4.184 - Designing with Non-Player-Characters

Architectural Design Workshop
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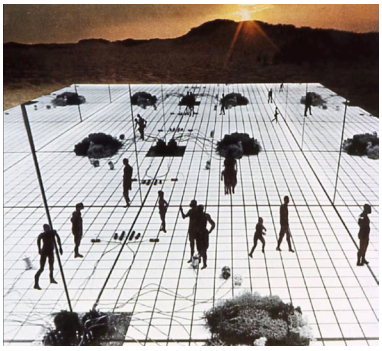
Simon Lesina-Debiasi
Postgraduate Teaching Fellow
MIT School for Architecture + Planning
slesina@mit.edu

Joris Daniel Komen
PhD Candidate, Design + Computation Group
MIT School for Architecture + Planning
MIT Leventhal Center for Advanced Urbanism Fellow
komen@mit.edu

Dummy - T-Pose



Superstudio, Gli Atti Fondamentali, Vita (Supersuperficie), 1971 – 1972, Supersurface Sunset, 1971. Mnam-CCI

Description

This seminar invites architects to step away from the design of buildings and toward the choreography of behaviors. Instead of training game engines as tools to simulate physical architecture, we will explore them as spaces of agency, interactions, and emergent systems – approached through the lens of Non-Player-Character (NPC).

NPCs can be understood as humans without agency in the design process – figures who move through, occupy, and animate spaces but do not participate in shaping them. In games like "The Sims" or "Animal Crossing," their behaviors are bound by pre-set logics: they water flowers where flowers exist, gather where furniture is placed, or follow circulation paths laid out by the player. This dynamic mirrors how some architectural users are often positioned: not as co-designers but as bodies that test, confirm, or reveal the affordances of built form. Thinking of NPCs this way allows us to frame game engines and digital twins as laboratories where human or beyond-human presence is simulated, not negotiated, offering architects a way to study occupation and spatial legibility while also questioning the limits of agency in design practice.

In the world of simulated environments, particularly in video games, NPCs are not players that the world is actively designed around; they are zero-sum rules, behaviors, and consequences. They react, they loop, and perhaps most importantly, they adapt. What happens when we begin to think of design not in terms of form, but in terms of response? This course frames the NPC as a design actor; a system-aware inhabitant of simulated space. Through the logic of NPCs, we will explore how spatial environments are less about static structures and more about the relationships, scripts, and feedback loops they host. We will treat NPCs both as products and producers of space, understanding them as narrative tools, system-thinking proxies, and spatial collaborators.

Participants in the seminar will learn to prototype not walls, but worlds – not elevations, but behaviors – using game engines to build interactive ecologies rather than inert environments. If architecture traditionally answers *what stands still*, dynamic environmental design methods ask: *what moves, what interacts, and why?* The seminar introduces game engines, and their respective asset development pipelines as design laboratories where spatial form, character logic, and environmental systems converge, enabling new ways to imagine architecture as a dynamic lived experience.

Seminar Framework

- **Conceptual Design Methodologies**
  Explore how to translate architectural thinking into systems of movement, interaction, and feedback rather than static drawings.

- **Introduction to Unity**
  Learn the fundamentals of the Unity engine as a platform for modeling, prototyping, and testing digital twins of architectural space.

- **Pipelines Between Software**
  Build workflows across Rhino, Blender, Photoshop, and Unity, understanding how assets, models, and textures circulate between platforms to create coherent interactive environments.

- **Character AI Design**
  Experiment with NPCs as "humans without agency," using simple AI behaviors to reveal how circulation, occupation, and interaction emerge in space.

- **Environmental Design**
  Construct environments that respond to and shape character behavior, highlighting how architecture frames rhythms of use.

- **Interaction Design (NPCs, Objects, Environments)**
  Prototype interactions between agents and artifacts - villagers watering flowers, Sims gathering at a stereo, Koopas tracing geometry - to understand architecture as a field of relationships.

- **Game Engine Manipulation**
  Develop fluency in modifying physics, rules, and visual systems within the engine to test speculative scenarios and alternative spatial futures.

- **Guest Lectures & Critiques**
  Engage in lectures and open-format conversations with level designers, technical artists, game developers, and researchers working at the intersection of interactivity, spatial storytelling, and more-than human design practices.

