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EXPERIENCING LANDSCAPE AS A VISUAL EVENT

DYNAMIC HYPERSTEREOSCOPY AND THE
EMERGENCE OF PERCEPTUAL SPACE

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Abstract

Dynamic hyperstereoscopy is an experimental stereoscopic technique that continuously adjusts interaxial disparity to generate a shifting perception of spatial depth. Instead of imitating visual stability, it presents space as a temporal and embodied phenomenon shaped by the viewer's adaptive engagement. The research investigates mountainous environments whose complex spatial structures surpass the integrative limits of natural stereopsis. The footage was captured using two drones. The analysis of the qualitative responses indicated a recurring sequence: initial disorientation, followed by perceptual adaptation and improved spatial attunement. The approach is grounded in enactive and embodied perception theory, and is characterised by its aesthetic and investigative nature. The film resonates with the aesthetic principles of slow cinema, a genre that prioritises duration and sensory immersion over narrative clarity. A forthcoming film is set to extend the project into an immersive context, treating spatial ambiguity as an experiential medium and inviting viewers to perceive depth as a dynamic, cognitive process rather than a fixed visual illusion.

Keywords: *stereoscopy, dynamic hyperstereoscopy, landscape perception, slow cinema, immersive media, embodied vision*

1. Introduction

The present study proposes a reconceptualisation of landscape as a perceptual event rather than as a static visual construct. Contrary to conventional representations in photography and cinema, which have historically prioritised spatial realism and illusionistic depth (Crary, 1992; Manovich, 2001), this investigation proposes an alternative model grounded in embodied visuality and dynamic spatial engagement, utilising extended binocular disparity.

The focus lies specifically on mountainous landscape environments characterised by vast spatial scales, layered recession, and parallax complexity that frequently surpass the resolving limits of natural human stereopsis. Within this framework, depth is understood not as a fixed optical property but as a variable perceptual process shaped by spatial and temporal conditions. Hyperstereoscopic images were first produced in the 1850s during the boom of stereoscopy, using exaggerated interaxial separation to intensify depth perception in early photographic experiments, for example, by Warren De La Rue in his lunar stereographs (De La Rue, 1858). These early works sought to expand spatial realism through static interocular extension. In contrast, the present research introduces a dynamic approach in which disparity evolves over time, transforming stereoscopy from a fixed spatial construct into an active perceptual event that foregrounds perceptual change and adaptation.

To address these phenomena, this study employs dynamic hyperstereoscopy, an experimental stereoscopic method in which the interaxial distance between two cameras is

continuously modulated during a single video sequence. This technique does not aim to stabilise depth perception; rather, it generates spatial transformations that elicit fluid, unstable, and sometimes disorienting depth cues. The viewer is not positioned as a passive receiver of spatial illusion but as an active negotiator of perceptual ambiguity. The project is situated at the intersection of artistic research and perceptual experimentation. The objective of this study is to comprehend the recalibration of perceptual strategies in response to overextended stereoscopic stimuli. Additionally, it seeks to explore the composition of these stimuli into a durational cinematic form. The methodology is structured into three interconnected phases:

1. A pilot phase focused on exploratory viewing and informal feedback (Visual Perception Conference participants, n=56);
2. A qualitative study analysing repeated exposure and perceptual learning (students of the Faculty of Design and Art at West Bohemia University in Pilsen and students of the Accademia di Belle Arti G. Carrara in Bergamo (n = 29);
3. A creative application, leading to the development of an experimental film employing dynamic hyperstereoscopy as an immersive artistic language.

The research explores the thresholds of spatial coherence, visual discomfort and aesthetic disorientation.

It has been asserted that the project eschews the use of three-dimensional imaging in order to reinforce realism, instead embracing the breakdown of spatial consistency as a creative opportunity. The landscape is not regarded as a passive backdrop but as a dynamic field of visual tension where

space itself becomes an active component of the viewer's experience. In this context, the mountainous landscape functions not only as a subject matter but also as a perceptual terrain, serving as a testing ground for the reconfiguration of spatial vastness and atmospheric depth as experienced through technologically augmented vision.

2. Theoretical Framework

The present work is founded upon perceptual theories that repudiate the notion of passive vision. The approach is predicated on the notion that perception is not merely a projection of the external world onto the retina but an active, embodied process involving both sensory input and physical interaction with space. This perspective finds resonance with the philosophical tenets espoused by Maurice Merleau-Ponty, who posited that the human body constitutes an integral aspect of our worldview (Merleau-Ponty, 2012). In the treatise entitled *Phenomenology of Perception*, the author posits the notion that the concept of depth is not merely perceived but rather enacted through the medium of bodily engagement with the environment.

