Movement as spatial investigation

in Landscape Architecture



Synthetic Crystallisations *– Lorenz Pammer, courtesy of Synthetic Landscape Lab*

FALL 2026

At the Synthetic Landscape Lab at the University of Innsbruck, we approach the alpine environment not as a static field, but as a living, dynamic territory continuously shaped and reshaped through the intersecting movements of humans, animals, weather systems, machines, and unseen ecological flows. This course, developed for the academic year 2026–2027, investigates movement—specifically human-powered, embodied movement through alpine landscapes—as a tool for spatial inquiry and design innovation in landscape architecture.

Traditional methods of site analysis often privilege visual, static, and data-driven understandings of space, neglecting the dynamic, multisensory, and temporal nature of landscape experience. This project addresses this gap by exploring movement as a generative method for engaging with and understanding spatial environments. Through walking, climbing, running, skiing or other intensive forms of mobility adapted to mountainous or urban terrain, movement becomes both a perceptual lens and a design strategy.



@Field Trip *– courtesy of Synthetic Landscape Lab*

We ask a fundamental question: how does movement—human and nonhuman, visible and invisible—shape our perception of space, and how might it reconfigure the way we design landscapes?

Drawing from ecological, cultural, and artistic frameworks, the studio engages historical and contemporary references such as the *Dérive* of the Situationist International, the performative trajectories of land artists like Richard Long, the migratory logics of animals and wind-dispersed seeds, and the spatial systems of nomadic societies. These practices remind us that space is not simply occupied but continuously produced through motion, rhythm, and relation.

By positioning movement at the core of landscape practice, we aim to cultivate new forms of architectural imagination—ones that emerge from bodily engagement, that negotiate terrain through effort and rhythm, and that embrace impermanence, adaptation, and ecological entanglement. In this light, design becomes not an intervention into static space, but a response to a moving world—a choreography of materials, species, energies, and affects in motion.



:: **Fixity::** A critique of stillness, and a call for embodied reentry



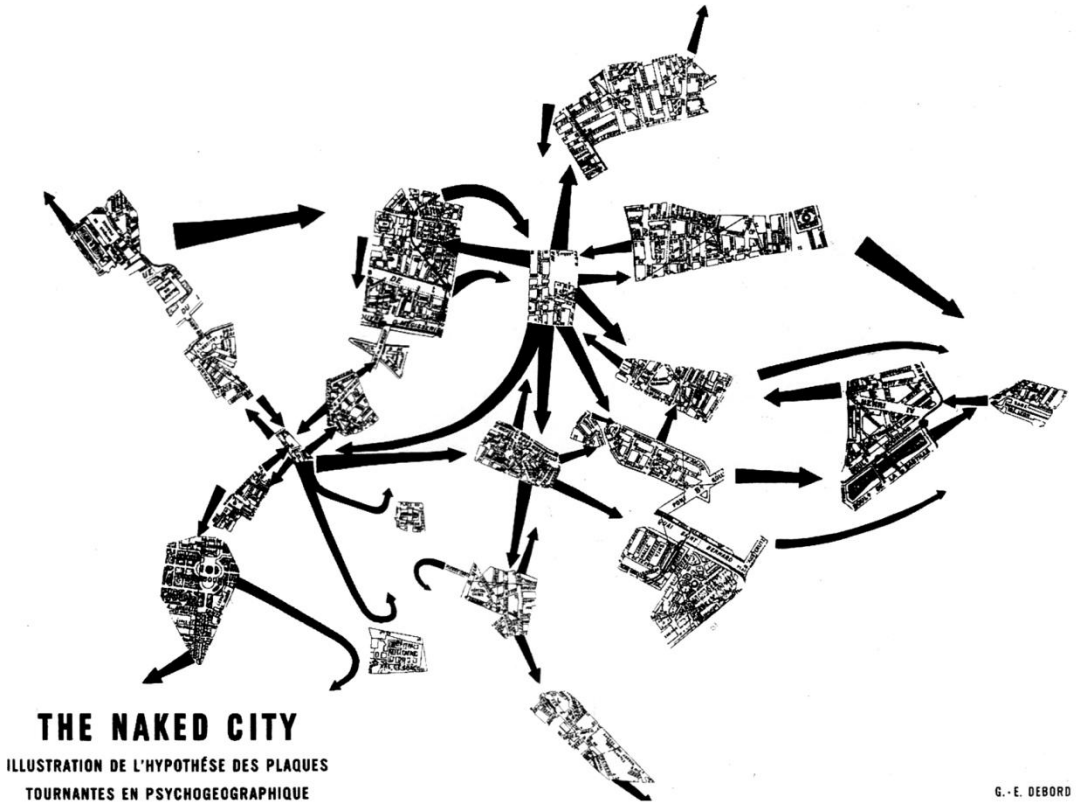
@Field Trip *– courtesy of Synthetic Landscape Lab*

