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# Versatile Camcorders

## **Looking at the GoPro-Movement**

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# Going Beyond the Human Perspective: GoPro Cameras and (Non-)Anthropocentric Ways of Seeing

PHILIPPE BÉDARD

## Introduction

As ubiquitous as it has been in the world of extreme sports, the GoPro has also secured its place in the public consciousness as a tireless companion in a quest towards the evermore panoptic capture of all of life's adventures. Over the last decade, this unassuming and tough little camera has grown beyond the simple task of capturing *images of actions* and onto the duty of recording one's *experience in action*. For instance, photographer and pioneering videographer Vincent Laforet wrote the following in a blog post arguing for GoPro's status as "one of the most significant cameras ever invented": "The GoPro more so than any tool that ever preceded it, has allowed people to focus more on experiencing the moment, as opposed to focusing on capturing it."<sup>1</sup> Nick Paumgarten pushes this reasoning further when, in an essay penned for the *New Yorker*, he lauded the GoPro's uncanny ability to let him peer into his son's way of seeing the world: "I didn't need a camera to show me what he looked like to the world, but was delighted to find one that could show me *what the world looked like to him*. It captured him better than any camera pointed at him could. This was a proxy, of sorts."<sup>2</sup> These comments contribute to GoPro's ethos, which the company embraces in its own marketing material, such as its 2017 campaign for the Hero 6 family of cameras whose tagline was "Live the moment. Capture the moment. Share the moment,"<sup>3</sup> and as recently as 2018 with their "GoPro: Experience Different" ad, which featured exclusively point-of-view (or POV) shots of people living their "different experiences" and goes as far as to suggest: "different is out there [...] just keep an eye out for the

<sup>1</sup> Vincent Laforet: "The GoPro & its Place in History," in: *Vincent Laforest Blog*, 2014, <http://blog.vincentlaforet.com/2014/09/30/the-gopro-its-place-in-history/> (last seen: 6.3.2019).

<sup>2</sup> Nick Paumgarten: "We are a Camera: Experience and Memory in the Age of GoPro," in: *The New Yorker*, 22.9.2014, pp. 44-52, here p. 51, emphasis added.

<sup>3</sup> GoPro: "GoPro HERO6: This Is the Moment in 4K," YouTube, 28.9.2017, <https://youtu.be/vr0qNXmkUJ8> (last seen: 6.3.2019).

unexpected. You may even discover something new about yourself.”<sup>4</sup> This begs the question: how does a camera so worn on the user’s body see the world and how can the images it produces lead to understanding oneself better? Or better still, can a camera such as the GoPro, so often associated with human vision and experience, ever allow one to discover something *new* about oneself?

The idea that a camera, such as GoPro, would somehow constitute an acceptable proxy or surrogate for human vision experience is a common, if problematic, occurrence in popular rhetoric. Unsurprisingly, it results from and feeds into a long history of dealing with cameras as analogous in some ways to humans, notably in the way they see or move through the world. Precisely because this way of thinking seems to be so pervasive, it requires that we stop and examine its rhetoric and its assumptions. In addition to questioning the reasoning that has led to GoPro videos being associated with the experience of the wearer, this situation invites us to reconsider the links between cameras and human experience at large: how do cameras build on human modes of navigation or perception and, conversely, what do they tell us about them?

For reasons that will be covered in this chapter, moving-image cameras have often been associated with human vision and experience, or discussed in anthropomorphic terms (i.e. as displaying some characteristic of what it is to be human). Using GoPro videos as a conducting thread through our analyses, the following chapter will expose the foundations of what has become a recurring strategy of discussing cameras (and GoPros chief among them) in anthropomorphic ways. Doing so will require that we explain the roots of such comparisons of filmic and human vision. This will allow us to focus on a particular trend in GoPro videos which contributes to subverting the kinds of highly normative and strictly limited modes of seeing endemic to dominant film practices. Indeed, this chapter will demonstrate how the inclusion of what we call “exo-centric” images in so many GoPro videos subverts the hegemony of *egocentric* points of view to which they so often subscribe and, in so doing, participates in a reflective “reversal of the gaze.” Perhaps, in looking at these images which step outside of anthropocentric modes of seeing we may in fact achieve what GoPro suggests and “discover something new about ourselves.”

<sup>4</sup> GoPro: “GoPro: Experience Different,” YouTube, 9.5.2018, <https://youtu.be/dAODE-Abg870> (last seen: 6.3.2019).

### Anthropomorphizing the camera

A long-standing habit in discourses on cameras and camera movement has been to speak of the device in relation to the ways humans see the world. For instance, Jakob Isak Nielsen in his chapter “The Camera: Anthropomorphic Analogies” and Patrick Keating in a video essay titled “A Homeless Ghost: The Moving Camera and its Analogies” both offer a survey of a few such comparisons, which revolve around the idea that “the camera represents the eye of a person.”<sup>5</sup> This proximity between camera and eye has led, more so than anything, to prognostications about the camera’s ability to act in ways that appear congruent with human vision and experience, as well as to interpretations of various human traits in the moving image. This tendency to anthropomorphize the camera has been documented by Nielsen and Keating, but also by Edward Branigan and Teresa Castro when dealing with anthropocentric approaches to the study of cameras.<sup>6</sup> The authors note occurrences of descriptions of the camera as “inquisitive; sometimes it is a little inattentive,”<sup>7</sup> as expressing, “desire, attention, identification,”<sup>8</sup> or still as “impulsive, bold, curious, lewd, tactful, disorderly, exhibiting a sense of smell, and even ‘smiling ironically.’”<sup>9</sup> In her “Animistic History of the Camera” Castro also lists how cameras have been discussed as participating in “‘seeing,’ ‘gazing,’ ‘peeping,’ ‘feeling,’ and even ‘thinking’” and criticizes those who “have written emphatically on the camera’s ‘eye,’ its ‘soul,’ and even its ‘intelligence’ and ‘consciousness’” as being, following what Malcolm Turvey once said, “at worst, a