Alva Noë's enactive theory of perception is predicated on this view, emphasising that perception is shaped by an individual's capacity to move through and explore their surroundings (Noë, 2004). These theories shift the emphasis from representation to engagement, thereby situating hyperstereoscopy within a broader framework where space is not simply shown but performed through viewer interaction. Within this theoretical framework, fluctuating disparity in hyperstereoscopy is not to be corrected as a distortion but rather treated

as a stimulus for active, exploratory vision. Perception is conceptualised not as a passive registration of stimuli but as a situated, sensorimotor interaction between the observer and the proposed depth-changing visual field (Gallagher, 2017; Petreca & Bianchi-Berthouze, 2019).

One of the central perceptual challenges addressed by this study concerns the apprehension of spatial phenomena that exceed the scale or resolving capacity of the human visual system. Mountainous landscapes, in particular, present conditions of volumetric scale, atmospheric perspective, and layered spatial recession that often elude binocular integration. The tension between the vastness of landscape and the limits of embodied vision has been theorised, albeit indirectly, in the writings of geographer Denis Cosgrove (2008), who conceptualised landscape both as a visual ideology and as a perspectival abstraction shaped by cultural tools. In a similar vein, James Elkins (1996) has posited that the eye is never neutral in its engagement with distance, as landscape perception invariably involves projection, metaphor, and cognitive scaffolding.

In this context, the viewer is not a passive observer but a participant in an unfolding perceptual experience. The stereoscopic image, which has historically sought to simulate stable, illusionistic depth, is here reimagined as a platform for temporal, ambiguous, and evolving spatial sensations which the perceiver can interpret in their own way or even reject. The notion under discussion here connects with artistic practices that intentionally foster perceptual uncertainty, particularly in experimental landscape cinema and immersive installation art (Marks, 2000; Sobchack, 1992).

The discomfort caused by disrupted spatial logic is not viewed as a flaw but as an opportunity to deepen perception. While the initial experience of disorientation may result in resistance, it can also precipitate heightened awareness, compelling viewers to recalibrate their perceptual expectations. This recalibration process can be regarded as a form of experiential learning. This perspective is analogous to aesthetic theories that prioritise ambiguity, slowness, and complexity as catalysts for perceptual and emotional engagement (Masumi, 2002; Shaviro, 2010).

3. Methodology and Artistic Process

The methodological structure of this project is organised into four principal phases: three-dimensional simulation and concept development, environmental selection, material production, and multimodal presentation. Rather than adhering to an empirical research model, these phases are aimed at articulating, constructing, and exhibiting the novel perceptual phenomenon of dynamic hyperstereoscopy.

The preliminary phase was comprised of three-dimensional simulations and conceptual testing using animation software to explore potential spatial configurations, camera movements, and disparity modulations. These virtual studies enabled the anticipation of perceptual responses and informed subsequent real-world implementations.

The subsequent phase concentrated on the selection of natural environments, with particular emphasis on mountainous terrains characterised by complex topographical depth, open

atmospheric scale, and perceptual inaccessibility. Such landscapes frequently exceed the resolving capacity of human binocular vision and were therefore identified as ideal test fields for dynamic disparity modulation.

The third and central phase of the project involved the production of stereoscopic video material using synchronised dual-camera systems mounted on aerial platforms. In each instance of the experiment, the interaxial distance was subject to incremental adjustment. In certain cases, this adjustment was extended to several hundred metres, contingent on the distance between the camera and the dominant spatial subject. The duration of each shot was typically 30 to 60 seconds, a duration that permitted the maintenance of modulation and viewer adaptation.

In the concluding phase of the project, the sequences were presented through a range of modalities, including VR headsets, stereoscopic projections, gallery exhibitions, and participatory workshops. The participant group included art and design students, researchers, and professionals from related visual disciplines. These modalities facilitated direct audience engagement and served as contexts for experiential demonstration rather than analytical testing.

Across all phases, the emphasis was placed on the performative and presentational dimensions of stereoscopic space, establishing dynamic hyperstereoscopy as a spatial-aesthetic event.

4. Qualitative Findings and Viewer Response

4.1 Method and Device Context

This study was conducted in two complementary phases designed to explore how viewers perceive, interpret, and adapt to dynamic disparity in stereoscopic imagery. The initial phase was conducted at the Conference on Visual Perception (ECVP), where 56 participants viewed the experimental video sequences. The second phase involved 29 participants at the University of West Bohemia (Pilsen) and the Accademia di Belle Arti G. Carrara (Bergamo), allowing for deeper qualitative insight under semi-controlled conditions.

