Cinema: Journal of Philosophy and the Moving Image

No. 3 (2012)

EMBODIMENT AND THE BODY

edited by Patrícia Silveirinha Castello Branco

Cinema: Revista de Filosofia e da Imagem em Movimento

N.º 3 (2012)

MATERIALIZAÇÃO E O CORPO

editado por Patrícia Silveirinha Castello Branco

IFL, FCSH-UNL.
Lisbon, Portugal.

PUBLICATION
Instituto de Filosofia da Linguagem
Faculdade de Ciências Sociais e Humanas
Universidade Nova de Lisboa
Edifício I&D, 4.º Piso
Av. de Berna 26
1069-061 Lisboa
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www.cjpmi.ifl.pt

PUBLICAÇÃO
Instituto de Filosofia da Linguagem
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SÍTIO ELECTRÓNICO
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CONTENTS | ÍNDICE

UPSIDE-DOWN CINEMA:
(DIS)SIMULATION OF THE BODY
IN THE FILM EXPERIENCE

Adriano D'Aloia (Università Cattolica del Sacro Cuore, Milan)

"You see, madness, as you know, is like gravity.
All it takes is a little push!"

— The Joker, in *The Dark Knight*

Watching a film is an experience of a relationship between bodies in space. Orthogonally oriented in front of the screen, there is the spectator's body, sitting almost motionless (s/he can move his/her head and eyes relatively freely), physically passive, although mentally and emotionally very active. On the screen — in a space that begins with its surface but extends with a perceptual and emotional depth — is displayed a series of landscapes, objects and bodies, above all those of the characters. The point is that, even though different in nature, the fictional world of the character and the real world of the viewer both have the same basic orientation: head up, feet down, as in ordinary everyday life. The space in which the fictional character's body moves seems to be bound by the same laws that govern the real world (and not only for *realistic* subject matter) — above all, by the law of gravity, the very force that controls the relationship between body and space. The character walks along a street that is *under* his feet; a car runs along a road that passes *under* its wheels; a superhero soars *upwards*; in the face in the close-up, the forehead is *above* the chin, and the nose is *under* the eyes... In short, we see bodies

and environments as we see them outside the film theatre, on a plane that is orthogonal to our vision and that offers an orientation that can be called "natural" because it is "common," "usual," "habitual," "ordinary," "normal" and readable without any effort, and because it obeys the laws of nature.

The power of cinema, of course, is that it can disregard physical laws. Cinema may count on "fantasy" or "artistic license": in some cases, the character may even walk *on* the walls or the ceiling, his face may appear on the screen upside down. How does this exceptional case affect the spectator's experience? What if the "standard" bodily orientation of the film experience were upturned? What if the spectator's head-up-feet-down orientation related with the upside-down character's body orientation? This article analyses a series of upside-down images (especially of the character's face) in different genres of narrative films. Even though this is not a very frequent occurrence in narrative cinema — we will also see why it is avoided — it can however be found throughout cinema history, with different aims and specific stylistic presentations. The fundamental argument is that the upside-down image provides the spectator a controversial experience that comprises a dual and oxymoronic dynamic: a *disembodying phase* (i.e., the "upside-downing") and a *re-embodying phase* (the "upturning"). In the disembodying phase, the narrative situations and formal solutions used in the film aim to perturb the spectator's usual perception and to elicit the pleasure of experiencing such an unusual and thrilling condition of perception. In the re-embodying phase, the film restores the ordinary condition of perception in order to not demand the spectator a prolonged cognitive and perceptual effort. However, this process implies that the final "straighten up" image and the initial "upright" image are different and express different psychological meanings.

The theoretical framework of this study embraces phenomenology and psychology. In particular, the analysis stems from the contribution of Maurice

Merleau-Ponty to the phenomenology of perception and relies on a Gestaltic approach to the film experience. The phenomenon of retinal inversion and adaptation to upside-down spectacles attracted psychologists at the turn of the XIX century[1] and found a renewed interest in the 1960s.[2] More recently, both cognitive psychology and neurocognitive research investigated the psychic conditions and the neural correlates of upside-down vision.[3]

However, film theory has not yet approached the upside-down image systematically. This exploration could be even more relevant if conducted in the paradigm of *embodied cognition*. As Varela, Thompson and Rosch stated, the term "embodied" highlights two points: "first, that cognition depends upon the kinds of experience that comes from having a body with various sensorimotor capacities, and second, that these individual sensorimotor capacities are themselves embedded in a more encompassing biological, psychological, and cultural context."[4] I will argue that the upside-down image establishes a conflicting relationship between the body and the eye, which (in the disembodying phase) interfere with each other, until the re-embodiment comes into play as a factor or re-organization and re-orientation. Although the human perception, when confronted with an upside-down image, adapts to the inverted image and re-establishes an orientation automatically, the film provides a perceptual and cognitive adaption *on behalf* of the spectator.

INVERTED RETINAL INVERSION

In *Phenomenology of Perception*, in the chapter on "Space," Maurice Merleau-Ponty recounts psychologists George Stratton and Max Wertheimer's experiments on vision without inversion of the retinal image in order to demonstrate that the human sense of space is formed *before* our eyes and that our relation to space is

bodily and not primarily reflective. "Space is not the setting (real or logical) in which things are arranged, but the means whereby the position of things becomes possible."[5] The best way to demonstrate this insight is by analysing an "exceptional case" (i.e., vision without retinal inversion) in which what we normally perceive through our ordinary experience is deconstructed and re-formed.