<sup>5</sup> The original quote from filmmaker Friedrich Wilhelm Murnau reads: “To me the camera represents the eye of a person, through whose mind one is watching the events on the screen.” Friedrich Wilhelm Murnau: “Films of the Future,” in: *McCall’s Magazine* (September 1928), p. 90; Jakob Isak Nielsen: *Camera Movement in Narrative Cinema: Towards a Taxonomy of Functions*, Ph.D. Diss., Aarhus University, 2007; Patrick Keating: “A Homeless Ghost: The Moving Camera and Its Analogies,” in: *[in]Transition: Journal of Videographic Film & Moving Image Studies* 2/4 (2016), <http://mediacommons.org/intransition/2015/12/29/homeless-ghost> (last seen: 15.12.2018).

<sup>6</sup> Edward Branigan: *Projecting a Camera: Language-Games in Film Theory*, New York, London 2006; Teresa Castro: “An Animistic History of the Camera: Filmic Forms and Machinic Subjectivity,” in Diego Cavalotti et al. (eds.): *A History of Cinema Without Names*, Milan 2018, pp. 247-255.

<sup>7</sup> Jens Albinus, quoted in Jan Oxholm and Jakob Isak Nielsen: “The Ultimate Dogma Film: An Interview with Jens Albinus and Louise Hassing on Dogma 2 - The Idiots,” in: *P.O.V* 10 (Dec. 2000), [https://pov.imv.au.dk/Issue\\_10/section\\_2/artc2A.html](https://pov.imv.au.dk/Issue_10/section_2/artc2A.html) (last seen: 15.12.2018).

<sup>8</sup> Keating: “A Homeless Ghost: The Moving Camera and Its Analogies,” op. cit.

<sup>9</sup> Branigan: *Projecting a Camera*, op. cit., p. 83. In a note to this passage (ibid., p. 257), Branigan goes on to enumerate still more human qualities that critics have attributed to the camera: bold and exhibiting a sense of smell; lewd; tactful; impulsive; disorderly; smiling ironically.

‘misuse of perceptual concepts.’”<sup>10</sup> In our search for the cinematic roots of the anthropomorphism with which GoPro cameras are so often discussed, it is imperative to point towards the first-person image, commonly called “point-of-view shots” (POV). Whether in the now infamous *LADY IN THE LAKE* (Robert Montgomery 1947), in *DARK PASSAGE* (Delmer Daves 1947), in *LE SCAPHANDRE ET LE PAPILLON* (Julian Schnabel 2007), in *ENTER THE VOID* (Gaspar Noé 2010) or more recently in the action-packed GoPro feature *HARDCORE HENRY* (Ilya Naishuller 2015), the POV shot uses the camera as avatar for the character; placing the camera where the character would have been and ostensibly seeing and moving through the world like they would.<sup>11</sup> While others have pursued inquiry into the effects of such first-person images in narrative cinema,<sup>12</sup> suffice it to say for now that they have only become more ubiquitous in recent years with the miniaturization of cameras, such as the GoPro, which has only increased the tendency to place cameras where humans would stand and, as a side effect, to conflate human modes of moving or seeing with those of the camera.

Seeing just how pervasive anthropomorphic interpretations of the camera have been within the realm of cinema and further still today with the ubiquity of GoPro cameras, the question remains as to what the impetus might be for such readings. Regardless of whether such anthropocentric approaches to the camera are used in earnest or simply as stylistic fancies, we may wonder why cameras invite so many comparisons to human vision, perception, or experience in general. More importantly still, what might be the impact of a device, such as GoPro cameras, that has become so synonymous with human vision as to be understood as a *representation of vision*?

### GoPro's tenuous relation with anthropomorphism

The story of GoPro's invention by Nicholas Woodman in the early aughts, which has likely been recounted *ad nauseam*, is worth revisiting briefly for what it reveals of a conflicting relation between the camera and the

<sup>10</sup> Castro: “An Animistic History of the Camera,” op. cit., p. 247.

<sup>11</sup> Interestingly, while the POV shot aims to convey the approximate point of view of a character, it is not by definition limited to human characters. Case and point, *Hardcore Henry* shows us the perspective of a cyborg, while many notable POV shots are from the perspective of an animal, monster, or other non-human character.

<sup>12</sup> Notably Julian Hanich: “Experiencing extended point-of-view shots: A film-phenomenological perspective on extreme character subjectivity,” in: Maike Sarah Reinerth and Jan-Noël Thon (eds.): *Subjectivity across media: Interdisciplinary and transmedial perspectives*, New York 2017, pp. 127-144.