In both phases of the study, the viewing of stereoscopic content was undertaken using VR headsets. Participants were not subjected to screening for binocular vision deficits; although such testing might enhance clinical precision, it was not a priority of the study, the focus of which was naturalistic perception and cognitive adaptation across a diverse sample.

Each participant viewed two videos (*Trentapassi* and *Concar-ena*), with the opportunity to rewatch each. The research design focused on three primary objectives:

1. To determine the subjective strength of the 3D effect;
2. To identify the point at which spatial coherence collapsed or became uncomfortable;
3. To observe perceptual changes occurring upon repeated exposure.

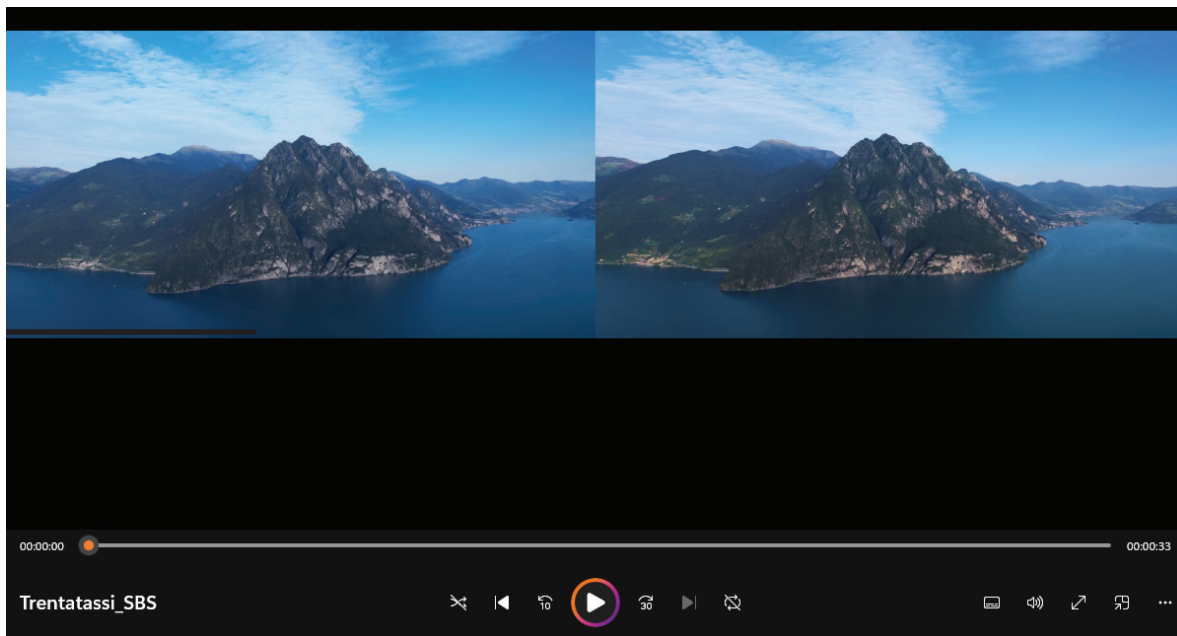
To guide participant feedback, four semi-structured questions were posed:

- How strong was the perceived sense of depth?
- At what point did the spatial perception become unpleasant or unstable?
- When, if at all, did stereoscopic fusion collapse?
- Did the perception of space change during the second viewing?

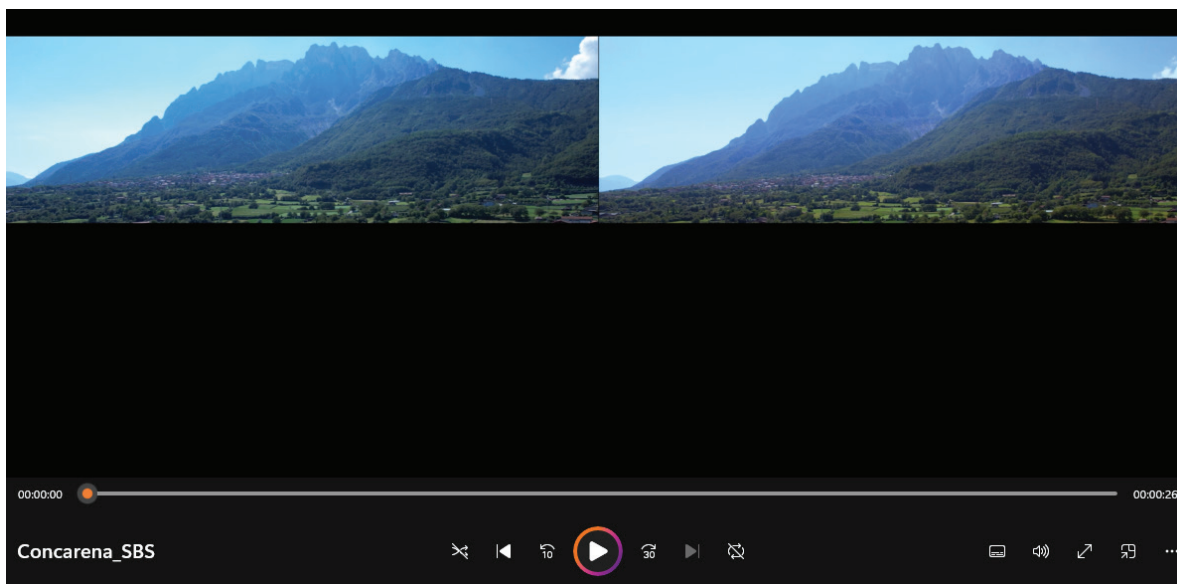
The selection of these videos was based on their contrasting technical and spatial characteristics. *Trentapassi* exhibited a prominent object at the centre of the frame, filmed from a distance of approximately 4 kilometres with a maximum interaxial disparity of 150 metres. *Concar-ena*, in contrast, exhibited a more complex spatial field without a clear visual anchor, captured from a distance of 2 kilometres with similar disparity values. This technical parity enabled meaningful perceptual comparisons grounded in scene structure rather than disparity magnitude alone.