Seminar Outcomes

By the end of the semester, students will have:

- Identified and described a conceptual framework for their simulation.
- Developed a library of environmental and spatial assets.
- Assembled their assets in Unity as an environmental digital twin.
- Deployed a family of NPCs in their environment.

The final project is a playable world exploring relationships and reactions within a designed environment. A collective show will be organized at the end of the semester to showcase these exploratory projects.

Students do not need a computational or design background to successfully participate in the seminar, but will be encouraged to learn new software and experimental design skills.

Course Structure

The class meets once a week, **Mondays from 10AM to 1PM in room 5-216.** The first class will be held on Monday, February 2nd, and will offer an overview of the course materials, learning objectives, and general structure of the course.

Each class time we start by discussing reading materials, findings, and experiences. Followed by lectures, we will introduce gradually more conceptual and technical frameworks that will help us throughout the semester to create responsive and adaptive systems through the lens of game design. Finally, in-class exercises and tutorials will assist students in framing their personal projects and cover essential components of game planning and development.

Course Format

This workshop course will meet in-person every Monday morning. Students registered in the course are expected to attend all class meetings. Active participation in class exercises and discussions is equally important as the successful development of a final project. We will work independently and in small groups throughout the semester, incrementally building our framework and working prototypes of our projects. The course is a working laboratory where students and instructors alike are exploring the opportunities and limitations of thinking and creating interactive worlds responding to complex systems. Students are expected to continuously work on their personal projects and meet the course deliverables and deadlines.

Design Process

Each class, we will cover new conceptual perspectives, narratives, mechanics, and pipelines that will incrementally build up to the creation of a final project. Students are invited to explore potential project ideas around topics they are developing in other courses or studios. The course structure exemplifies a design and system-thinking path where the world-making process starts with a complex phenomenon and the different agents and conditions, and results in a network of relationships that allow us to create adaptive environments and speculative imaginations. Through weekly exercises and assignments covering a variety of topics, students will develop a series of investigative and technical skills supporting the creation of their own game/simulation/environment.

We will start with fundamental theoretical texts and video game examples to explore the idea of worlding in design. Extracting ideas, character profiles, level designs, and narratives, we will unpack different forms of interactions, relationships, and narratives. Next, we will each explore a different complex system in and around environmental phenomena, spatial inhabitation, social interaction, communication, or otherwise that allow us to create a map of relationships and dependencies within a complex system. These investigations are not bound to a specific architectural vision or narrative but allow us to map all agents and conditions in our potential world to their role, limitations, and objectives. From there we will establish our narrative and game logic, which will be the skeletal system of rules and dynamics behind our world. Establishing the main actors and interactions, we will create the mechanics and platforms that can test, investigate, or introduce our ideas. Following the creation of our game or environment framework, we start working on both level design and narrative creation. Despite the seemingly linear structure of the course, students will find themselves in a recursive moment, where the creation of the world will require multiple passes back into the mechanics, agents, and level design. Ultimately, the worlding of our projects will conclude in the reflection of "what our world wants" from us, and the environment. Finally, students will finalize their projects into a playable or active simulation that will be placed into the course "arcade," to be explored by friends and visitors, together with supporting diagrams, process images, and game instructions.

What to expect

Designing for NPCs will introduce students to an investigative perspective on our built or constructed environment that allows us to interact or reflect on complex systems around us. Topics will range from theoretical concepts, investigations of intricate relationships, to the abstraction of complex systems to story and world building. The scale and width of the topics are open to the individual students to experiment and test. We envision working with game engines as an active laboratory for experimentation. Beyond pure software skills, we create pipelines for both the actual creation of our projects, as well as an open-ended method for reflective and iterative thinking.

Likewise, we expect the course format to be a space for exploration and reflection. We want to emphasize the importance of your peers as a source of support, inspiration, and feedback. If design is a collective process supported by shared views,

creating a world is something that cannot be done alone. This course tries to foster the collective nature of creative thinking and uses the classroom as a place for all.

