoming inverted and then righting itself, and as performing a 'kind of loop; these movements, whatever they were, apparently helped Pegoud to formulate the idea of attempting to fly upside down. The first English aviator to fly the loop was Mr. B.C. Hucks in November of that same year. His programme text of 1914 joyfully recounts the 'thrill' of watching a trail little monoplane "plunging vertically to the earth like a stone - flinging itself on its back and floating serenely upside down". One spectator was reported as saying that he always thought flying men were doomed "if the machine upset" and that he had never seen a bird that could fly upside down and loop the loop. Hucks explains his acclimatization training in a section entitled How I Loop the Loop.

shafts of light that darted along the length of the partially padded sides. We were each undertaking an internal reconnaissance.

This strangeness of being embodied but not knowing where you are is echoed in video documentation from the flights. Earlier in 2001 before MIR 001 I saw a video document of The Arts Catalyst's 2000 initial campaign with a parabolic flight from Star City. It was exciting and funny and that night I dreamed about flying. In the video the interior of the plane was cordoned off into two sections. In the far section French choreographer Kitsou Dubois and a team of dancers were performing elegant and controlled movements. In front of them, a chaotic miscellany of people were momentarily being thrown around like passengers on a bus ride gone horribly wrong. I can see how some might believe "... somewhere in NASA or a similar space training facility exists an anti-gravity room, where gravity can be switched off and people float around"⁶⁶

A couple of years ago I asked a few people, travellers and employees at Newcastle Airport, the question - what keeps a plane in the air? Most of the respondents (like myself) were embarrassed to admit they had no idea.

*During this dead drop I see nothing but the earth immediately below me. Then I rise for the loop, and the earth disappears over the front of my machine, and I see nothing but sky. Then from behind my back the earth lurches up again, and I am once more flying level.*⁶⁷

He goes on to describe his inability to be sure of his attitude relative to the earth at any given moment during the manoeuvre when performing his first few loops. He could feel the strain on the straps over his shoulders when upside-down but after the twelfth loop was able "more by instinct, than anything else – a kind of aviator's sixth sense – to tell at what angle my machine was flying."

Over the course of a year, the pilot takes me flying three times. Finding a day without strong winds, cloudless skies (or too cloudy) was difficult. On the second flight, I decide to keep my eyes closed for the first manoeuvre – a barrel roll. The plane dives to the right, pulls up then rolls to the left. I'm content for my video camera – braced against my chest – to record the tumbling vista. The pilot notices and says "keep your eyes open, don't shut them it will make it worse. It's not reckoned to be a good thing as the sensations can be a bit confusing. You want your inner ear, your muscles and the view all to correlate. If you don't have any vision you get funny messages passed to your brain as one of the senses missing". I don't tell him I was too terrified to watch. Like an exaggerated repeat of a childhood fun fair episode when a friend's mother told me off because I kept my eyes closed during a ghost train ride (and so wasted her money).

There is an increasing amount of work being made in and texts being written about the 'laboratory' of the parabolic flight in the creative realm. What seems seldom mentioned is the actuality of being in a plane that is performing these diving manoeuvres and yet we (the artist payload at the back) don't know where we are. Quite obviously the ten parabolas for MIR 001 were undertaken in Russian airspace but I had absolutely no (haptic) awareness or memory of the parabolic curves the plane was making in the sky. The back of the plane has no windows, the only visual invasion from outside are the

MIR 001 spent the ten parabolas aiming to reflect on his own state during the different phases of the flight and correlating the weightless state with the other weight states, without defining weightlessness as anything particularly special". He observed that "during such flights you feel acutely the relativity of your body: just now you flew in the air and in an instant you lie on the mats and feel your inexorably increasing weight. Even a passing stay in the alternating states of weightlessness and double gravity changes for some time one's relation to his own body and its terrestrial possibilities. I also noticed that the time flows much more rapidly than we are used to. Maybe this experience helps to develop the intuitive, non-verbal components of our consciousness."⁶⁸

what it felt like, as if that was sufficient research. 'Floating' is very different from falling. In conversation we later discovered that we had both considered and accepted the possibility of fatality in flight.

I review the video footage, let my racing heartbeat calm down and a few minutes later say 'I'm ready for the loop. The pilot is tangibly concerned for my well being (having had a previous passenger be sick in his plane) as he thinks I've said '100'. He explains how it is the passenger who has a harder job avoiding sickness because they don't know what is coming next or can curtail a manoeuvre when feeling the arrival of that sinking feeling.