For optimal viewing, each stereoscopic sequence should be experienced using a virtual reality headset providing high-resolution binocular display (minimum 2064 × 2208 pixels per eye) and aspheric lenses with low chromatic aberration and wide field of view (approximately 100°). The videos are designed for a seated, central viewing position in a dimly lit environment, allowing perceptual transitions in disparity to unfold with minimal external distraction.

Where head-mounted displays are unavailable, the sequences may be viewed in anaglyph format on a standard monitor using red-cyan glasses in monochrome mode, which minimises colour-related distortions. While this method enables broader accessibility at minimal cost, it significantly limits image quality and depth precision.



Video 1 Trentpassi¹



Video 2 Concarena²

- 1 To access the stereoscopic video sequences, which are hosted on the DeoVR platform and support high-quality playback on VR headsets: <https://deovr.com/ne49y3>
- 2 To access the stereoscopic video sequences, which are hosted on the DeoVR platform and support high-quality playback on VR headsets: <https://deovr.com/63yop5>



Video 3 Trentapassi Anaglyph



Video 4 Concarena Anaglyph

4.2 Summary of Perceptual Trends

Participant feedback consistently characterised the hyperstereoscopic sequences not as static depictions of space but as evolving visual experiences. The responses given by the participants grouped together around several recurring perceptual phenomena.

The phenomenon of initial disorientation

Initial disorientation is defined as a state of confusion or disorientation that is experienced by an individual upon first encountering a novel or unfamiliar situation.

As is evident in both videos, particularly in Concarena, a significant proportion of viewers reported a phase of perceptual instability within the initial 10–15 seconds. This phenomenon was often characterised by terms such as ‘fragmented,’ ‘chaotic,’ or ‘ungraspable.’

‘At first it felt like the space was flickering, my eyes couldn’t settle anywhere.’

‘It was disorienting, like looking through a warped lens.’

Perceptual Learning

A significant proportion of participants reported an enhancement in their spatial comprehension following repeated viewing. This finding suggests that viewers were not merely observing space but actively recalibrating their perceptual strategies. This process is consistent with the concept of perceptual learning as defined in visual neuroscience (Gibson, 1969; Fahle & Poggio, 2002). In this framework, adaptation is not passive, but rather constitutes an active neural

reweighting of sensory inputs that improves discrimination or coherence. This arc is indicative of perceptual learning and adaptive re-calibration in response to stereoscopic stimuli (Fulvio & Rokers, 2017; Kim, Kim, & Oh, 2020).

‘The second time, the space opened up like a fan. What was flat before, started to breathe.’

‘I didn’t understand the depth at first, but the second viewing made it flow I had to learn how to see it.’

This phenomenon aligns with the enactive theory of perception (Noë, 2004), which proposes that perceptual understanding emerges through sensorimotor engagement rather than static reception. In this case, the spatial coherence of the image was found to be more dependent on viewer temporal investment and cognitive adaptation than on fidelity to natural parallax.

Temporal-Spatial Metaphors

The participants frequently employed metaphors to articulate spatial depth in dynamic ways. The following terms are employed to describe the process under discussion: ‘breathing,’ ‘pulsing,’ ‘stretching’ and ‘melting into layers’. The employment of such descriptors indicates that disparity was perceived not as a fixed attribute but rather as a temporal modulation. This notion is corroborated by the literature pertaining to slow perception and cinematic ambiguity (Marks, 2000; Massumi, 2002).