Fig. 1: The original, wrist-worn GoPro Hero (circa 2004).

experience of its user. At the root of the invention of the camera in its original state (i.e. as a wrist-worn 35mm still camera) was a desire among surfers to capture images of themselves in action, or at least photos that could somehow translate the “euphoria” one experienced while riding, as Bradford Schmidt, one of GoPro’s earliest testers and employees, once put it.<sup>13</sup> The initial solution, around 2002-2004 when the prototypes were first being tested and when the original GoPro Hero (fig. 1) was released, was to mount the camera on the wrist in such a way that allowed surfers to flip the camera up, look through the viewfinder and snap a photo of what was in front of them. Instead of Schmidt’s disappointment in 2002 towards photos “limited to perfect waves without a surfer in sight, taken from the beach before I paddled out,” this set-up allowed one to take images while “in action.”<sup>14</sup> Furthermore, as this wrist-mounted position left its place to head and body-mounted uses of the GoPro over the years, this point of view meant the images were not only taken by the user, but more importantly *from* the wearer’s perspective; a first-person point of view reminiscent of POV shots in narrative films. Indeed, while it may bear resemblance with the head-mounted cameras used in extreme sports recordings of the past (fig. 2), the GoPro occupies a peculiar role

<sup>13</sup> Bradford Schmidt and Brandon Thompson (eds.): *GoPro - Professional Guide to Filmmaking*, San Francisco 2014, p. 3.

<sup>14</sup> *Ibid.* Or, arguably, in *between* the action. While the photos could be taken while out at sea waiting for waves, for example, one still needed to stop and frame the image before capturing a shot.



Fig. 2: Carl Boenish using a 35mm helmet-mounted Eyemo camera. Photo R. Cottingham, *American Cinematographer* 53/6.

as personal recording device; the action recorded is *subjective*, in that it represents the perspective of the user-subject *in action* rather than simply capturing images of someone else's actions from a first-person POV.<sup>15</sup>

Taken from a viewpoint on the user's head and closely associated with the subject's own point of view, the GoPro also becomes subject to the way in which human vision and navigation interface with the outside world. Taking the head as a central point of reference,<sup>16</sup> the body relates to the world in an interior/exterior opposition that we can describe as *egocentric*, following the uses of the term in Piaget's account of infant psychology (the child sees herself as center of her world) and in Rudolf

<sup>15</sup> Note that the qualifier "subjective" is used here to refer to the intimate relation between the images and the subject producing them. It is not meant to refer to the distinction suggested by Alexander Galloway, following Edward Branigan, between POV shots (images taken from a character's approximate position and meant to stand in for their vision) and *subjective* shots (images that aim to represent a character's subjective perspective, down to their emotions, affects, etc.). Alexander R. Galloway: "Origins of the First-Person Shooter," *Gaming Essays on Algorithmic Culture*, Minneapolis: University of Minnesota Press 2006, pp. 39-69; Edward Branigan: *Point of View in the Cinema: A Theory of Narration and Subjectivity in Classical Film*, Berlin, New York 1984.

<sup>16</sup> Neurophysiologist Jacques Paillard concludes that the head serves as a point of reference for movements within the body itself (of the hands and eyes for example), and as a point that relates to external referents for purposes of outward motion. The head thus constitutes a *cephalocentric* referent that itself relates to *geocentric* references such as gravitational forces. Jacques Paillard: "Les Déterminants Moteurs de l'Organisation de l'Espace," in: *Cahiers de Psychologie* 14/4 (1971), pp. 261-316; "Comment le Corps Bâtit l'Espace," in: *Science & Vie* 158 (March 1987).

Arnheim's description of the individual's relation to the world: "Perceptually a person is a viewer, who *sees himself at the center of the world surrounding him*. As he moves, the center of the world stays with him. Considering himself the primary center, he sees the world populated with secondary objects, eccentric to him."<sup>17</sup> Just as the eyes that move within the head they perceive to be the center of their world relative to an external world populated by objects and other subjects, the body-worn GoPro moves through space and produces images that are tinted by this egocentric mode. This connection has only been accentuated with the aforementioned adoption of options to mount the camera to helmets or to the user's chest, two positions that strengthen the "first-person" connotations of this point of view and feed into the long history of substituting camera for human experience.

However, one bit of GoPro lore that is seldom recounted has conversely led to a departure from the strictly wrist-mounted style of the original camera and towards more varied approaches to image production. It may also very well have been the impetus to move away from the body as a center of perception. In his "History of GoPro," Schmidt points to an anecdote about Woodman taking racecar driving courses around 2007:

By then, GoPro was doing well enough that Nick [Woodman] could afford to attend race driving school, another one of his passions. During school, Nick had the idea to strap his digital wrist camera to the roll bar of his car to record video of himself driving on the track. As soon as Nick stepped back and saw his wrist camera mounted in this new way, a lightbulb turned on and Nick suddenly realized that GoPro could be much more than just a wrist camera company.<sup>18</sup>

In wanting to record images that didn't simply represent his experiences from his own point of view but rather images *of himself in action*, Woodman needed to remove the camera from his natural perspective (the egocentric view of the world *from* the body) and adopt a new perspective beyond that which is afforded to us. Removing the camera from its alignment with the human body's central mode of perception and navigation (its head, its eyes, oriented as they are from the center outwards) has led to a variety of original points of view in a subgenre of GoPro videos focused on producing the most unusual perspectives. However, between the factions of standard egocentric images and outlandish points of view lies a type of image we propose to call "exo-centric" images, which remains focused on the experience of the user while also departing from logical representation of space.

<sup>17</sup> Rudolf Arnheim: *The Power of the Center*, Berkeley, 1988, p. 36.

<sup>18</sup> Schmidt and Thompson: *GoPro*, op. cit., p. 6.



