Buildings with an attitude

The relationship of architecture with technology is a fraud one. Ambition for power, representation and other forms of posturing have registered in buildings throughout history. Buildings project a certain attitude, embody a stance, express a position through their formal and material composition, their program and their contextualization. This stance almost always has human consequences as the architectural ambitions need to be propped up through human effort to compensate for the technological shortcomings of the status quo. This is true for the excessive palace architecture of Versailles with its elaborate dual circulation catering to a ceremonial and a supporting cast of human characters orchestrated by the architectural spaces. It is true for an early example of ambitions in building automation like Monticello by Jefferson that ultimately was only possible to be operated supported by slavery to fill the gaps in the imperfect systems and provide the intelligence mechanical systems lacked. It registers also in the expression of political power in architecture such in the denial of the historically representative facade in Axel Schultes and Charlotte Frank's Kanzeramt in Berlin enabled through progress in building technology yet in its stance monumental in its own way. And in the contemporary technological crisis in architecture where the rapid advances in robotic logistics and processing of goods register predominantly in off site warehouse architecture often in no go zones for humans.
and almost no articulation to the outside. Technology is preoccupied with automation in architecture, and continues to reinforce phantasies of hierarchical control and power pyramids, efficiency and convenience rather than tackle the question of how architectural autonomy can affect architectural design and open new challenges in redefining what design means if a building for instance can learn throughout its life time and be viewed more like a person with right and responsibilities towards humans.

The goal with the workshop is to probe the potential for architecture to incorporate autonomous qualities and explore the impact on design when design is not constrained to the formal and programmatic but expands into the behavioral.

The workshop consists of a number of assignments from analyzing precedents of attitude projected through architecture and subsequently the attempt to translate contemporary agendas into autonomous architectural designs. The workshop is speculative in nature and aims to provoke a rereading of the evolution of technology in architecture in relation to human intent embodied in design. It is as much a critical analysis of the status quo of architecture’s engagement with technology as it is a chance to revisit the agendas that go into architecture and how they materialize in light of changes towards autonomy.

In summary the core questions are:

- What changes when architectural attitude shifts from the material to the behavioral?
- How does the relationship between people and architecture change with architectural autonomy?
- How can an autonomous building be held accountable – what values does it have?
- What can an autonomous building with a 50 to 100-year life span learn and how does it affect its design at the outset?
- How can architecture be redefined as an entity more like a person with rights and responsibilities towards people rather than just a scaffold for technology?

Assignment summaries:

1 - Object with an attitude
As a startup assignment develop an object with an attitude - how do you convey intent through formal and material organization, what are possible hidden agendas underlying design decisions. How does it connect to its agenda through choice of materials form, implied references etc.

2 - Analyze an architectural precedent - how does a perceived agenda transpire through the building
What role does technology play, what part do people play and how does the material artifact of the structure negotiate between the two. What are tangible and intangible aspects, how much does the architecture rely on cultural context for its message to come across.
Does the building have a goal, an ambition, does it have limits? Is the creator present through his or her work or abstracted? Develop a thorough analysis using diagrams, background research and visualizations of core concepts.

3 - Translate into architectural agenda for a design proposal
Define an agenda and develop a design proposal for a building with an attitude. Define a story line and a set of vehicles for conveying the agenda through architectural terms. What is the division between material form, necessary technology and resultant behavioral patterns? Identify and speculate on possible implementations and underlying techniques, and also necessary steps to bridge any possible gaps in enabling your building to act autonomously.

4. Tell a story of Human-Architecture coexistence
Project your design speculation on autonomous architecture forward into a story of human-architecture coexistence with your building design and its inhabitants as the protagonists.

Final Presentation and Final Report
Document your project trajectory and precedent research in a final presentation and final hand in report to be presented in the final presentation.