Presentations
The instructors will deliver a series of short lectures exploring the core conceptual ideas behind thinking of architectural space through NPCs, as well as the idea or responsive worlds. We will investigate how to approach interactive ecologies as fluid systems, scripts, and feedback-loops. Additionally, we hope to be joined by guest speakers working in level design, game development, and interactive storytelling, who will share insights into the production of behavior-driven environments and the role of NPCs in shaping user experience. Followed by discussions and conversations, these presentations will give students a lens into game design practices and help situate architectural thinking within broader world-building and digital design ecosystems.

Tutorials
Following the content of the presentations and exercises, instructors will deliver fundamental tutorials around the most important tools, and operations to set up our worlds. This includes the creation of a narrative framework, a skeletal environment, 3d objects and 2d textures, scripted and responsive interactions, and simple interfaces. Additional topics will be adjusted depending on individual project ideas and developments.

Exercises
Different exercises will be held during course time or as assignments in between classes introducing students to different game mechanics, examples, forms of communication, and visual language. The number of exercises will get less throughout the semester, as students are expected to work in groups to develop their personal projects.

Course Preparation

Students will participate in a variety of activities during class times and will be required to work on their own projects. Every student will be required to bring their own laptop with charger and should think about getting a mouse (3D modeling and drawing software is possible with track pads, but most software is designed to be used with a mouse). Additionally, supplies to sketch, take notes, and record your progress is strongly encouraged.
Should you need any additional technical support or equipment, please contact the teaching team or reach out to Systems and Technology Organization of Architecture - STOA (https://stoa.mit.edu/ or via email stoa@mit.edu).

Attendance

Since the course only meets once a week, attendance for the full duration of the class is mandatory. 4.184 is an experimental learning environment that requires not only your presence but is also built upon your active participation. Developing your ideas, creating your structure and developing an interactive environment require your attention and dedication throughout the semester.

Course Communication

Instructors will primarily communicate with students during the course through in-person conversations. Additional announcements are made via email outside of class times. Students are invited to create a dedicated group chats to share ideas and additional information among each other.

Student Conduct, Rights, and Responsibilities

All students are expected to attend all class dates and activities, participate in the course exercises and tutorials, and submit course assignments in due time. The course credits are 6 in total, divided into 3-0-3. Three hours of class time and three hours of expected work in between classes, initially in the form of readings and investigations, later as work time dedicated to exercises and the final project. The use of AI tools for the creation of text or visual components of assignments is not strictly prohibited, but students should be able to explain what components were created using AI applications. Since this is not a coding course, we will use AI tools for the construction of our game mechanics and logics. Most of your own research and concept development should come from your own interests and ideas.

Respect

It is important to us and the university that our workshop ensures that all students, staff, faculty, and members of the MIT community are treated with respect. As described in the MIT Values Statement, we cherish intellectual and creative excellence through an environment of free expression, debate, and dialogue in pursuit of truth. "We strive to make our community a humane and welcoming place where people from a diverse range of backgrounds can grow and thrive – and where we all feel that we belong". This is only achieved through decency, kindness, respect, and compassion for each other.

Student Support Services

If you are dealing with a personal or medical issue that is impacting your ability to attend class or complete work, students should contact a dean in Student Support Services (S3). These offices are here to help you. The deans will verify your situation, provide you with support, and help you work with your professors to determine next steps. In most circumstances, students are not automatically excused from coursework without verification from a dean. Please visit the S3 website (https://studentlife.mit.edu/wellbeing-support/student-support-services-s3/) for contact information and more ways that they can provide support. We, as the teaching team, will do our best to accommodate a learning environment that allows all students to learn, participate, and enjoy the course.

Mental Health

As a student, you may experience a range of challenges that can interfere with learning, such as strained relationships, increased anxiety, substance use, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may impact your ability to attend class, concentrate, complete work, take an exam, or participate in daily activities.

Undergraduates: Please discuss this with Student Support Services (S3). You may consult Student Support Services in 5-104 or at (617) 253-4861.

Graduate Students: Please reach out to the deans for personal support in the Office of Graduate Education. For urgent or after-hours concerns, please contact MIT Police.

MIT offers a range of counseling and mental health resources for students. Information on the available services can be found through MIT Health or online at https://health.mit.edu/services/mental-health-counseling. Do not hesitate to reach out if you are struggling so we can support you the best we can.