Fig. 3: The exo-centric technique (left) and its image (right)

Displaced from the head as the *de facto* mounting position for most GoPro, the exo-centric point of view is created when the camera is attached at a distance, such as when it is fixed in front of the helmet or behind the wearer through a length of rigid tubing (fig. 3). We have introduced both this peculiar mounting position and the visual effect it produces in an earlier paper focused on the opposition between what were then called first-person and third-person images,<sup>19</sup> but the implications of the newly christened “exo-centric image” in this inquiry into the relations between camera and human experience merit new attention. Specifically, in offering a view of the body *in action* from a perspective beyond one’s natural perception of oneself, these exo-centric images invite us to rethink the rampant anthropocentrism with which authors have dealt with the filmic apparatus in relation to the human body; for we must remember that egocentric perspectives remain the norm in most action sports footage and that they contribute to the ubiquity of anthropomorphic interpretations of the camera. In order to more fully appreciate how a camera might merit comparisons with human perception and experience we must question how the “grand schemes” of the visual systems in humans and cameras function. More importantly still – and regardless of whether these comparisons or justified or not – we may need to consider the consequences of considering moving images as analogous to human vision.

### Camera-eye analogies and “visualizations of sight”

In his important overview of the links between cinema and human perception, William C. Wees offers an account of the many similarities and fundamental differences between the way human vision and the cinematic

<sup>19</sup> Philippe Bédard: “Disembodied Perspective: Third-Person Images in Gopro Videos,” in: *Alphaville: Journal of Film and Screen Media* 9 (Summer 2015), <http://www.alphavillejournal.com/Issue9/PDFs/ArticleBedard.pdf> (last seen: 6.3.2019).

image function. Of particular interest for this chapter are his opposition between factual descriptions of the human visual system (in relation to cinema) and images that become generally accepted as representations of this vision. First, his references to scientific descriptions of the camera-eye analogy both serve to explain and to criticize the recurrence of anthropomorphic accounts of the camera. Most notably opposed to analogies between camera and eye is Robert Boynton who, methodically and at great length, rebutted any similarity between the two, stating forcefully: “The eye most emphatically does not *work* just like a camera, and the differences are worth discussing. The eye is a living organ, while the camera is not [...]”<sup>20</sup> Boynton’s obstinate pragmatism is met with criticism on Wees’s part, who clarifies: “The fact that the eye does not work ‘just like a camera’ is indisputable, but it is also irrelevant, since the significant similarities between the two are metaphorical, not literal.”<sup>21</sup> While they might not be *isomorphic*, camera and eye *do* share important similarities that go beyond the metaphorical; similarities which we should acknowledge if we seek to understand why cameras have such strong (if problematic) ties with human vision.

In contrast to Boynton, Wees presents the point of view of those who believe in certain fundamental similarities between the two entities, a position encapsulated by George Wald in his article “Eye and Camera”:

In both instruments a lens projects an inverted image of the surroundings upon a light-sensitive surface: the film in the camera and the retina in the eye. In both the opening of the lens is regulated by an iris. In both the inside of the chamber is lined with a coating of black material which absorbs stray light that would otherwise be reflected back and forth and obscure the image.<sup>22</sup>

Steeped in fact – the eye and the camera *do* both function by focusing light on a photosensitive surface – this analogy between camera and eye can lead to excesses and misinformation if not taken lightly. The trouble derives from an understanding of the image produced by techniques such as perspective, as well as optical tools such as photographic and cinematographic cameras, as what Wees calls “visualizations of sight.” Defined as referring firstly to “pictures (‘still’ or ‘moving,’ drawn or painted or photographed) that are intended to be equivalents of our actual experi-

<sup>20</sup> Robert M. Boynton: “The Visual System: Environmental Information,” in: Edward C. Carterette and Morton P. Friedman (eds.): *Handbook of Perception*, vol. 1, New York 1974, p. 290.

<sup>21</sup> William C. Wees: *Light Moving in Time: Studies in the Visual Aesthetics of Avant-Garde Film*, Berkeley, 1992, p. 24.

<sup>22</sup> George Wald, quoted in Wees: *Light Moving in Time*, op. cit., p. 21.

ence of seeing,”<sup>23</sup> and secondly to “diagrams, models, and instruments of various sorts that *reveal something about how sight occurs*, whether or not they were originally intended for that purpose,”<sup>24</sup> the expression “visualization of sight” invites us to think of images and optical machines as elements that are built upon – and more importantly contribute to – our understanding of human vision. The problem, of course, stems from the fact that artificial and highly standardized representations of the visual world (such as pictorial perspective during the Renaissance) have been misconstrued as “proofs” of the way human vision functions. Note, for instance, how in this passage Wald does not distinguish between the “images” that the eye and the camera project upon the former’s retina or the latter’s recording surface, which are produced under different conditions and therefore are not entirely similar. Images too easily thought of as visualizations of sight constitute an enticing and therefore perilous influence on our thinking about human vision; an impact which has only been made stronger and more insidious with the invention of cameras: “Because photography automatically incorporates geometrical perspective, it has confirmed perspective in the public mind, made it ‘true’ and, in [William M.] Ivins’s phrase, ‘clamped it on our vision.’”<sup>25</sup>

Wees argues that within a Western culture already rigidly organized by geometrical perspective – which “has been familiar for so long that its limits on and deviations from actual vision are hardly noticed at all” – the cinematic image constitutes “a powerful, yet peculiarly limited visualization of sight.”<sup>26</sup> The limitations the author perceives within this image stem from the organization of vision initiated by perspective and the tools used for its creation; limitations that amount to “a mechanization and standardization of seeing that sacrifice much of what emotion, imagination, and the total visual experience offer to visual artists.”<sup>27</sup> While Wees looks to experimental filmmakers over the twentieth century who embraced the full breadth of this so-called “total visual experience,” one need only turn to the question of movement at the core of moving images media (and to contemporary practices such as GoPro videos) to expose both key similarities and differences between the way human and filmic vision function.