Breakdown Thresholds

As demonstrated in the video, there were instances where the stereoscopic fusion failed, resulting in the image becoming two-dimensional or the viewer experiencing double vision.

These occurrences are indicative of perceptual threshold moments. The intensity and timing of these thresholds were found to vary depending on the sequence and viewer attention. While Trentapassi demonstrated a degree of stability, Concarena exhibited a higher propensity for collapse.

'At some point, it all broke down, it felt like I was looking at a collage instead of space.'

4.3 Comparative Analysis by Video

Trentapassi

This video was perceived as relatively accessible. The presence of a central mountain peak provided a visual anchor that stabilized attention and facilitated fusion. The majority of participants reported moderate to strong spatial depth, with minimal discomfort. Repeated exposure enhanced depth articulation, suggesting that the video encouraged perceptual engagement without overwhelming the visual system.

A number of viewers observed that the spatial depth felt exaggerated, whilst others described it as subtle or underwhelming. Following repeated viewings, a shared observation was made that the second exposure resulted in a significantly richer sense of spatial emergence. Participants reported that their cognitive-perceptual system adapted to the visual structure, allowing them to grasp not just static depth but the process by which space unfolded dynamically. This finding lends further support to the hypothesis that the development of hyperstereoscopic perception is contingent upon a learning phase.

'The second viewing helped me feel the space better like it wasn't just there, but unfolding.'

The structured disparity and smoother spatial progression created favourable conditions for what could be described as 'spatial acclimation.'

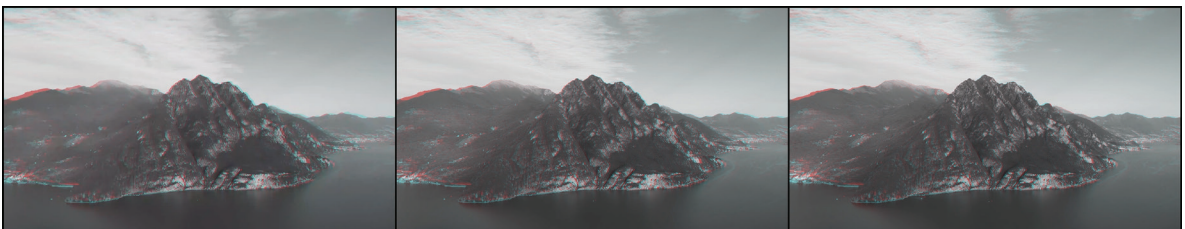


Fig. 1 Stills from *Trentapassi*



Fig. 2 Stills from *Concarena*

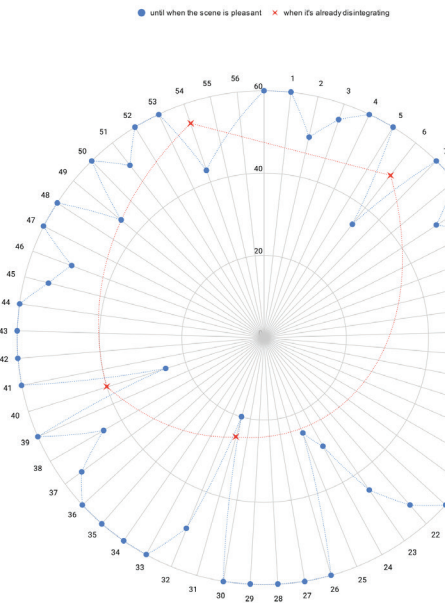
Concarena,
 in contrast, exhibited rapid shifts in disparity and lacked a dominant visual element. This resulted in attentional fragmentation, which in turn made it difficult for many participants to maintain binocular fusion. The visual field was characterised by its perceived density, layered structure, and instability. This was perceived as challenging, but the potential for reward was considered to be significant.

‘The space was aggressive, almost noisy. It took effort to keep things together.’

While a subset of viewers reported an enhancement in depth perception during second viewings, this effect was less consistent and required a conscious visual strategy (e.g., focusing on the distant peak).

‘Once I focused on the far ridge, it started to come together but only after knowing what to expect.’