Schedule (draft):

<table>
<thead>
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<th>Class: T5-8 (3-329) TBC</th>
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<td><strong>Week 1 (Sep. 2)</strong></td>
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<td>9/5 Introduction</td>
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<td>Assignment one – create an object with an attitude</td>
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<td><strong>Week 2 (Sep. 9)</strong></td>
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<td>9/12 Lecture “Embodied Computation- shift from material to behavioral”</td>
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<td>Presentation Assignment one</td>
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<td>Intro – Assignment two – Analysys of an architectural precedent</td>
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<td><strong>Week 3 (Sep. 16)</strong></td>
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<td>9/19 Lecture “Autonomy - changes in relations between people and machines”</td>
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<td>Proposal Assignment two</td>
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<td><strong>Week 4 (Sep 23)</strong></td>
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<td>9/26 Lecture “Robotic architecture “</td>
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<td><strong>Week 5 (Sep 30)</strong></td>
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<td>10/3 Presentation Assignment two –</td>
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<td>Intro Assignment Three - Develop an architectural design proposal with an attitude</td>
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<td>10/10 Lecture “Prototype”</td>
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<td>10/24 Assignment Three presentation –</td>
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<td>intro assignment four – Story of Human-Architecture coexistence</td>
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<td><strong>Week 9 (Oct 28)</strong></td>
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<td>11/1 Lecture “shift from mechanical complexity to algorithmic”</td>
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<td>Proposal presentation Assignment four</td>
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<td><strong>Week 10 (Nov 4)</strong></td>
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<td>11/7 Progress update Assignment four</td>
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<td><strong>Week 11 (Nov 11)</strong></td>
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<td>11/14 Progress update Assignment four</td>
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<td><strong>Week 12 (Nov 18)</strong></td>
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<td>11/21 final presentation four and overall report</td>
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<td><strong>Week 13 (Nov 25)</strong></td>
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<td>11/28 Thanksgiving break</td>
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<td><strong>Week 14 (Dec 2)</strong></td>
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<td>12/5 Wrap up discussion</td>
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Selected readings:

Cotton Gin motor installation Kevin Beasley
https://news.artnet.com/exhibitions/kevin-beasley-1475380

Howl’s moving castle (2004) - written and directed by Hayao Miyazaki
Solaris, by Andrei Tarkovsky

Shape shifting intelligence at ocean scale- imitation as form of contact

“Morgan”- Movie
Morgan Movie trailer created by IBM’s Watson AI
https://www.youtube.com/watch?v=gJEzuYynaiw

Movie generated by AI

Ex Machina, Garland
Intelligence hierarchy: AI in female Robot form vs. - male computer scientist
- male entrepreneur- AI in female robot form vs. smart house-helicopter
“Smart” home that is accessed via cards with pictures on it- for what for who
and do not even block access when someone else uses the card- why the
picture then- the home/architecture is clearly the dumbest thing just short of
the helicopter
Gender questions of robotics http://www.wired.com/2015/04/ex-machina-turing-bechdel-test/

2001 space odyssey, Stanley Kubrick
HAL - station- personification of AI in evil red eye- but also embodied in the
station culminating in the physical brain that can be accessed and “operated”
on to ultimately disable the AI and overcome it.
Transcendence, Wally Pfister
super intelligence/singularity/transcendence- what happens if AI transcends
human intelligence and as a networked entity gains power

Interstellar, Christopher Nolan
Apart from the space theme and social dynamics- coworking robotics- the
cubic robots as incorruptible human pals that are happy to sacrifice them-
selves and assist wherever needed like intelligent pets.

Blade runner- Ridley Scott
Eternal artificial life- gender question of robots- role models reinforced even
in robotics
Prometheus and Alien movies, Ridley Scott, James Cameron
Confusion of who is human and who is machine, ultimately reliable compan-
ion

Her, Spike Jones,
Disembodied abstraction of human as love interest and obsession but ulti-
ately superior being as it transcends bounds of individuality as a networked
Omni present entity

Tron
inhabiting the architecture of the AI in the computer as a maze and parallel
universe

Wall-E, Pixar
Robots as the most resilient species on earth, continuing to tend to earth
long after humans have left- assistive robotics leads to degenerate mankind
as shown on the cruise space ship

Humans- BBC series- on synth- robotic workers and robotic human cohabita-
tion and the threat of machines gaining consciousness

Black Mirror series- dystopian vision of technology’s impact on society

Home automation movies
Simplistic examples of the horror that may spawn from the smart home - impersonation of technological evil or run amok - a subset of haunted house horror movies and also playing on the potential of AI-human relationships