<sup>23</sup> Wees: *Light Moving in Time*, op. cit., p. 31.

<sup>24</sup> *Ibid.*, p. 32. Emphasis added.

<sup>25</sup> *Ibid.*, p. 44.

<sup>26</sup> *Ibid.*

<sup>27</sup> *Ibid.*

## Questions of movement

Looking at movement, we find that a particular set of questions highlights interesting points of exchange between cinema and the psychology of perception in human subjects. Indeed, the field of psychology encounters a key problem when attempting to explain the way we as humans perceive movement in the world, specifically in such a way as to allow us to move *ourselves* within it as well. James J. Gibson tackles this problem with three interrelated questions that resonate with concerns within the domain of film studies: “How do we see the motion of an object? How do we see the stability of the environment? How do we perceive ourselves as moving in a stable environment?”<sup>28</sup> While these questions could find logical and simple answers within a “conceptual eye” – bereft of any “imperfections” or distractions – Gibson insists on situating vision in its *actual* context, that is, as a process undertaken within a living body that is in constant motion within an environment somehow perceived as fixed. Considering the eyes “perform saccadic or exploratory movements without ceasing during waking life,”<sup>29</sup> how is it indeed we can correctly discern between the movement of external objects imprinted upon the retina (what Gibson calls “objective motion”) and the transformations of the retinal image attributed to the “subjective movements” of the eye or the body?

The solution proposed by Gibson – but also by Jacques Paillard – relates to the range of subjective cues of movement. When the body moves forward, for instance, cues from the vestibular system as well motor commands from various muscle groups help the body interpret the visual cues of movement as subjective. That being said, atypical situations of “passive locomotion,” such as riding on a train, can confront the mind with conflicting information which may lead to sensory illusions. A cherished example in texts on the psychology of movement, the train also foregrounds the key to the problems faced within film studies, as exemplified in this passage from David Bordwell’s “Camera Movement in Cinematic Space”:

But passive locomotion, say, riding on a train or bus, enforces a much greater dependence upon purely visual cues. When we sit in an un-moving train, the sight of a passing train can even mislead us into thinking that *we* are moving and the other train is stationary. Our dependence on visual cues is more strongly marked in a passive locomotion situation, *the situation most analogous to the cinema spectator’s viewing situation*.<sup>30</sup>

<sup>28</sup> James J. Gibson: “The Visual Perception of Objective Motion and Subjective Movement,” in: *Psychological Review* 101/2 ([1954] 1994), pp. 318–323, here p. 318.

<sup>29</sup> *Ibid.*

<sup>30</sup> David Bordwell: “Camera Movement and Cinematic Space,” in: *Ciné-Tracts* 1/2 (1977), pp. 19–25, here p. 21. Emphasis in original.

For Bordwell, moving image media must convey the impression of movement on screen without having access to the many elements of motion perception in the human sensory system. Their reliance on strictly visual cues, however, may lead to confusion in some cases, such as when insufficient information is given on screen to indicate that the camera ever moved during production, or if the movements are such that they translate into visual cues our minds are not equipped to interpret adequately. This leads Bordwell to speak of a “camera-movement effect” that allows spectators to interpret camera movement regardless of whether or not (or even how) the camera was moved on set during filming. The author’s question of “how camera movement asks to be ‘read’ perceptually,”<sup>31</sup> therefore invites us to question our tendency to rush to conclusions when it comes to interpreting camera movement. Specifically, it is the chance to question a reliance, in much thinking about film, on the analogy between filmic and human vision and, more specifically, on “a very limited and highly standardized version of ‘visual life’: focused, stable, unambiguous representations of familiar objects in three-dimensional space.”<sup>32</sup> What, then, are some of the other ways camera-movement effects can be interpreted? And, furthermore, what can moving images interpreted in such non-anthropocentric ways tell us about the “grand scheme” of human perception?

### Exo-centric images against anthropocentrism

While the miniaturization of video cameras has facilitated the production of exo-centric images, the technique used in its creation has been used throughout the twentieth and twenty-first centuries.<sup>33</sup> By attaching a camera *away* from the body through some rigid fixture, what results is a camera that moves through physical space in perfect synchrony with the body carrying it, if only that it maintains a fixed distance from the body throughout these submissive displacements. For instance, a common strategy among GoPro users is to produce an ersatz selfie by placing the camera in front of their faces through a pole extending from the helmet (see fig. 3). Such is the case in the videos “GoPro: 2500m Chamonix Wingsuit Flight” or “GoPro: Whistler’s Dirt Merchant With

<sup>31</sup> Ibid., p. 20.

<sup>32</sup> Wees: *Light Moving in Time*, op. cit., p. 3.

<sup>33</sup> The earliest relatives of this technique can be traced back to 1913’s *KRI KRI E IL TANGO* (anonymous), and its most notable early incarnation comes from F.W. Murnau’s *DER LETZTE MANN* [THE LAST LAUGH], 1924.





Fig. 4: The exo-centric image in “GoPro: Whistler’s Dirt Merchant With Yoann Barelli”

Yoann Barelli” among countless others.<sup>34</sup> In the latter, for instance, Barelli rides down a mountain bike trail with a camera placed some 30 cm in front of his head and pointed towards him, showing us his inappropriate getup (he is riding a road bike with the corresponding attire) in lieu of the trail he is perilously descending (fig. 4).<sup>35</sup> While it would be possible to look into the implications of this perspective in relation to the *selfie* – and indeed some have gone down that path, such as Marina Merlo, Florian Krautkrämer and Matthias Thiele, and Winfried Gerling – more fruitful conclusions may be drawn by focusing on the formal and phenomenological repercussions of this technical condition.<sup>36</sup>

<sup>34</sup> GoPro: “GoPro: 2500m Chamonix Wingsuit Flight,” YouTube, 20.11.2015, <https://youtu.be/RbcbjMhvJEs> (last seen: 21.2.2020); “GoPro: Whistler’s Dirt Merchant With Yoann Barelli,” YouTube, 21.11.2016, <https://youtu.be/gvL1agpqwvE> (last seen: 21.2.2020).