The sensitivity of respondents to the extremisation of the spatiality phenomenon.
 Trentapassi



The sensitivity of respondents to the extremisation of the spatiality phenomenon.
 Concarena

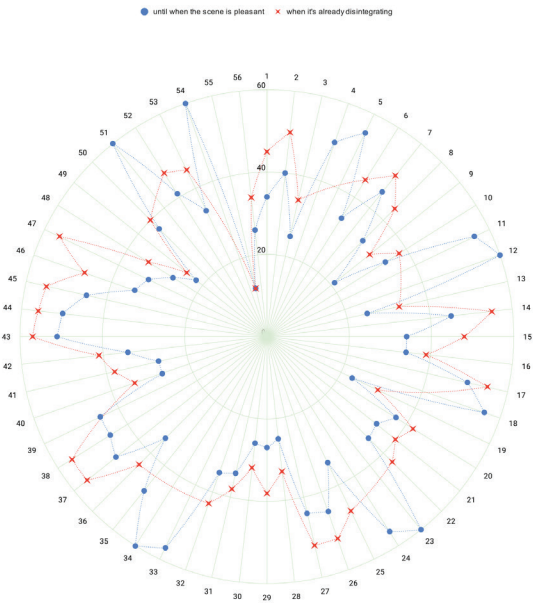


Fig. 3 Graphs - Variability

Explanatory notes to the graph: Each ray (numbered 1-56 around the circumference of the circle) delineates the timeline of one viewer, which radiates outwards from the centre. The centre marks the commencement of the video and the outer circle denotes the conclusion of the video. The centre and individual circles are indicative of the time shift from the centre to the edge (where the centre is zero, followed by unmarked 20s, 40s, and 60s).

The contrast between the videos demonstrates that technical disparity values alone do not determine perceptual outcome. The structure of the scene, the distribution of focal points, and the rhythm of disparity have been shown to significantly influence viewer response.

A minority of participants succeeded in maintaining their depth perception by fixating on the distant mountain peak, following the researcher's recommendation. Second viewings have been shown to yield enhanced outcomes, with observers reporting that repeated exposure enables them to discern a gradual unfolding of space, although this process necessitates sustained attention and effort. The disparity profile, which was found to be highly non-linear and complex, appeared to necessitate not only perceptual stability but also active spatial learning.

4.4 Visual Representation of the Findings

Aggregated trends in perceptual comfort were visualised through the use of descriptive curves. These curves

Determining respondents' adaptability

to dynamic hyperstereoscopic images

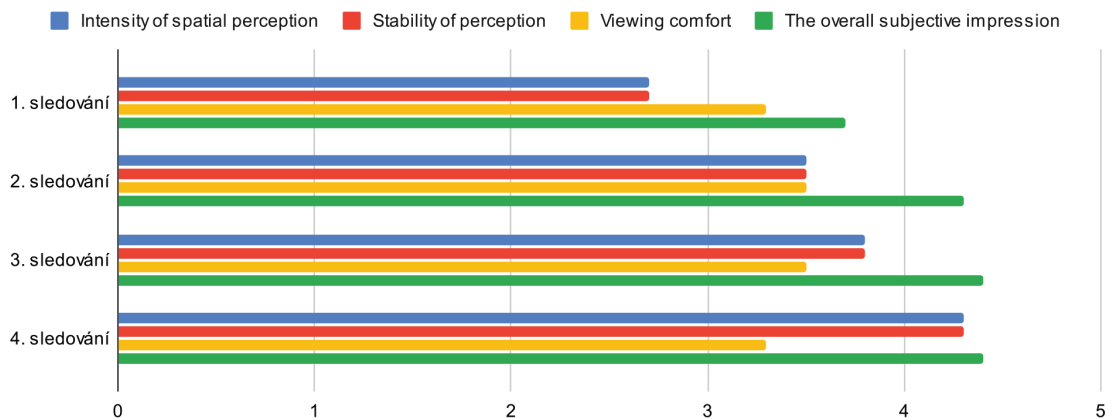


Fig. 4 Graphs - Adaptability

represented the subjective experience of each sequence over time. The Trentapassi curve demonstrated elevated initial comfort, exhibiting a stable or increasing trajectory upon subsequent observation. Concarena, on the other hand, exhibited an initial decline in spatial coherence, with partial recovery associated with viewer adaptation.

It is important to note that these curves do not represent psychometric graphs; they are qualitative models derived from verbal responses. These phenomena are indicative of the phenomenological contours of viewer engagement.

Interpretive Insight: Discomfort must not be considered in isolation as a negative phenomenon; in some cases, it marks

the threshold of perceptual transformation. As one participant succinctly articulated:

‘The space didn’t make sense at first but maybe that was the point. It made me look differently.’

The following summary note is hereby provided: the table confirms that spatial comprehension and perceptual comfort are co-produced by disparity, scene design, and viewer adaptation. A comparison of two sequences that possess identical disparity ceilings has revealed that it is the spatial structure, rather than the magnitude of the disparity alone, that is the determining factor of perceptual load.