Tau - Netflix 2018
Home wrecker 1991
Demon Seed 1977
https://en.wikipedia.org/wiki/Demon_Seed
https://www.youtube.com/watch?v=UDUVZIAIBYQ
Dream House 1998
https://www.youtube.com/watch?v=8wq1awa_QgA
R.U.R. Rossum's Universal Robots Karel Capek - first mention of Robot
I, Robot, Isaac Asimov, 1950- collection of short stories
Solaris, Stanislaw Lem
Fiasco, Stanislaw Lem
Eden, Stanislaw Lem
Parallel Walls, Parallel Worlds: The Places of Masters and Servants in the “Maisons de plaisir” of Jacques-François Blondel
António Brandão Moniz, Robots and humans as co-workers? The human-centred perspective of work with autonomous systems
Duffy, Brian R., 2003, “Anthropomorphism and the social robot”, robotics and autonomous systems 42

Fox, Michael, Kemp, Miles, “Interactive Architecture”, 2010, Princeton Architectural Press


IJAC - Architectural Robotics: Catalyzing New Design Opportunities. Guest editors: Michael Fox, Aaron Sprecher, Doug Noble, Mike Christenson, Anton Harfmann, Aaron Temkin, Nancy Cheng
http://multi-science.atypon.com/toc/ijac/10/3


Moniz, António Brandão, 2013, “Robots and humans as co-workers? The human-centered perspective of work with autonomous systems”, IET Working Papers Series No. WPS03/2013


Radhika Nagpal, Programmable Self-Assembly Using Biologically-Inspired Multiagent Control, AAMA, 02, Bologna Italy


LEARNING OBJECTIVES & PEDAGOGY
The learning objectives for the course is to learn through a combination of critical analysis of precedent work and design work provoke a rethinking of the realm of technology in architecture. The method of teaching is a combination of lectures, design crits, and in-class design review sessions with pointers to relevant precedents and resources for the students to develop their projects further. The seminar is structured in a relatively open-ended way around a sequence of assignments that require that students submit the relevant material produced to allow for the instructor to help them guide the development of their overall project. Students are expected to be able to work independently based on presentation feedback and explore a range of concepts related to autonomy and automation in architecture in order to question the potential shift from design as shape giving to behavioral design over the life time of a building.

Evaluation
Work in the seminar will build sequentially. Therefore, student commitment to incremental development on a weekly basis is of great importance. Seminar necessitates regular attendance and requires that deadlines are consistently met. Attendance in classes is mandatory. Greater than two absences from class without medical excuse supported by a doctor’s note or verifiable personal emergency could result in a failing grade for the studio. Work will be evaluated based on overall participation in discussion, submission of the individual assignments including a prototype and satisfactory development of the final paper.

Grading will be done according to the following criteria:
A - Exceptionally good performance demonstrating a superior understanding of the subject matter, a foundation of extensive knowledge, and a skillful use of concepts and/or materials.
B - Good performance demonstrating capacity to use the appropriate concepts, a good understanding of the subject matter, and an ability to handle the problems and materials encountered in the subject.
C - Adequate performance demonstrating an adequate understanding of the subject matter, an ability to handle relatively simple problems, and adequate preparation for moving on to more advanced work in the field.
D - Minimally acceptable performance demonstrating at least partial familiarity with the subject matter and some capacity to deal with relatively simple problems, but also demonstrating deficiencies serious enough to make it inadvisable to proceed further in the field without additional work.
F - Failed. This grade also signifies that the student must repeat the subject to receive credit.

Writing Center
The WCC at MIT (Writing and Communication Center) offers free one-on-one professional advice from communication experts. The WCC is staffed completely by MIT lecturers. All have advanced degrees. All are experienced college classroom teachers of communication. All are all are published scholars and writers. Not counting the WCC's director's years (he started the WCC in 1982), the WCC lecturers have a combined 133 years' worth of teaching here at MIT (ranging from 4 to 24 years).
The WCC works with undergraduate, graduate students, post-docs, faculty, staff, alums, and spouses. The WCC helps you strategize about all types of academic and professional writing as well as about all aspects of oral presentations (including practicing classroom presentations & conference talks as well as designing slides). No matter what department or discipline you are in, the WCC helps you think your way more deeply into your topic, helps you see new implications in your data, research, and ideas. The WCC also helps with all English as Second Language issues, from writing and grammar to pronunciation and conversation practice. The WCC is located in E18-233, 50 Ames Street. To guarantee yourself a time, see the WCC's page About Appointments where you can then schedule an appointment online.

Academic integrity
MIT’s expectations and policies regarding academic integrity should be read carefully and adhered to diligently: http://integrity.mit.edu/.