<sup>35</sup> Some videos also feature a GoPro placed behind the body, as in “GoPro: Lion Hug,” or a camera that rotates around the body from its exo-centric position, such as in “GoPro: Art Of The Double Cork With Bobby Brown.” In either case, the exo-centric relation between camera, body, and space remains, as do the interpretations proposed here regarding images taken from the front of the body. GoPro: “GoPro: Lion Hug”, YouTube, 3.10.2013, <https://youtu.be/ZRd3lrukxu8> (last seen: 21.2.2020); GoPro: “GoPro: Art Of The Double Cork With Bobby Brown - TV Commercial,” YouTube, 8.10.2013, [https://youtu.be/8Ykv2i\\_VyKU](https://youtu.be/8Ykv2i_VyKU) (last seen: 21.2.2020).

<sup>36</sup> Marina Merlo: *Le Narcissisme du Selfie: Esthétique et Pratique de la Subjectivité Contemporaine*, Ph.D. Diss., Université de Montréal 2018; Florian Krautkrämer and Matthias Thiele: “The Video Selfie as Act and Artifact of Recording,” in: Julia Eckel, Jens Ruchatz and Sabine Wirth (eds.): *Exploring the Selfie: Historical, Theoretical, and Analytical Approaches to Digital Self-Photography*, Cham 2018, pp. 239–259; Winfried Gerling: “Be a Hero: Self-Shoots at the Edge of the Abyss,” in: Julia Eckel, Jens Ruchatz and Sabine Wirth (eds.): *Exploring the*

In spite of the physical movements of the camera resulting from its peculiar arrangement, Bordwell reminds us that the camera-movement effect is not necessarily produced by the displacement of the machine through physical space – or at least that the resulting effect is not simply naturally congruent with the instigating motion of the device. Following Bordwell’s formulation then, how may we say the exo-centric images presented in these GoPro videos ask to be “read” perceptually? In both videos cited previously as in many others – and as we have demonstrated extensively in the past – exo-centric images communicate the presence of a body fixed in space at the center of a motion-filled world.<sup>37</sup> This interpretation is derived from Gibson and Paillard’s conclusions on the psychophysiological conditions of the perception of movement, and from Bordwell’s adaptation of these notions to the field of cinema, which insists that “monocular movement parallax must be read from the entire visual field” for a convincing impression of camera movement to be produced.<sup>38</sup> On the contrary, the visual information conveyed in “GoPro: Whistler’s Dirt Merchant With Yoann Barelli” and other such exo-centric images point to the fact that the head of the subject remains a motionless point (i.e. it does not communicate having moved in the context of the space constructed in the image). It bears clarifying that while this interpretative process occurs during normal conditions of perception, the relative immobility of the spectator emphasizes the importance of purely visual cues in signifying a camera-movement on screen. And while Vivian Sobchack notably stated that camera movements were instinctively understood by viewers as representing the “embodied activity of a human consciousness as it is situated in and inhabits the world,”<sup>39</sup> the exo-centric image contradicts this interpretation by presenting a perception of space and mode of navigation that reject our embodied egocentric experience of the world.

Our reliance on psychophysiological concepts should make it clear that beyond an interesting formal effect, these exo-centric images also bear on our understanding of the visual systems for which they stand. And while Wees may have criticized an overreliance on the cinematic image taken as “visualization of sight,” the same approach applied to a fundamentally non-anthropocentric point of view can bring to light seldom

*Selfie: Historical, Theoretical, and Analytical Approaches to Digital Self-Photography*, Cham 2018, pp. 261-283.

<sup>37</sup> Bédard, “Disembodied Perspective,” in *Alphaville* 9, op. cit.

<sup>38</sup> *Ibid.*, p. 22.

<sup>39</sup> Vivian Sobchack: “Toward Inhabited Space: The Semiotic Structure of Camera Movement in the Cinema,” in: *Semiotica* 41/1-4 (1982), pp. 317-335, here p. 317.

seen aspects of the relation between vision and the world. Much like an anatomical bisection that can bring new information to the fore – all the while appearing somewhat alien to the untrained eye – the exo-centric image shifts the way we see things in such a way that invites us to *consider* things from a new perspective. In a somewhat ironic turn, this point of view that departs from the human body as center of perception (making it a non-anthropocentric perspective) results in an image in which the human, the individual, is literally the center of the world. At first glance anthropocentric (or perhaps egotistical) in its foregrounding of the human figure, the exo-centric image falls beyond the realm of human apprehension in its departure from the *egocentrism* that governs our body's relation to the world. And in removing vision from the human body as a center of perception while also representing the body in such a way that we would never perceive it (be it ours or that of others), this perspective paves the way towards a more complex appreciation of images that does not limit them, as so often has been the case throughout the history of moving image media, to an anthropomorphic interpretation.