In one of the reported experiments, Stratton asked a subject to wear special glasses that correct the retinal images and *invert* the physiological *retinal inversion*, so that images are cast on the retina as if the whole field of view had been rotated about the line of sight through an angle of 180°. The experiment lasted a week, and during this period, the subject's vision changed. During the first day, the landscape appears unreal and upside down; this is due to the conflict between tactile and visual perception. Yet progressively vision becomes less unreal. The next day, in fact, "the landscape was no longer inverted, but the body is felt to be in an abnormal position." From the third day on, "the body progressively rights itself, and finally seems to occupy a normal position." In other words, what Merleau-Ponty aims to demonstrate is that human perception is capable of adapting to a new, inverted visual orientation, to the extent that the latter becomes "normal." "The new visual appearances which, at the beginning, stood out against a background of previous space, develop round themselves […] with no effort at all, a horizon with a general orientation corresponding to their own." So much so that, when the glasses are removed at the end of the experiment, "objects appear not inverted, it is true, but 'queer,' and motor reactions are reversed."[6] The insight moment of the experiment, therefore, is when the glasses are removed and the initial "normal" situation is restored: the new "image of the world" brings into question the old image; the new upright image does not correspond to the "old" upright image, since the reversal has disturbed and re-formed our sense of upright and upside down.

Can we apply this theoretical framework to the analysis of the upside-down film experience? Since the film experience does not share all the features of the non-mediated experience, some preliminary remarks are required, concerning the specificity of the film experience as a *sui generis* form of relational experience between bodies. The first consideration relates to the psychophysical condition of the beholder, in particular the particular kind of *passive activity* in which s/he is involved; the second addresses the role of the camera and the point of view as factors *mediating* that relationship. Both these clarifications are functional to a full understanding of the complex dynamic that creates a conflict between the spectator's and the character's bodily orientations and that leads narrative cinema to resolve it. As stated above, rather than rashly embracing *embodiment* as a general description of the film experience, my fundamental hypothesis is that narrative cinema provides a *re-embodiment* of an experience that is inevitably *disembodied*.

Passive Activity

As Merleau-Ponty clarifies, the progressive *bodily righting* reached by the subject in Stratton's experiment is achieved "particularly when the subject is active."[7] As the visual field is inverted, the

> mass of sensations which is the world of touch has meanwhile stayed "the right way"; it can no longer coincide with the visual world so that the subject has two irreconcilable representations of his body, one given to him by his tactile sensations, and by those "visual images" which he has managed to retain from the period preceding the experiment; the other, that of his present vision which shows him his body "head downwards."[8]

The resolution of the conflict between tactile/motor sensations and visual images "is the more successfully achieved in proportion as the subject is more active." The fact that the subject uses his/her body to move into space assists with the progressive *righting* of perception. In other words, "it is the experience of movement guided by sight which teaches the subject to harmonize the visual and tactile data: he becomes aware, for instance, that the movement needed to reach his legs, hitherto a movement 'downwards', makes its appearance in the new visual spectacle as one which was previously 'upwards.'" By contrast, when the subject "is lying motionless on a couch, the body still presents itself against the background of the former space, and, as far as the unseen parts of the body are concerned, right and left preserve their former localization to the end of the experiment."[9]

An obstacle to the application of Merleau-Ponty's reflections to the film experience may be the (relatively) passive condition of the spectator's body, which sits almost motionless in front of the "virtual" space of the screen, on which are depicted movements and gestures of foreign bodies, not of his/her own. How can the conflict between motor sensations and visual images be resolved if motor sensations exclusively depend on visual images, and the spectator's body is inactive and unable to counterbalance this effect?

What I am implicitly arguing is that the film experience cannot be considered as completely *embodied*. It is true that relatively recent discoveries in neurocognitive research on the so-called "bimodal" neurons[10] provided scientific evidences that, in particular conditions, human beings are internally *active* during the mere observation of actions and emotions executed and expresses by other subjects. By expanding the hypothesis of *embodied simulation*[11] to the film experience, it can be hypothesized that, although the spectator's physical body remains still 'in front of' the screen, s/he internally simulates the (intentional) actions and emotions that are represented on screen, "as if" actually doing that action and feeling that emotion.[12] Nevertheless, my

argument is that the perceptual-cognitive process performed by the spectator, when confronted with an upside-down image, seems to interfere with a low-level and neuro-physiological simulation. Indeed, the disorientation of the perceptual patterns hamper the activation of the "mirror mechanism." The upside-down image causes a sort of displacement or *disembodiment* of perception; it creates a gap that needs to be filled up. As Merlau-Ponty suggests, even in the film experience, tactile and visual perception are potentially in constant conflict. The conflict can be resolved by the spectator on a cognitive level (through a perceptual adaptation), or by the film itself on an expressive level (i.e. what I call *re-embodiment*).

Centre of Gravity

As Rudolf Arnheim argued in 1932, films are viewed in the *absence of the nonvisual world of the senses*, such that "Our eyes are not a mechanism functioning independently of the rest of the body. […] Our sense of equilibrium when we are watching a film is dependent on what the eyes report and does not as in real life receive kinaesthetic stimulation."[13] On closer inspection, this "deficiency" of the *disembodied eye*, that is, the *relativity* of the spatial framework, may even be seen as an advantage for the artistic purpose of the film. As Arnheim wrote:

> One of the factors that determine the difference between looking at a motion picture and looking at reality is the absence of the sense of balance and other kinesthetic experiences. In everyday life we always know whether we are looking straight ahead or up or down; we know whether our body is at rest or in motion, and in what kind of motion. But […] the spectator cannot tell from what angle a film shot has been taken. Hence, unless the subject matter tells him otherwise, he assumes that the camera was at rest and that it was shooting straight.[14]

In the film experience, since there is nothing to suggest to the spectator what the camera angle is or whether it is upside down, "The absence of any feeling of the force of gravity also makes a worm's-eye view particularly compelling."[15] Arnheim's words help to focus on a second aspect, closely connected to the previous: the problem of the constitution or pre-constitution of a system of reference points for orientation. The interference between *recognition* and *perception* — the conflict between the spectator's assumptions and the "real" orientation in the fictional world — seems to be very problematic if related to an embodied conception of the spectator.