On the third flight, we looped six times, attempting to line the plane up each time with the A1 and its perpetual flow of cars up and down towards Scotland and away from England and vice versa. I considered other architectural and natural landmarks as recurring visual referents on the ground but wanted lively peopled motion beneath the tiny



In those moments, it's no longer a plane but an object.

I wasn't prepared for the shock of the first parabola. All mental preparation seemed to evaporate at the onset of the 20-25 seconds of double gravity and the unexpected intensity of this force. Then the ferocity of zero gravity takes hold. My feet accidentally came out of the improvised foot restraints needed for the experiment and flew upwards and hit my head on the (unpadded) ceiling of the plane. I had taken double the dose of anti-nausea medication – but without its amphetamine companion. I felt dazed, it was an inept performance. I inadvertently played the part of the awkward, undisciplined subject once before in an experiment containing simple choreography. I had been intrigued by the syndrome of motion sickness (suffered by a body with organs) for some time.

It was the sheer brute force punch in the face quality of zero gravity that took me by surprise. Your organs are lifted up and feel they are now temporarily located in your mouth, you're not floating but falling upwards. Then it's double gravity again and back to normal gravity. Eddie George (from Flow Motion, also on MIR 001) described the double gravity sensation as a familiar one – similar to when you go to a sound system and feel the bass pressing against you, rattling against your insides. He also said it reminded him of the description of his brother's recurring dream (when young). He reported he could feel the sky above him, the weight of it pressing down on him.

Later on Morag told me how she had prepared for the flight with techniques such as hanging upside down on a swing and performing body awareness exercises in a swimming pool. It seems absurd to me now that I thought I could know what to expect by asking a couple of people

spectacle of the looping plane. The wretched feelings of fear have almost completely subsided. The view of the patchwork landscape now seems abstract and illusory, I feel euphoric. This return to double gravity (after the experience of a parabolic flight in 2001) is joyous and I have a strong bodily recall of that flight, almost like a flashback.

The approach and landing at the airfield is delayed as we're held in a queue. There's a backlog of larger aircraft to take possession of the runway and we have to circle a few times. Smaller aircraft must avoid the wind turbulence created by jets which have just landed. I feel increasingly nauseous and find the perpetual encircling with the comfort of the runway in sight then lost again, very unnerving.

Artist Jen Southern, who has gained her private pilot's license as part of on-going visual arts research, describes the moment of landing as holding competing tensions and a degree of friction with the machine:

*When flying a plane, as you come in to land, just before you touch down, there is a moment after you have seen the pattern of fields and houses laid out below you in fascinating detail, a moment when all you can see are airport buildings, grass and tarmac, a moment just before touch down when you are between flight and landing, when the plane seems to hold back, almost as if repelled by the earth. Instead of flying you feel suspended, at the height you are usually at on a bridge. It's a transition point between a suspension of disbelief whilst flying, it's the moment when gravity tightens its grip again, you are held in a moment of blissful defiance of the friction of the earth, and gut dread that in a split second from now something could go wrong.*⁹



Later this video footage of the pilot and myself inside the Slingby is edited and installed for one day in the Q153 building at the former Royal Engineering Workshops in Farnborough. This building still houses elements from a flight simulator such as the apparatus along which the video camera for the simulator moved in order to relay back images of a scale model view of Salisbury Plain to the pilot, every fake tree corresponding to a living one. The section of the Plain is bordered by mirror giving the appearance of unending space.¹⁰

In the bar afterwards – a site for the telling of stories of narrow escapes and flight in perilous weather – the pilot speaks about the number of pilots he has known who have died in aviation accidents. Some suffered strange, freakish deaths such as the friend killed on the ground when a gust of wind caught his glider, hitting him on the head. On the other hand, some acquaintances had miraculous stories of cheating death like an escape following a crash landing at night when the plane ran out of fuel. The pilot says that his life decisions involving flying have been good ones, he wouldn't make other choices if he had his time again. I become more and more interested in the idea of the flown loop as a perpetual (video-edited) loop. The technology of flight resolutely brings into focus particular aspects of our physiological and psychological selves and the aerobatics loop seems more than just a moment of display and control. I'm subsequently told about the idea that a life well lived is one where you'd be happy to repeat it exactly as it was.