Cities are widely seen as the pinnacle of human settlement, yet in many ways they represent a **compensation for our lost capacity to migrate**. The invention of air conditioning, heating systems, vertical farming, and even parks are cultural prosthetics—designed to stabilize our existence in places where our bodies might otherwise move with the seasons, with animals, or with shifting climatic conditions. **Zoning, centralization, and infrastructural fixity make us still. Stillness then makes us blind to the metabolic flows that sustain us.**

This condition has only intensified in the digital age. **Online platforms offer frictionless access to services, erasing the need for physical presence. Movement is no longer necessary to procure food, meet people, or explore space.** The screen becomes the new site; the click, the new gesture of consumption. While this logic transforms economies and social relations, its effects on the body, on perception, and on spatial design are more insidious. It renders us disconnected from the environment, disengaged from the affective, sensory, and ecological dimensions of place.

This course seeks to challenge these disconnections by **returning to the body**—not only as a user of space, but as a **sensor, navigator, and constructor** of space. **Movement** is not merely the act of traversing terrain; it is the primary modality through which **life makes sense of its environment**. From migrating birds to nomads, from drone scans to the metabolic flows of microbial life, movement is a spatial logic—an embodied form of **distributed intelligence**. It connects bodies to terrain, perception to ecology, and time to space. To move is to **re-enter relationship**: with land, with weather, with other species, and with the memory and rhythm of bodies.

:: **Motion** :: Movement, Perception, and Embodied Space



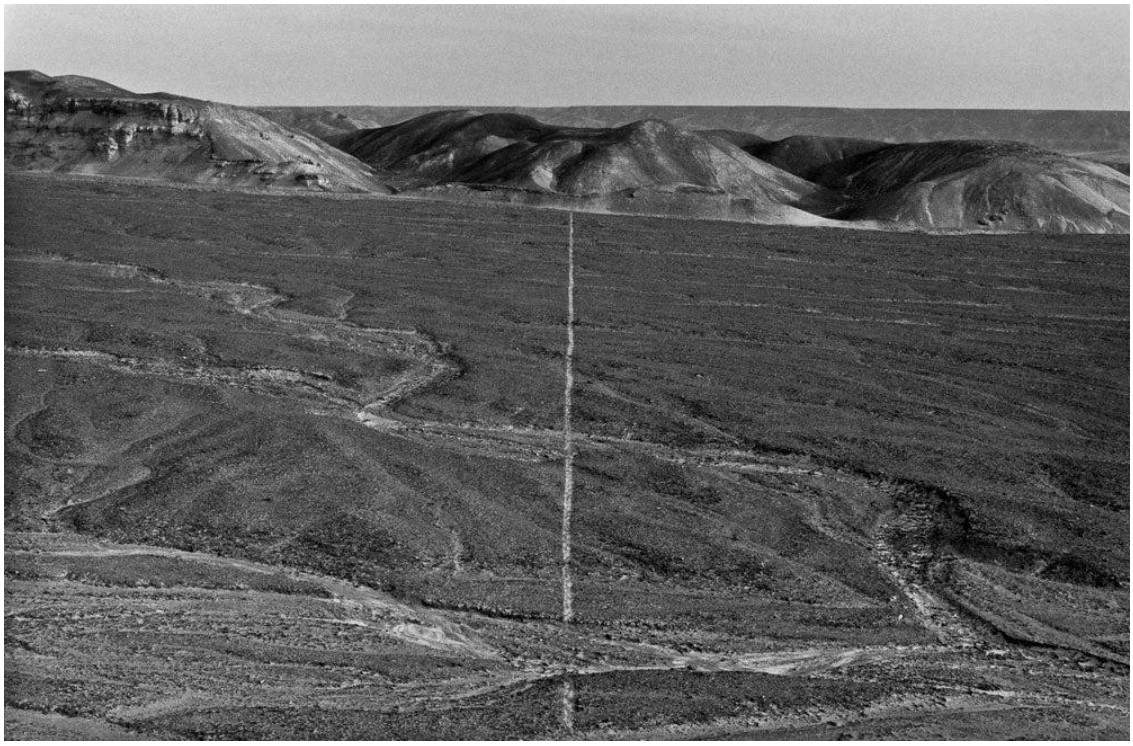
@the Naked City *– Guy Debord and Asger Jorn, Situationist International*