As Merleau-Ponty states,

> "Inverted" or "upright," in themselves, obviously have no meaning. The reply will run: after putting on the glasses the visual field appears inverted in relation to the tactile and bodily field, or the ordinary visual field, which, by nominal definition, we say are "upright." […] we have as yet only sensory fields which are not collections of sensations placed before us, sometimes "head to the top," sometimes "head downwards," but systems of appearances varyingly orientated during the course of the experiment.[16]

The French philosopher challenges both empiricist and intellectualistic psychology. The first "treats the perception of space as the reception, within ourselves, of a real space, and the phenomenal orientation of objects as reflecting their orientation in the world"; for the second, "the 'upright' and the 'inverted' are relationships dependent upon the fixed points chosen." Merleau-Ponty chooses a "third spatiality" and affirms the need for "an absolute within the sphere of the relative," a space that "survives (the) complete disorganization" of "top" and "down." The philosopher is

not offering a *relativist* account of orientation, but rather an *embodied* perspective of human perception.[17]

The "correction" of the field (i.e., the "*new* normal" orientation) is understandable only if one conceives of the body as "the subject of space," which is "geared onto the world": "The perceptual field corrects itself and at the conclusion of the experiment I identify without any concept because I live in it, because I am borne wholly into the new spectacle and, so to speak, transfer my centre of gravity into it." Rather than "a process of thought," bodily orientation is something pre-cognitively *lived*. It is an experience in which the body is a *centre of gravity*, a point of reference relative to which a relationship is established, and this relationship is between the body and the world, between the subject and the environment in which it moves. Grounded in the body is a *primordial level* of space, an "already constituted" space that represents the general system of orientation in respect to which we can identify the *sense* of "up" and "down."[18]

Wertheimer's experiment on repositioning the orientation parameters (i.e. high and low) while the subject sees the image of a room oriented obliquely through a mirror, suggests a solution that is consistent with a notion of the spectator's body as *active*. "My body is wherever there is something to be done." It is, phenomenologically, a lived-body (*Leib*), and, in fact, "The reflected room miraculously calls up a subject capable of living in it." As Merleau-Ponty states,

> This virtual body ousts the real one to such an extent that the subject no longer has the feeling of being in the world where he actually is, and that instead of his real legs and arms, he feels that he has the legs and arms he would need to walk and act in the reflected room: he inhabits the spectacle.[19]

The conditions in which the "inhabitation of the spectacle" may happen are of great interest:

> my body is geared onto the world when my perception presents me with a spectacle as varied and as clearly articulated as possible, and when my motor intentions, as they unfold, receive the responses they expect from the world. This maximum sharpness of perception and action points clearly to a perceptual ground, a basis of my life, a general setting in which my body can co-exist with the world.[20]

"Clarity" and "sharpness" describe an experience based on the fundamental principle of Gestalt psychology of perception: *Prägnanz*,[21] i.e., the idea that we tend to order our experience in a manner that is regular, orderly, symmetric, and simple. In brief, the *relationist* (rather than *relativist*) Merleau-Pontyan account of perception implies a *primordial sense* of perception and orientation that is constructed based on *Prägnanz*.

This enables us to reflect on the nature of film perception. In order for bodies and events to be readily perceived and understood by the spectator, they are depicted on screen using a recognizable and comprehensible spatial orientation. Given our Merleau-Pontyan assumptions, we can theorize that the "standard" head-up-feet-down bodily orientation offered by narrative cinema is such not merely for its being the "common," "usual," "habitual," "ordinary" orientation but rather for its being a *good* orientation, one that not merely obeys the laws of nature but rather obeys the principle of *Prägnanz*. The film experience has to be well balanced, centred, not easily thrown off balance, because the spectator's body is "geared into the world" and the relationship between the body and the world is "already constituted" in that way, at a preliminary spatial level, and *that* way is a *good* one.

For example, if we look at an upside-down face for long enough, that unrecognizable face becomes an entity in its own right — more than a mere *inversion of an image,* it becomes an *image of inversion*: "the face takes on an utterly unnatural aspect, its expressions become terrifying, and the eyelashes and eyebrows assume an air of materiality such as I have never seen in them. For the first time I really see the inverted face as if this were its 'natural' position." This shows that "To invert an object is to deprive it of its significance." The gaze meets the face "at certain angle, and otherwise fails to recognize it." It is, fundamentally, a matter of recognition. "This is why each object has its 'top' and its 'bottom' which indicate ... its 'natural' position, the one which it 'should' occupy."[22]

The Third Body

At this point, a final theoretical clarification has to bee done. In fact, in the film experience, it is not the actual spectator's body that moves in the (filmic) world and touches the (filmic) objects. This means that the spectator's body cannot be considered the actual "centre of gravity" and that the balance in the orientation depends exclusively on the fact that cinema offers a good orientation — it obeys, so to speak, the law of gravity, which is valid in both the character's and the spectator's world and which, ideally, connects and merges the two spaces (the darkness in the movie theatre reduces distance and creates this spatial continuity). In other words, even though the bodily orientation system of the character and that of the spectator are independent of each other, they are psychologically and physically related. But this also means that upright orientations can be overturned at any time. The cinema can orientate his/her body at its own discretion, upright or upside down (other oblique angles are generally not used). In all these cases, the problem is not whether the character obeys "filmic" gravity. Cinema can invalidate this *sui generis* kind of law of gravity. Film as a representational medium is potentially non-gravitational in