More to the point, the fact that a camera carried by the human body might produce images that are so starkly opposed to the modes of perception inherent to that body invites further reconsideration of the presumed anthropomorphism of images made through cameras in general, and of body-mounted cameras in particular. This brings to mind the process of viewing an anamorphosis in a painting, which Daniel Collins describes as requiring the spectator to adopt an *excentric* posture.<sup>40</sup> In removing oneself from the position assigned by the picture, the spectator of anamorphoses (much like that of exo-centric images) must also become conscious of her own subjective posture and approach the image anew. Doing so allows the viewer to take part in the production of the unusual image and to question the anthropomorphic qualities one so often takes for granted in images.

## Conclusion

Florian Leitner, in an article titled “On Robots and Turtles: A Posthuman Perspective on Camera and Image Movement after Michael Snow’s *LA RÉGION CENTRALE*,” suggests that while dominant film practices only rarely make the camera show a character’s first-person view, “the camera view

<sup>40</sup> Daniel L. Collins: “Anamorphosis and the Eccentric Observer: Inverted Perspective and Construction of the Gaze,” in: *Leonardo* 25/1 (1992), pp. 73–82.

almost always imitates the human gaze in one way or another.”<sup>41</sup> Leitner, like many before him, points to the types of movements performed by cameras as the most convincing similarity to the human body (as the head turns and tilts, so does the camera). But cameras can, of course, perform movements that no human body could naturally perform, such as those in many experimental films (Leitner focuses on *LA RÉGION CENTRALE* [Michael Snow 1971]), but also in exo-centric images which, relative to the egocentric worldview of humans, reverse the natural order of things.

More importantly still, these images serve to bring attention to the fundamental instability of the camera-movement effect. Much like the grand scheme of vision in humans – which learns to *anticipate* spatial and sensorial configurations and is prone to illusions in abnormal perceptual conditions – moving image media are based upon a carefully structured illusion, particularly in regards to the representation of camera movement and the construction of space. This is why Jordan Schonig, in dealing with the anthropocentric conceit in film-phenomenological approaches, concludes that:

[...] phenomenological film theory’s account of the moving camera does not describe an essential condition of camera movement but rather *an effect of particular ways of moving the camera* – forward movements-into-depth – which strongly evoke the sense of an embodied mobile perspective. Our tendency to bodily identify with the moving camera, then, is merely *one possible effect* resulting from particular kinds of movements within particular kinds of spaces.<sup>42</sup>

This illusion, which has urged Sobchack, Bordwell, and so many others to read into the moving camera as analogous to human perception and mobility, is conventionally upheld in dominant forms of cinema and media, but it can just as easily be broken through so-called “forbidden movements.”<sup>43</sup> Exo-centric images are one such movement since they foreground the fragility of the illusion, and of the anthropomorphism that depends on it: despite the camera having moved in production (just

<sup>41</sup> Florian Leitner: “On Robots and Turtles: A Posthuman Perspective on Camera and Image Movement after Michael Snow’s *La région centrale*,” in: *Discourse* 35/2 (2014), pp. 263–277, here p. 267.

<sup>42</sup> Jordan Schonig: *Cinema’s Motion Forms: Film Theory, the Digital Turn, and the Possibilities of Cinematic Movement*, Ph.D. Diss., University of Chicago 2017, p. 149. Emphasis added.

<sup>43</sup> Bordwell: “Camera movement”, in: *Ciné-Tracts* 1, op. cit., p. 24. Here again, the example Bordwell evokes is Michael Snow’s *La Région Centrale* (1971). Schonig would focus on what he calls “spatial unfurling,” a form of movement characterized by lateral displacement in shallow space as opposed to the travelling’s forward movement into depth. Schonig: “Cinema’s Motion Forms”, op. cit.; “Seeing Aspects of the Moving Camera: On the Twofoldness of the Mobile Frame”, in: *Synoptique: An Online Journal of Film and Moving Image Studies* 5/2 (2017), pp. 57–78.

as much even as any body-worn GoPro), the exo-centric camera appears motionless on screen, much like the body carrying it. More specifically, in turning the camera back onto the body of its wearer, these GoPro videos likewise invite a reversal of our gaze back onto the process of image making and the modes of vision that implicitly regulate them. We may only hope that such a new perspective on the body and its place in the world will go beyond unsettling our formal expectations and influence our own egocentric and anthropocentric worldview.

# Proof of Illustrations

## Introduction

Fig. 1: Analog GoPro

the phoblographer: GoPro Was Originally a 35mm Film Waterproof Camera Manufacturer, 24.3.2014

<https://www.thephoblographer.com/2014/03/24/gopro-originally-35mm-film-waterproof-camera-manufacturer/> (last seen: 07.3.2020)

Fig. 2: First digital GoPro

GoPro Digital Hero 5, 5 Mega-Pixel

[https://www.bhphotovideo.com/c/product/581948-REG/GoPro\\_GDH50\\_Digital\\_Hero\\_5\\_5.html](https://www.bhphotovideo.com/c/product/581948-REG/GoPro_GDH50_Digital_Hero_5_5.html) (last seen: 07.3.2020)

Fig. 3: GoPro commercial 2016

Alexandra Jardine: "GoPro Helps You Stay in the Moment, Says Brand's First Scripted Spot," in: AdAge.com, 10.11. 2016

[adage.com/creativity/work/this-is/49895](http://adage.com/creativity/work/this-is/49895) (last seen: 07.3.2020) (Screenshot)

Fig. 4: GoPro in its packaging

cam for pro: "GoPro HERO7 Black Holiday Bundle"

[https://www.camforpro.com/gopro-hero7-black-holiday-bundle/?gclid=Cj0KCQjw0pfzBRCOARIsANi0g0s4\\_UVzfaRzfXcG4ERwf2ZM4GRBYH-sAa-Ab184b1LUr-R8JtxIWd6QaAoA0EALw\\_wcB](https://www.camforpro.com/gopro-hero7-black-holiday-bundle/?gclid=Cj0KCQjw0pfzBRCOARIsANi0g0s4_UVzfaRzfXcG4ERwf2ZM4GRBYH-sAa-Ab184b1LUr-R8JtxIWd6QaAoA0EALw_wcB) (last seen: 07.3.2020).