This research draws inspiration from artistic and philosophical movements that foreground the body as a central instrument of spatial exploration. The **dérive**, developed by the Situationist International, proposed drifting through urban environments as a form of radical spatial critique—disrupting habitual paths and revealing the psychological, political, and affective contours of the city. The dérive invites a sensitivity to the rhythms, textures, and ambiances of space as it is lived and experienced, rather than merely seen or measured. Translating this method into the alpine landscape offers a powerful tool for reimagining terrains typically analysed through top-down or cartographic approaches.



***@ Five Stones** – Richard Long*

Similarly, the **land art** of **Richard Long** repositions movement as both medium and message. His walks—recorded through maps, photographs, or minimal interventions in the landscape—highlight the dialogue between body, time, and terrain. Long's work reveals how traversing a space can inscribe meaning, create narratives, and evoke ecological awareness without imposing upon the land. His practice demonstrates a tactile, ethical, and poetic mode of inhabiting landscape, one that informs this project's ambition to make design more responsive to embodied knowledge.



***@ Walking a Line** – Richard Long*

At the core of this investigation is the belief that **space is not a passive container but an active field of bodily engagement**. An **embodied experience of space**—where perception arises from movement, breath, fatigue, orientation, and touch—offers a way to reconnect with the primal, corporeal dimensions of landscape. This stands in contrast to the increasingly disembodied habits fostered by digital interfaces and sedentary urban life. Crucially, these habits often extend into our relationship with the landscape itself—for example, in alpine tourism, where ski resorts enable physical movement across terrain but disconnect it from any meaningful, sensory, or ecological interaction. Here, the landscape becomes a consumable backdrop, not a space of dialogue or encounter. By foregrounding the body in motion, this research seeks to reclaim landscape as a **lived, dynamic medium**, where design begins not just with observation, but with presence, participation, and an ethic of engagement.

:: Methodology



courtesy of Synthetic Landscape Lab

:: Tools and Workflows for Spatial Investigation

Building on the conceptual foundation of movement as a spatial method, this design research integrates a range of digital and analogue tools to capture, analyse, and transform embodied experiences into design insights. These techniques are selected not for their precision alone, but for their capacity to **translate perception into patterns**, **effort into data**, and **movement into meaningful design gestures**.

1. *Movement Tracking and Biometric Data*

   Tools: GPS devices, Strava, Komoot, Suunto or Garmin sensors, biometric wearables (heart rate, elevation gain, exertion levels)

   Purpose: To record and analyse patterns of human-powered movement through different terrains. These datasets offer insights into effort, duration, rhythm, and intensity, transforming subjective movement into spatial diagrams.

   Applications: Mapping “felt topographies” (where strain or flow is greatest), identifying paths of least resistance, or designing user-specific trail networks.