any case (whereas the spectator's orientation is necessarily grounded in his/her lived-body) and can represent the character in an "extra-ordinary" orientation without a diegetic or physical motivation. This is the point: as the good orientation is broken, and as the point of reference is lost, we realize that our body can be the only point of reference. When the implicit "filmic gravitational pact" is suspended or invalidated, the spectator seeks a new point of reference and finds his/her own body. As Edmund Husserl argued in his "upturn of Copernican doctrine," bodies can only move *in relation to* each other and to the Earth. When the other is missing or the Earth is not under our feet, our body becomes a *basis-body* [*Boden-Körper*], relative to which our positions and movements — and those of other bodies — are oriented.[23] In the film experience, "We define and comprehend movement — and repose — in terms of our own bodily positions, through the sense of inner coordinates rather than in terms of what is merely seen."[24] However, when a conflict occurs between the character's and the spectator's orientation, the spectator feels the need to be reoriented to the usual axes of perception (and this need becomes even stronger when the figures on the screen are human bodies and, in particular, faces shown in close-up).

By expanding Merleau-Pontyan reflections on the upside-down vision to the film, I argue that the upside-down image offers the spectator a primordial space in which the system of reference is preliminarily established based on good orientation. Yet things are complicated because the system is governed by a "third party": the camera, with its "positions" (i.e., the point of view), its "discourse" (the montage), and its "gestures" (the movements). Through these means, cinema regulates the relationship between the spectator's body and the character's body. The "bodily machine" of cinema is a virtual entity that, as it were, replaces the eyes and the body of the spectators in the act of seeing and touching the (filmic) world. This implies the mediation of a third *quasi*-body — the "film-body" — which as

Vivian Sobchack argued, "uses 'lived modes' of perceptual and sensory experience (seeing, movement, and hearing the most dominant) as 'sign-vehicles' of representation."[25] More precisely,

> The moving camera is not only a mechanical instrument, an object of visual and kinetic perception; it is also a subject that sees and moves and expresses perception. It participates in the consciousness of its own animate intentional, and embodied existence in the world.[26]

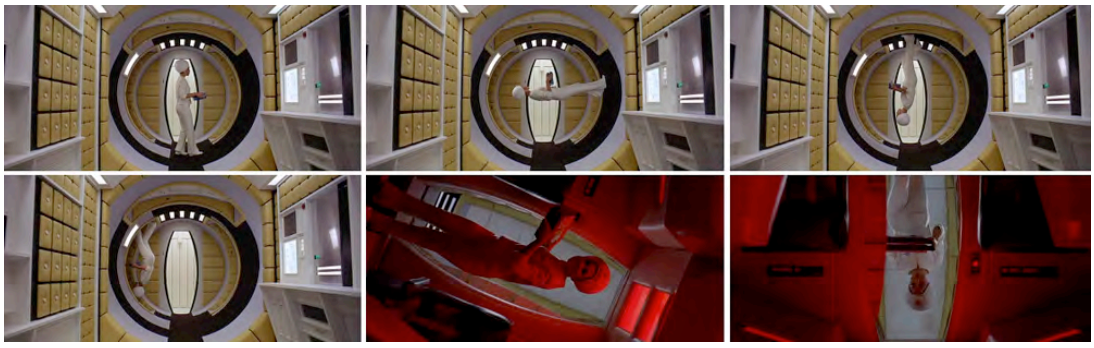
Through these "conscious lived modes," the camera both creates and resolves the conflict between the eye and the body. In the following, I will analyse a series of upside-down images in narrative cinema with the aim of demonstrating how in films the interference between the thrill of bodily disorientation and the cognitive need for clarity and intelligibility can be offered to spectators in a vast range of ways, depending on the incidence of the 'bodily nature' of the filmic formal solutions.

STATIC-CAMERA UPSIDE-DOWNING

Dancing on the Ceiling

Consider a case where the frame remains static and the character moves in the environment in a way that violates the law of gravity. In *Royal Wedding* (1951), Tom

Bowen (Fred Astaire) is in love with a beautiful woman and starts dancing on the walls and the ceiling (it is interesting to note that he rotates around the space). Here we have a subversion of the physical laws that, until that moment, seemed to govern the movement of bodies internally in the film space; the viewer's natural perceptual habit is thus disturbed. Suddenly, the character does not obey the law of gravity that have governed the space in which he moved. The audience need to reformulate their judgments of the validity of those laws. Viewers immediately adjust their perceptual and cognitive patterns to adapt to the new state of affairs. It is less difficult here than in other cases, since we are in a musical, a genre that sometimes has the license to stray into the realms of fantasy. Moreover, the large shot size allows the movement to be fully contextualized. The film expresses and communicates to the spectator the character's state of happiness, light-heartedness and gaiety on both a motor and an emotional level. This solution works because it thematizes the contrast between the fixedness of the external world (the frame remains static with the room in a "standard" orientation) and the variability of the internal world (as the character's anti-gravitational movement express his emotions).



A Squared Sphere

In some of the indoor sequences of *2001: A Space Odyssey* (1968), the upside-down image is justified by the setting in outer space, namely in an environment where the

force of gravity is naturally absent or severely weakened. Initially, the film context obeys artificial micro-gravity induced by the rotation of the spacecraft: the character remains upright. Suddenly, however, something happens. In the first appearance of an upside-down image, the Aries 1B Moon Shuttle's hostess prepares the dinner for the pilots and enters the cockpit walking on a circular surface: all of a sudden, there is no floor, no wall, and no ceiling (as in *Royal Wedding*, the effect was achieved by building the room set inside a revolving steel barrel and mounting the camera and operator to the floor so they would rotate along with the room).