4.5 Tabular Summary of Key Aspects

	TRENTAPASSI	CONCARENA
Initial Comfort	High – Immediate perceptual ease reported	Low to Moderate – Visual disorientation in early moments
Depth Perception	Moderate to Strong – Stable depth in most viewers	Fragmented or Collapsed – Depth lost without focal anchor
Discomfort / Breakdown	Low – Minor fusion failures	High – Disparity overload caused perceptual collapse
Improvement w/ Repetition	Strong – Viewers refined perception on second exposure	Moderate – Improvement observed but less consistent
Visual Complexity	Low – Central mountain simplified spatial structure	High – Dense, distributed topography fragmented attention
Perceptual Adaptation	Moderate – Intuitive learning curve	High – Demanded effort and strategic visual behaviour
Technical Parameters	Distance: ~4 km; Max Disparity: 150 m; Central focal point present	Distance: ~2 km; Max Disparity: 150 m; No focal anchor; rich spatial texture

5. From Research to Artistic Application: Toward a Dynamic Hyperstereoscopic Film

As a consequence of the qualitative findings presented in the preceding section, the project has transitioned into a new phase centred on the production of a short experimental film that employs dynamic hyperstereoscopy as its core visual language. The perceptual responses to the Trentapassi and Concarena sequences informed not only the conceptual orientation of this cinematic work, but also its aesthetic and spatial strategies.

Filming took place across a range of geographically and atmospherically diverse locations, each selected for its potential to support unique configurations of spatial instability and perceptual emergence. The following are included:

- The topography of Connemara in western Ireland is characterised by variable weather conditions and undulating geological formations.
- The topography of the Alpine foothills in the Bergamo and Brescia areas of northern Italy is characterised by pronounced layering.
- The semi-urban environments in the Czech Republic, including the city of Plzeň, are characterised by dense geometries and shifting perspective planes.

Each landscape functions not only as a subject, but also as a spatial catalyst. The topographic and atmospheric complexity of these works enables the extension of experimental disparity techniques into contexts where perceptual ambiguity becomes aesthetically generative. This use of environment aligns with the earlier conceptualisation of landscape as an active perceptual terrain.

The film's structure is not predicated on narrative development; rather, it is characterised by the emergence of visual depth as a durational process. Sequences are composed in accordance with a set of principles, the aim of which is to create a dynamic effect by means of disparity modulation, parallax drift and layered motion techniques. These techniques are derived directly from the research findings that demonstrated the viewer response to slow-building spatial events. In the case of initial discomfort, as evidenced by Concarena, the subject is now recontextualised within a dramaturgy of perceptual tension and resolution.

This approach is indicative of an affinity with the aesthetics of slow cinema, which prioritises slowness, ambiguity, and sensory immersion over plot progression or spectacle. As with slow cinema, viewers are invited to decelerate, to dwell within the temporal unfolding, and to engage actively with visual uncertainty.

The fundamental principle underpinning this theory is the concept of *'perception as emergence'*, a process through which space is not presented as a resolved visual construct, but revealed through interaction, adaptation, and temporal modulation.

It is important to note that the film does not just translate research into art; it is a continuation of research through artistic form. The phenomenon under scrutiny is presented as a perceptual instrument per se, which invites audience participation in the very phenomena that the original studies aimed to document. Consequently, the empirical findings have evolved into compositional instruments, with rhythm, spatial

instability, and cognitive load being recognised as formal parameters within the cinematic medium.

Illustrative sequences and stills from the ongoing production are appended to elucidate the manner in which the empirical insights have informed the visual structure. These materials also serve as a bridge between perceptual research and curatorial practice, positioning the film as both an experimental artwork and as a platform for further viewer study in immersive media settings.

6. Discussion

The findings of this study suggest that dynamic hyperstereoscopy functions not merely as a technical variation on stereoscopic imaging, but as a conceptual shift in the presentation and perception of spatial depth. The method transforms disparity into a modulated, time-based variable, thereby re-framing space not as a stable dimension but as a processual phenomenon. This phenomenon is experienced as unfolding, unstable and, at times, cognitively demanding.

Viewer responses across both phases confirmed that spatial coherence is not inherently tied to representational fidelity. The phenomenon under scrutiny instead exhibits a state of emergence or collapse contingent upon a multifaceted interplay between scene structure, disparity, rhythm, and viewer adaptation.

This divergence underscores a significant insight: the perceptual load in stereoscopic environments is determined not only by disparity magnitude, but also by disparity's interaction

with attentional focus, spatial anchoring, and viewer expectations. In this sense, visual discomfort must not be considered a technical flaw; it should be regarded as a functional threshold, as a moment of breakdown that has the capacity to catalyse new perceptual strategies.

As one participant noted, *'The initial impression was one of perplexity, but upon further reflection, it became apparent that this may have been the intended effect.'* It was necessary to re-learn how to see.