Belonging and Community

MIT values an inclusive environment. I hope to foster a sense of community in this classroom and consider this space to be a place where you will be treated with respect. I welcome individuals of all backgrounds, beliefs, ethnicities, national origins, gender identities, sexual orientations, and political affiliations – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the class. If this standard is not being upheld, please speak with us immediately.

COURSE SCHEDULE

February	Monday	02/02/2026	FIRST DAY OF CLASS Syllabus, course introduction, overview
	Monday	02/09/2026	RESEARCH Introduction Assignment 1, Group discussion on game experience + finding a topic.
	Monday Tuesday	**02/16/2026** 02/17/2026	**NO CLASS - Presidents' Day – Holiday** [Following Monday Schedule] FRAMING Environments, actors, agents, conditions
	Monday	02/23/2026	TEXT ADVENTURE PRESENTATIONS Guest Talk #1 (to be confirmed) Graphic mood board, narrative
March	Monday	03/02/2026	REFLECTIONS ON TEXT ADVENTURES
	Monday	03/09/2026	BUILDING AND DEFINING NPCs (1st NPC draft due)
	Monday	03/16/2026	CONCEPTUAL WORLD BUILDING | START WORLDING (Storyboard Due)
	Monday	03/23/2026	NO CLASS - Spring Break - Think of about Easter Eggs
	Monday	03/30/2026	WORLDING continued (1st World Draft Due)
April	Monday	04/06/2026	INTRODUCE PLAYER INTERACTION INTERFACE (2nd World Draft Due) Guest Talk #2 (to be confirmed)
	Monday	04/13/2026	BUILD + REFINE WORLD/GAME
	Monday Tuesday	**04/20/2026** 04/21/2026	**NO CLASS - PATRIOTS DAY – Holiday** Last Drop Date
	Monday	04/27/2026	BUILD + REFINE WORLD/GAME
May	Monday	05/04/2026	BUILD + REFINE WORLD/GAME
	Monday	05/11/2026	WORLD/GAME SUBMISSION
	Monday	05/18/2026	? Final Presentation – Exhibition? (TBD)

Evaluation Criteria and Grading

All students are expected to attend all classes and participate in presentation updates, final presentations and discussion of presented work. If attending class is not possible, please contact the instructor beforehand to arrange an alternative. Regular attendance of weekly sessions is crucial for design development and live project discussions.
The following criteria will be used for the evaluation of students' work, both in terms of helping their progress and in final grading:

1. Thesis: How clearly is the student articulating the conceptual intentions?

2. Translation of Thesis: How well is the student using their thesis to develop a design response to given problems?

3. Representation Appropriateness: How well matched is their choice of representational means to their intentions?

4. Prototyping Quality: How accomplished are they in drawing, modeling, digital representation, and prototyping?

5. Oral Presentation Skills: How clearly are they presenting their ideas orally, whether at their desk, in class discussions, or to a more formal jury?

6. Participation in Discussions: How actively and how constructively are they involved in class discussions, both formally and informally?

7. Response to Criticism: How do they effectively take advantage of criticism from instructors, classmates and outside jurors?

8. Auto-Critical Skills: To what extent are they able to critique their own work regularly and effectively?

9. Attendance – attendance to all classes is mandatory, please email beforehand for excused absence.

A: Excellent - Project surpasses expectations in terms of inventiveness, appropriateness, verbal and visual ability, conceptual rigor, craft, and personal development. Student pursues concepts and techniques above and beyond what is discussed in class.

B: Above Average - Project is thorough, well researched, diligently pursued, and successfully completed. Student pursues ideas and suggestions presented in class and puts in effort to resolve required projects. Project is complete on all levels and demonstrates potential for excellence.

C: Average - Project meets the minimum requirements. Suggestions made in class are not pursued with dedication or rigor. Project is incomplete in one or more areas.

D: Poor - Project is incomplete. Basic skills including graphic skills, modelling skills, verbal clarity or logic of presentation are not level appropriate. Student does not demonstrate the required design skill and knowledge base.

F: Failure - Project is unresolved. Minimum objectives are not met. Performance is not acceptable. This grade will be assigned when you have excessive unexcused absences.

Course Bibliography

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