The relationship between the character's "circular" orientation frame and the viewer's "squared," four-sided orientation frame frees itself from the implicit "gravitational pact." This is simply achieved by the choice of static shot, which continues to obey *a* law of gravity that applies to the audience (the spectator is "kept still") but not to the characters. As Annette Michelson noted in a famous article on Kubrick's film, "The system of pre-supposition sustaining our spatial sense […] are here suspended and revised";[27] "one rediscovers, through the shock of recognition, one's own body living in *its* space. One feels suspended, the mind not quite able to 'touch ground'";[28] "one becomes conscious of the modes of consciousness."[29] So, what happens here in the audience is what had happened with the dance on the ceiling in *Royal Wedding*, but based on different premises and in a different way. Indeed, the viewer soon accepted that upending bodies is entirely justified in the world of film, but s/he has to face the disorientation. In a gravity-free environment, the notions of up and down or horizontal and vertical lose meaning for the character, but not for the spectator, since the represented three-dimensional space depends on the point of view offered by the camera. As Annette Michelson's comments suggest, there is a cognitive element at work, a natural disposition to restore the "standard" orientation and clearly comprehend the situation in spatial terms. In narrative cinema, the spectator is prepared to experience *unbalance*, on

condition that this is only an exception to the norm, and that the norm is rapidly restored: the general situation must be balanced and "good" oriented.

Cinematic Dictatorship

Let us return to the atmosphere, yet not quite down to Earth. A classic case that helps us to understand this dynamic is the humorous dialogue between the Jewish barber and the Tomainian officer Schultz on the aeroplane in the opening sequence of *The Great Dictator* (1940). Schultz feels faint and the plane turns upside down. The two characters initially have an upside-down conversation; then, after a simple editing cut, the camera turns upside down and shows the scene with normalized orientation axes.

The gag exploits both these "capsized" images for comic effect, as in the first shot the barber looks *down* and sees the sun and, in the second, the clock escapes from his pocket and slips *up*, while the water comes out of the bottle *upwards* by itself. Beyond its humorous dimension, this example highlights how perception and cognition can trip over each other, as typified in optical illusions: even if the viewer

knows that s/he is observing the situation in a certain way, s/he continues to perceive it in a way that conflicts with that knowledge. In restoring the upside-down body to its normal orientation, the film has resolved the conflict on behalf of the viewer. The interesting fact is the comic effect of the cinematic representation of this cognitive dynamic: in being surprised by the "strange" gravity he is experiencing, the barber-Chaplin behaves as if he were upright. And in fact, even if *physically* upright, he is *perceptually* upside down. Looking closer, we see that, in doing this, cinema generates another, inverse, interference: we perceive the characters as upright, but we must try to infer that they are upside down.

The expressive and comical element that makes this strategy interesting is that a state of affairs inferred (but not perceived) as upside down is, however, different from the ordinary, upright state of affairs, as if perceived without any cognitive effort. It is a perceptual and conceptual shift from upright as "double upside down" to *downside up*, an "inverted normality." In fact, the *downside-up* image is impossible in physical terms (yet possible in perceptual terms), since the camera has moved to the other side of the plane and the characters have swapped position, but the aeroplane continues to fly to the right, whereas it should go to the left. Continuity of direction of movement prevails over correctness of orientation.

Only at the end of the sequence does the force of gravity return to assert itself. In fact, the picture is oriented again like the aeroplane — upside down — and the barber slips into the void *below* him. The plane crashes *down*, but with no physical consequences for anyone, of course!

In *The Great Dictator*, therefore, the "ordinary" orientation is restored by the film itself through the editing process: the counter-overturning is implicit and extraneous to the narrative, but it is explicit as a *static* "act of language." The spectator needs just a moment to contextualize the orientation of the characters in space (through the alternation of close/ medium shots and long shots) and so to

grasp the comic effect of the gag. The film has only *represented* the "normalization," rather than offered to spectators in a way that can be fully *experienced*. This *disembodied* strategy is less effective and less interesting than that in which the camera *movement* cause a perturbation of the equilibrium that can be more 'directly' felt by the spectator.

MOVING-CAMERA UPSIDE-DOWNING

The shot of *2001* that follows the abovementioned one, for example, proposes a *dynamic* pattern. This time, a slow camera rotation reproduces the micro-gravity rotation. Whereas in the previous shot it is as if the spectator is "kept still" or "stopped" in his/her position in a space that is rotating, in the second shot the camera simulates the actual rotational movements of the spacecraft, until the hostess orientation is "normalized."

A Preventive Move

Let us consider a sequence in the crime-comedy *A Fish Called Wanda* (1988). The dialogue between Otto and Archie, the lawyer, is represented with an apparently "classic" shot/reverse-shot dynamic. After the quarrel inside the building, we see Archie upright, with his back against a brick wall, while finally apologizing to Otto. Suddenly there is a rapid 180-degree rotation of the camera on its axis, combined with an enlargement of the shot. We now see the whole situation: Archie is upside down hanging out of the window, and Otto is holding his legs, in a state of affairs quite different from that initially suggested.

The editing cut here is also an "ellipse" that has hidden part of the events (in which Otto takes Archie and pulls him out of the window). The actual position of the character is hidden in the cut and in the initial narrow, decontextualized frame, which shows only part of the facts and of the space. These elements are *partial* (in the sense of both "incomplete" and "partisan" — gestaltically, the disruption of the figure-ground relationship is used as an artistic device). The rotational movement does not imply an intention to hide the language of film, but rather to flaunt and explicitly reveal the deception. The main purpose is the surprise effect, and this is achieved through a *preventive* normalization of perception that implies a delay in the correct interpretation of the character's orientation by part of the spectator.