Fig. 5: Margaret Raspé had developed a Super 8 helmet camera

Margaret Raspé mit Kamerahelm, ca. 1974, Foto: Heiner Ranke <http://www.madeleinebernstorff.de/seiten/raspe/biografie.html> (last seen: 10.3.2020)

Winfried Gerling:

*Go Pro Hero Camera Technology - The Production of the Companion View*

Fig. 1: GP Hero with wrist strap

Ben Einstein: "The Real Reason Quirky Failed", in Medium, 24.9.2015,

<https://medium.com/@BenEinstein/the-real-reason-why-quirky-failed-c362b3a3abd7> (last seen: 10.3.2020)

Fig. 2: Michael V. Korda, Sailboat 1966, and Nikonos Camera

Michael V. Korda: "The Camera that thinks it's a Duck", in: Popular Photography, March 1966, pp. 62-65, here p. 65

Fig. 3: GoPro Hero with wrist strap

Hero 1 Wrist, dropzone, <https://www.dropzone.com/gear/cameras/wrist-hero-r560/> (last seen: 10.3.2020)

Fig. 4: Mounts

Go Pro Ultimate Combo Kit, <https://www.geewiz.co.za/go-pro-series/93660-go-pro-ultimate-combo-kit-51-in-1-action-camera-accessory-kit-for-gopro-hero-7654-hero-2018hero-session-cameras.html> (last seen: 10.3.2020)

Fig. 5: GoPro Evolution (Montage by the author)

Philippe Bédard: *Going Beyond the Human Perspective:*

*GoPro Cameras and (Non-)Anthropocentric Ways of Seeing.*

Fig. 1: The original, wrist-worn GoPro Hero (circa 2004)

© Philippe Bédard

Fig. 2: Carl Boenish using a 35mm helmet-mounted Eyemo camera  
Photo R. Cottingham, *American Cinematographer* 53/6

Fig. 3: The exo-centric technique (left) and its image (right)  
Image designed by Charlotte Courtois

Fig. 4: The exo-centric image in “GoPro: Whistler’s Dirt Merchant With Yoann Barelli,” YouTube, 21.11.2016, <https://youtu.be/gvL1agpqwvE> (last seen: 21.2.2020) (Screenshot)

Jan Distelmeyer: *IT sees: Speculations on the Technologization of the View and its Distribution*

Fig. 1: Providing proof: GoPro Advertisement from 2015  
[http://media.virbcdn.com/cdn\\_images/resize\\_1024x1024/77/0b881217247354bf-comp3.jpg](http://media.virbcdn.com/cdn_images/resize_1024x1024/77/0b881217247354bf-comp3.jpg) (last seen 7.3.2020)

Fig. 2: Proximity – pretty damn close: GoPro Advertisement from 2015  
<https://daviesmoore.com/wp-content/uploads/2015/07/GoProPrint-Ad.jpg> (last seen 7.3.2020)

Fig. 3: Stable Mobility: Still from “GoPro: Pelican Learns To Fly”  
„GoPro: Pelican Learns To Fly”  
[https://www.youtube.com/watch?v=\\_YEyztMx3s](https://www.youtube.com/watch?v=_YEyztMx3s) (last seen 7.3.2020) (Screenshot)

Florian Krautkrämer: *GoPro Culture: On the Relationship between Apparatus, Manufacturer, and Aesthetics*

Fig. 1&2: Stills from the clip “Million Dollar Challenge”, for which the GoPro was attached to an object.  
“GoPro Awards: Million Dollar Challenge Highlight | HERO7 Black” (GoPro) 14.12.2018, <https://www.youtube.com/watch?v=Prt-G4cPIn4> (last seen: 10.3.2020) (Screenshot)

Nanna Verhoeff and Iris van der Tuin: *Footage Redux: Revisiting Cartographic Captures of Time*

Fig. 1: Screenshot of a commercial for the GoPro camera with skateboarder Ryan Sheckler, imitating the style of popular amateur action videos.

“GoPro Hero3 TV Commercial, ‘On Top’, YouTube, Apr 23.4. 2015, <https://www.youtube.com/watch?v=wuegT2b-PwY> (last seen: 02.08.2020) (Screenshot)

Fig. 2: Footage with data overlay – an image we know well from computer games. (Screenshot)

Tobias Conradi: *Pure, Clinical, Shiny Surfaces: Recreational Drones and Images of Construction and Destruction*

Fig. 1: The “Spaceship” Apple Park in June 2018  
YouTube clip Matthew Roberts: “APPLE PARK June 2018 Aerial Perspective 4K”, YouTube, 4.6.2018 [https://www.youtube.com/watch?v=dnC\\_dxKc6bk](https://www.youtube.com/watch?v=dnC_dxKc6bk) (last seen: 11.3.2019) (Screenshot)

Fig. 2: Virtual floating around the MacBook Pro 2016  
YouTube clip (Apple) “The new MacBook Pro – Design, Performance and Features,” YouTube, 17.10.2016 <https://www.youtube.com/watch?v=WVPRkcczXCY> (last seen: 11.3.2019) (Screenshot)