Such remarks serve to reinforce the notion that perceptual engagement can be deepened by deliberate instability, thereby echoing theories of experiential aesthetics and enactive perception (Merleau-Ponty, 2012; Noë, 2004). The project does not seek to eliminate discomfort; rather, it embraces it as an opportunity for perceptual reorientation. The aesthetic value of breakdown and discomfort becomes productive when situated within a context of durational engagement and viewer agency (McDonnell, Breidt, & Bülthoff, 2021; Somaini, 2019).

However, the viewer responses were not uniform. It was reported by some participants that they continued to experience difficulty, particularly in high-complexity scenes such as Concarena, where spatial coherence was more challenging to regain. This variability indicates the necessity for further research into stereoacuity thresholds, attentional resilience, and viewer-specific adaptation curves. Inquiries of this nature would benefit from the integration of psychophysical tools, such as eye-tracking, pupillometry, or motion correlation, with a view to quantitatively complementing qualitative feedback.

In curatorial and media art contexts, these findings carry significant implications. Rather than framing immersive design solely around user comfort or realism, artists and designers might harness instability, dissonance, and perceptual ambiguity as productive forces. When orchestrated meticulously, visual discomfort has been demonstrated to enhance attention, provoke reflection, and foreground the act of seeing itself (Marks, 2020).

Finally, the role of landscape in this project cannot be underrated. The selected environments, encompassing the expansive, low-contrast horizons of Connemara and the pronounced alpine reliefs of northern Italy, functioned not merely as settings but as dynamic spatial agents. The visual and topographic complexity of the environment directly influenced the modulation of depth perception, and the process of re-learning depth perception was also influenced by these factors. In this respect, mountainous terrains functioned as



Video 5 Connemara 2025

3 To access the stereoscopic video sequences, which are hosted on the DeoVR platform and support high-quality playback on VR headsets: <https://deovr.com/y1iosk>

perceptual instruments, thereby enabling dynamic hyperstereoscopy to expose and reconfigure the limits of spatial perception.

The QR code provides direct access to the stereoscopic video sequence hosted on the DeoVR platform for the VR headset, which is manually accessible at: <https://deovr.com/y1iosk>.

The project aligns with the tradition of expanded cinema and sensory media art, challenging passive viewing and inviting perceptual labour, while foregrounding the materiality of vision. Dynamic hyperstereoscopy is not merely a visual enhancement; rather, it becomes a critical method for encountering space, opening up depth not as an illusion but as a genuine experiential phenomenon.

7. Conclusion

The present project explores the potential of dynamic hyperstereoscopy to provide a novel aesthetic and perceptual framework for rethinking the experience of spatial depth. By shifting the emphasis from static representation to temporal transformation, it challenges traditional notions of stereoscopic realism and invites a participatory, embodied form of seeing.

The findings demonstrate that, when continuously modulated, disparity does not merely enhance depth; rather, it destabilises it, thereby reconfiguring space as a cognitive terrain that the viewer must navigate, interpret, and adapt to. This process is neither instantaneous nor consistent. It frequently commences with a state of disorientation, and may progress

through repetition and focus to achieve a more profound perceptual integration. In this context, the viewer is no longer a passive observer of visual scenes, but rather an active negotiator of spatial ambiguity.

The mountainous environments utilised in this study proved to be ideal for conducting such perceptual inquiries. The immense size of the mountains, the layered distances between them, and the atmospheric variability all posed significant challenges to the viewer's ability to discern depth and detail. This, in turn, prompted a comprehensive array of viewer responses, ranging from active resistance to complete attunement.

The present study examines a short experimental film currently in development that embodies these insights by translating the research outcomes into an immersive cinematic format. The work has been conceptualised not only as a narrative, but as a perceptual instrument. It is an example of moving image architecture, which has been used to stage depth as a temporal phenomenon and test the limits of visual coherence.

The project is positioned within the lineage of slow cinema and immersive art, and is particularly suited to exhibition contexts that support durational attention and sensory openness. The film's integration of empirical research and spatial aesthetics renders it a valuable case study for interdisciplinary dialogue between visual perception, media theory, and experimental filmmaking. It invites cross-disciplinary dialogue and positions stereoscopic media as a testbed for exploring the temporal architecture of depth perception (Gonzalez-Franco & Lanier, 2017; Shimamura & Palmer, 2016).

In consideration of future developments, there is potential for the implementation of expanded screening protocols, multi-modal data collection methodologies, and collaborative endeavours with vision scientists and curators. It is posited that dynamic hyperstereoscopy may continue to evolve not only as a visual technique, but also as a method for conceptualising vision, thereby revealing the thresholds where perception, cognition, and artistic experience converge.

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