The Right Place for Drama

Another interesting case is in *Cape Fear* (1991), when Max Cady phones Danielle, attorney Bowden's daughter, to lure her into a trap. After a slow pan of his room, a close-up shows Cady on the phone, with hair hanging down (he is hanging from a door frame to train his abs). Suddenly there is a rapid, full anticlockwise camera rotation (as in *A Fish Called Wanda*, but this time without enlargement of the field, since the spatial continuity offered by the pan and the bathroom visible in the background are enough to contextualize the upside-down position from the beginning). The inversion is thus explicitly artefactual, but it is not intended to hide anything. Cady's initial upside-down position embodies his own inner reversal, his thirst for revenge, his madness. The reversal or normalization of perception through which spectators see Cady upright (despite his being upside down — this is what I call *downside-upness*) allows them to better experience the character's mental instability.

Bat's-eye-shot

Although other examples could be taken into consideration, I want to explore one final case from *The Dark Knight* (2008). In a crucial scene, a classic shot/reverse-shot dynamic is used in a very particular way. Batman has been captured by the Joker and is balanced on a ledge of a Gotham skyscraper. He manages to free himself from his rival's clutches and throw him into the void. The Joker's fall is shown with a bird's-eye shot (Batman's point of view: thus a *bat*'s-eye shot, if you will). As we know, Batman's morality forbids him from killing: instead, he launches one of his cables and hooks the Joker. A low-angle shot immediately follows the high-angle shot: Batman starts to pull his opponent up. The Joker is hanging by his feet, upside down. Initially, Batman is upright, the Joker is upside down, and both are represented as such. Almost immediately, the Joker starts to rotate slowly anticlockwise, until he reaches an upright position. The film has normalized the orientation axes by returning them to the usual upright perception, according to the orientation of the seated spectator. In this way, s/he can experience the dialogue in the 'conventional', manner. This allows us to grasp the psychological and communicative intent of the representation: as with Cady, the Joker's face is even more effective *downside up* than upside down in expressing his antagonistic, inverted morality, his madness.

But we have to look deeper. That rotation is hiding something curious. Unlike *The Great Dictator*, in *The Dark Knight* there is no simple editing cut that perceptually normalizes the axes of orientation, nor is the rotation intended to show off the nature of cinematic language or to obtain a comic or surprise effect. When we watch the sequence, it *seems* first that the shot is static and that the Joker rotates. The viewer is inclined to think that, once he has hooked him with his cable, Batman is also straightening his rival up. As Rudolf Arnheim stated in 1932,

> if something moves in the picture this motion is at first seen as a movement of the thing itself and not as the result of a movement of the camera gliding past a stationary object. […] It is, however, possible to make clear which movement is relative and which absolute by the nature and behaviour of the objects shown in the picture.[30]

In *The Dark Knight,* the shot size (close-up) is calculated to exclude this possibility. It takes a while for the spectator to see that the Joker's long hair, his coat-tail, his pocket watch — just like in *The Great Dictator*! — are hanging *upwards,* contrary to the law of gravity. Therefore, this is not a "fictional" movement on the part of the Joker but an artefactual "move" of the film itself. It is not an internal transformation, but rather an external normalization whose subtle workings are, at least temporarily, concealed. This deliberate deception is achieved through a very precise formal strategy aimed at delaying the viewer's correct interpretation of the situation. Above all, we notice the speed of the rotational movement: it is *slow*. In contrast with the rapid and abrupt rotation of the camera in *Cape Fear* and *A Fish Called Wanda*, the camera here moves slowly and silently, softly and stealthily. The aim is to disguise its artefactual nature and to pass it off, at least for a moment, as fictional. The film has the deliberate intention of *dissimulating* its artefactual nature through an anthropomorphic simulation of the ways in which the character's body moves. As Vivian Sobchack stated in this regard, "the moving camera is originally perceived by us in experience as an 'other' who is animate, conscious, and experiences and intends towards the world or toward its own conscious activity as we do."[31] This statement seems to perfectly fit an embodied and empathetic account of the film experience in respect to the movement of the camera as a "*quasi*-lived-body." As Sobchack asserts,

> the motility of the camera is prereflectively understood as always of a human consciousness as it is situated in and inhabits the words […] such understanding arises because camera movement echoes the essential motility of our own consciousness as it is embodied in the world and able to accomplish and express the tasks and projects of living.[32]

Embodiment, in these scenes of *The Dark Knight*, works as a factor of implication and concealing that uses bodily appearances with the aim to *lie* to perception and *open* a cognitive gap. The camera movement appears to be 'transparent' and "invisible," that is — accordingly with Sobchack's (and Merleau-Ponty's) vocabulary — directed to an *intentional object* (Joker rotation), while actually being an *intentional act* in itself.[33] This (delayed) shift from *perception of perception* to *perception of expression* is possible thanks to the capability of the film's body to incarnate the expressive quality of human movement (i.e., slowness). Hence, it is *embodied simulation* that allows *dissimulation*.

DOWNSIDE UP

Let us summarize our analysis of the cinematic use of upside-down images.

Both *Royal Wedding* and *2001: A Space Odyssey* use static shots and non-gravitational rotational movements of characters to disorient the spectator's bodily orientation. This is justified emotionally in the first case, diegetically in the second.

Both *A Fish Called Wanda* and *Cape Fear* use rapid rotational camera movements presented as explicitly artefactual that cannot be misinterpreted in any way. In the first case, the character is upside down but initially is "mendaciously" presented as upright though a close-up. The combination of rapid camera rotation and extension

of the visual field reveals the real situation, creating a surprise effect. In the second case, the character is upside down and presented as such — the purpose of the camera rotation is not for surprise but rather to present Cady's upside-down morality to dramatic effect.