- courtesy of Synthetic Landscape Lab

2. *Drone-Based Mapping and Intervention*

   Tools: DJI drones with RTK GPS, multispectral or LiDAR payloads, seed-dropping modules, photogrammetry software (Pix4D, DroneDeploy)

   Purpose: To generate high-resolution topographic and vegetative data from hard-to-access terrain, and to stage temporary or ecological interventions (e.g., aerial light choreography or landscape seeding).

   Applications: Creating 3D models of alpine landscapes, analysing slope/aspect/surface exposure, or performing environmental gestures from above.



courtesy of Synthetic Landscape Lab

3. *Computational Design and Simulation*

   Tools: McNeel Rhinoceros/Grasshopper, SideFX Houdini.

   Purpose: To process the recorded information. To develop algorithmic, procedural simulations of natural systems that are used to explore design morphologies.

   Applications: Creating biodigital design morphologies at the macro/meso/micro scales.



courtesy of Synthetic Landscape Lab

4. *Generative and Predictive AI*

   Tools: AI tools—including DeepSeek-R1 and GPT-4o for multimodal input, FLUX.1-dev on ComfyUI and Gemini Nanobanana for image generation, and Microsoft's TRELLIS model for 3D design translation. Video outputs, animated via Kling AI, bring urban scenarios to life.

   Purpose: To simulate ecological futures, speculate on landscape scenarios, or transform movement data into 3D printable morphologies.

   Applications: Generating speculative renderings of future climate-adapted terrain, modelling animal migration in relation to human pathways, or merging sensor data with AI to create responsive design strategies.



5. *FDM 3d printing*

   Tools: Filament-based desktop 3D printers (such as Ultimaker, Creality, Wasp)

   Purpose: To materialise prototypical design morphologies.

   Applications: Creating physical models that are representative of the design interventions, and to create working material prototypes that can be tested on site.



A potential workflow for a project site might follow these steps:

1. **Field Movement:** Traverse the site on foot or by bike, recording GPS and biometric data along various routes (effort, elevation, rhythm).

2. **Data Layering:** Combine this with drone-based topographic scans and LiDAR terrain models, photogrammetry or GIS data.

3. **Computational Exploration:** Use the datasets previously created as an input for biodigital morphological simulations at different scales.

4. **AI Interpretation:** Use generative models to actualise the computational design morphologies, producing photorealistic representations that make scale, materiality, site features and atmospheres intuitive and specific.

5. **Design Translation:** Use 3D printed physical models to visualize how interventions could evolve through use and environmental feedback.

6. **Embodied Feedback Loop:** Return to the site with augmented overlays or mobile-based tools such as drones, testing how users engage with the new interpretations in real time.



:: Scale: From Trajectory to Bivouac

The studio moves across three interdependent scales: the alpine territory, the architectural intervention, and the moving body. At territorial scale, students will investigate routes, slopes, snow, wind, vegetation, water, visibility, and seasonal accessibility as dynamic systems that condition movement. These observations should not remain as background analysis; they should guide where an intervention is situated, whom or what it serves, and how it participates in a network of trails and ecological flows.

The design outcome will be a small inhabitable structure comparable in scale and ambition to an alpine mountain hut, bivouac, or refuge. It should operate as a precise point of contact between a moving body and an unstable landscape. Its programme is open: it may provide shelter, rest, overnight accommodation, food preparation, equipment storage, orientation, observation, environmental monitoring, or a temporary base for scientific research. Students should define the programme through the forms of movement and site conditions uncovered in their investigation.

At the architectural and bodily scales, movement becomes a design measure. Arrival, pause, recovery, changing equipment, gathering, sleeping, looking out, and departing should shape spatial sequence, dimensions, thresholds, and material decisions. The project should therefore be developed from landscape-scale mapping to building-scale organisation and detail-scale encounters with the body, equipment, climate, and terrain. The aim is not merely to place a hut in the mountains, but to design a situated instrument that makes movement legible, supports it, and transforms it into a spatial and ecological encounter.



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Synthetic Landscape Lab:

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