In both *A Fish Called Wanda* and *The Great Dictator,* the means used to obtain the comic effect is the montage (and not the rotation). Whereas in the latter film the montage actually consists of a spatial edit, in the former it also involves a temporal cut (the rotation/enlargement reveals the real situation and creates the surprise).

Whereas in *A Fish Called Wanda* and *Cape Fear* the camera rotation is rapid and explicitly artefactual, in *The Dark Knight* the camera movement is slow, and this slowness has a different expressive result. *The Dark Knight* is a particular case, since it uses *slow* rotational camera movements to temporarily conceal its artefactual nature and to defer the point when viewers understand what is actually happening.

The editing, the shot size, the point of view, and the camera movement are specific means though which cinema (de)regulates the relation between the spectator's and the character's bodily orientations. That the frame is still and head-up-feet-down oriented lends stability and balance, even if the character's frame is moving counter to the law of gravity (*Royal Wedding*) or in a zero-gravity or artificial-gravity environment (the first part of the sequence in *2001: A Space Odyssey*). The editing may complicate the situation, as it offers upside-down images and leaves it up to the spectator to interpret if they are upright or upside down (*The Great Dictator*). When this "cinematic act" is not hidden in the editing cut but explicitly depicted, as in the case of rapid rotation (*A Fish Called Wanda* and *Cape Fear*), the orientation system changes suddenly and causes a different emotional effect.

All these cases can be viewed as the representation of the various stage of Stratton's experiment reported by Merleau-Ponty in *Phenomenology of Perception*. As

we have seen, in *The Great Dictator*, the editing *uprights an upside-down* image. The cinema has materialized the perceptual work performed by the human *embodied* mind. The film does the work on behalf of the spectator: it *normalizes* the perceptual relational orientation system, often by *"upside-downing" an already upside-down* body or face. Phenomenologically, something in the appearance of this upright image has changed after the "upside-downing"; restored normality is not quite the same as normality — it is a *downside-up* image. *Downside-upness* is not equivalent to *uprightness*. The *downside-up* process consists of a sort of objectification of the deep meaning of images. Through the "overturned overturn," the character's inner state is effectively communicated, and the moral and symbolic meanings of their physical position are fully articulated, thus engaging the spectator on various levels. The same happens in *A Fish Called Wanda*, where the spectator sees an upside-down body turned upright and experiences comic surprise. But the fact that Archie is *initially* represented as upright even though he is actually upside-down supports the Merleau-Pontyan idea that the space is constructed in relational rather than in imposed, absolute terms. The opposite happens in *Cape Fear*, where a downside-up body is turned back upright with the expressive aim of showing the character's 'subverted' intentions.

In all these occurrences, the result of the 'double inversion' corresponds to a "normalization" of the disturbed balance, although it produces an image that inevitably differs from the initial one. This *downside-up* image corresponds to the moment when the subject of Stratton's experiment is adapted to the inverted visual orientation. Nevertheless, what is lacking in the film experience in respect of Stratton's experiments is not only the actual physical activity of the spectator (which may help him/her to better coordinate the sensation of his/her own body in the environment) but also the time for that inverted world to become a "normal" (double inverted) one. Every upside-down image lasts no more than a few seconds

on the screen. Narrative cinema offers a *representation* of the downside-up image and the process of double inversion, but it does not provide an *experience* of that process.

The cases I have considered are, in fact, only exceptions, since mainstream narrative films generally obey the internal or fictional physical laws, in particular that of gravity. Upside-down images are used sparingly, since a film needs to make itself generally intelligible to its spectators, who would not enjoy continuously having to make the effort to restore the usual patterns of perception, or deliberately thinking and inferring how the upside-down image would be when upright. It is true that we initially enjoy seeing the world inverted. The use of upside-downing aims to take the sense of dizziness that the character is experiencing, and to recreate it in the viewer. Even so, it cannot last for more than a few seconds. Upside-downing is, in fact, limited in quantity and duration, since prolonged exposure to such a perceptual reversal would convey a proprioceptive "disorientation" to the spectator that may impair his/her pleasure in the film experience. If a film persists too often or for too long with an upside-down image, or if it does not intend to hide the artifice behind it, its linguistic and artefactual nature becomes explicit, with a consequent dilution of illusionary power. This is avoided in (both classic and postmodern) mainstream cinema, which, to be coherent and to offer a canonical and intelligible experience, can only *represent* this process, rather that offer the spectator a full *experience* of it. Upside-downing inevitably leads to a dilution of illusionary power, leaving the spectator both conscious of the artefactual nature of cinema and self-conscious of his/her sensorimotor, perceptual, and cognitive activity.

The Dark Knight seems to offer something different; its approach sheds light on one aspect of the transition of styles in cinematic representation, eloquent signs of a more general relationship between the subject and the world. The spectator has lost his/her point of reference, s/he may count only on his/her "basis-body," and yet

the world is upside down. This example suggests that, in order to face this disorientation, this *disembodiment*, and to restore a comprehensible and recognizable relationship with the world, language assumes bodily form to perform a *re-embodiment* in which the film *dissimulates* its artificiality and *simulates* pseudo-human bodily qualitative features (i.e., slowness). "This is what happens when an unstoppable force meets an immovable object," as the Joker says.

NOTES

1. George M. Stratton, "Some Preliminary Experiments on Vision Without Inversion of the Retinal Image," *Psychological Review* 3:6 (1896): 611-17. Stratton, "Upright Vision and the Retinal Image," *Psychological Review* 4:2 (1897): 182-87. Stratton, "Vision Without Inversion of the Retinal Image," *Psychological Review*, 4:5 (1897): 463-81. Max Wertheimer, "Experimental Studies on the Seeing of Motion," in *Classics in Psychology*, ed. Thorne Shipley (New York: Philosophical Library, 1961), 1032-89.

2. See Ivo Kohler, "Experiments with Goggles," *Scientific American* 206 (1961): 62–72. Carl U. Smith and William K. Smith, *Perception and Motion: An Analysis of Space-structured Behavior* (Philadelphia: Saunders, 1962). James G. Taylor, *The Behavioral basis of Perception* (New Haven: Yale University Press, 1962). Richard Held and Sanford J. Freedman, "Plasticity in Human Sensorimotor Control," *Science* 142 (1962): 455-62. Ivo Kohler, "The Formation and Transformation of the Perceptual World," *Psychological Issues* 3 (4, Monography 12) (1964): 1-173. Charles S. Harris, "Perceptual Adaptation to Inverted, Reversed, and Displaced Vision," *Psychological Review* 72:6 (1965): 419-44. Irvin Rock, *The Nature of Perceptual Adaptation* (New York: Basic Books, 1966). Robert B. Welch, *Perceptual Modification: Adapting to Altered Sensory Environments* (New York: Academic Press, 1978). Hubert Dolezal, *Living in a World Transformed* (New York: Academic Press, 1982).

3. See, for example, David E. J. Linden et al., "The Myth of Upright Vision: A Psychophysical and Functional Imaging study of Adaptation to Inverting Spectacles," *Perception* 28 (1999): 469-81. H. Richter et al., "Long-term Adaptation to Prism-induced Inversion of the Retinal Images," *Experimental Brain Research* 144:4 (2002): 445-57. Hirokazu Yoshimura, "Re-acquisition of Upright Vision While Wearing Visually Left–right Reversing Goggles," *Japanese Psychological Research* 44:4 (2002): 228-33.

4. Francisco J. Varela, Evan T. Thompson, and Eleanor Rosch, *The Embodied Mind: Cognitive Science and Human Experience* (Boston: The MIT Press, 1991), 172-73.

5. Maurice Merleau-Ponty, *Phenomenology of Perception* (London: Routledge & Kegan Paul, 2002), 284.

6. Ibid., 285.

7. Ibid.

8. Ibid., 286 and 285.

9. Ibid., .

10. See Giacomo Rizzolatti and Corrado Sinigaglia, *Mirrors in the Brain: How Our Minds Share Actions and Emotions* (Cambridge, MA: Oxford University Press, 2008).

11. The notion of *embodied simulation* has been proposed by neurophysiologist Vittorio Gallese as a kind of simulation that uses a pre-existing body-model in the brain and therefore involves a non-propositional form of self-representation. See Vittorio Gallese, "The 'Shared Manifold' Hypothesis: from Mirror Neurons to Empathy," *Journal of Consciousness Studies* 8 (2001): 33–50. Gallese, "The Roots of Empathy: the Shared Manifold Hypothesis and the Neural Basis of Intersubjectivity," *Psychopatology* 36 (2003): 171-80. Gallese, "Embodied Simulation: From Neurons to Phenomenal Experience," *Phenomenology and the Cognitive Sciences* 4 (2005): 23-48. Gallese, "Mirror Neurons, Embodied Simulation, and the Neural Basis of Social Identification," *Psychoanalytic Dialogues* 19 (2009): 519-36. Gallese, "Motor Abstraction: A Neuroscientific Account of How Action Goals and Intentions Are Mapped and Understood," *Psychological Research* 4 (2009): 486-98.

12. Experiments on the brain activity of subjects watching films have been conducted by Uri Husson et al., "Neurocinematics: The Neuroscience of Film," *Projections* 2 (2008): 1–16. For a neuro-

biological approach in film studies, see Torben K. Grodal, *Embodied Visions: Evolution, Emotion, Culture, and Film* (Oxford: Oxford University Press, 2009).

13. Rudolf Arnheim, *Film as Art* (Berkeley-Los Angeles-London: California University Press, 1957), 30.
14. Ibid., 32.
15. Ibid., 104.
16. Merleau-Ponty, *Phenomenology of Perception*, 287.
17. Ibid., 288 and 289.
18. Ibid., 292 and 293.
19. Ibid., 291.
20. Ibid., 292.
21. See Max Wertheimer, "Laws of Organization in Perceptual Forms," in *A Source Book of Gestalt Psychology*, ed. Willis D. Ellis (London: Kegan Paul, Trench, Trubner & Co., 1938), 71-88.
22. Merleau-Ponty, *Phenomenology of Perception*, 294 and 295.
23. Edmund Husserl, "Foundational Investigations of the Phenomenological Origin of the Spatiality of Nature," in Husserl, *Shorter Works* (Indiana: University of Notre Dame Press, 1981), 222-33.
24. Annette Michelson, "Bodies in Space: Film as 'Carnal Knowledge'," *Art Forum 7* 6 (1969): 60.
25. Vivian Sobchack, *Carnal Thoughts. Embodiment and Moving Image Culture* (Berkeley and Los Angeles: University of California Press, 2004), 74.
26. Vivian Sobchack, "Toward Inhabited Space: The Semiotic Structure of Camera Movement in the Cinema. *Semiotica* 41 (1/4) (1982), 327.
27. Michelson, "Bodies in Space," 60.
28. Ibid., 58.
29. Ibid., 59.
30. Arnheim, *Film as Art*, 32.
31. Sobchack, "Toward Inhabited Space," 324.
32. Ibid., 317.
33. On embodiment and intentionality in the film experience, see also Vivian Sobchack, *The Address of the Eye: A Phenomenology of Film Experience* (Princeton, NJ: Princeton University Press, 1992).