

# School of Design & Science (SDS)

Chiba Institute of Technology (CIT)

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v1.0

## I. Statement of Founding Precepts

We set forth the following principles, process, and areas of practice, which the School of Design & Science commits to uphold in perpetuity. These precepts embody the founding vision of the School.

### Principles

**RESILIENCE** over strength.

強さではなく、しなやかさを持つ。

**SYSTEMS** over objects.

モノではなく、システムに焦点を合わせる。

**DISOBEDIENCE** over compliance.

服従ではなく、反抗する。

**PULL** over push.

「押す」のではなく、「引く」。

**COMPASSES** over maps.

地図ではなく、良いコンパスを持つ。

**EMERGENCE** over authority.

専門家ではなく、クラウド（人々）に向かう。

**RISK** over safety.

安全ではなく、リスクを取る。

**PRACTICE** over theory.

理論ではなく、実践に基づく。

**LEARNING** over education.

教育ではなく、学びに焦点を当てる。

**SUSTAINABILITY** over growth.

拡大ではなく、持続可能性。

**PUBLIC** over individuals.

個人の利益ではなく、公共的な視点を持つこと。

**MODULAR** over monolithic.

一枚岩ではなく、モジュール型のデザインを意識すること。

## Process

Rather than a top-down approach where leaders determine values and priorities, or a purely bottom-up approach where methods emerge from hands-on experience, SDS employs three guiding principles<sup>1</sup>: identifying and eliminating waste (無駄, Muda), managing unevenness (斑, Mura), and preventing overburden (無理, Muri). We prioritize collaborative structures involving students, faculty, researchers, and administrators alike which address these three factors as core optimization variables to surface issues early and maintain a lean operation. This approach aligns with our commitment to maintain SDS as an inclusive yet elite organization.

## Domains of Creative Exploration

SDS explores four domains of creative exploration: Science, Engineering, Design, and Art. These domains exist in an entangled cycle of exchange<sup>2</sup>. Science explains and predicts the world, converting information into knowledge. Engineering applies that knowledge to develop solutions, converting knowledge into utility. Design embodies solutions that maximize function and experience, converting utility into behavior. Art questions behavior and creates awareness, converting behavior into new perceptions of information, completing the cycle.

We engage these four domains not by training specialists in each, but by cultivating the capacity to traverse and transcend between them. With sufficient energy, achieved through excellence and deep integration, practitioners can leap directly between domains, bypassing sequential progression. Rather than wearing four separate hats, we provide one pair of shoes for the journey. Each realm can incite revolution within another. We seek to redefine expertise itself.

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<sup>1</sup> Drawn from the Toyota Production System.

<sup>2</sup> Neri Oxman, "Age of Entanglement," *Journal of Design and Science*, 2016, <https://doi.org/10.21428/7e0583ad>.

*This charter is a living document. What remains fundamental to SDS are our principles, process, and domains of creative exploration. If you are reading a printed version, it may be out of date already and you can read or download the latest version at <https://sds.chibatech.dev/charter>.*

## II. An Antidisciplinary Institution

What differentiates SDS is not its focus on any particular domain, but its commitment to antidisciplinary<sup>3</sup> culture as a method for systemic impact. We pursue the highest leverage by identifying the complex systems we inhabit and intervening at their most powerful point, the paradigms that structure them.

Traditional disciplinary boundaries cannot address our generation's defining challenges, from climate change and social polarization to technological disruption and more. These problems, as well as their opportunities, emerge from entrenched paradigms which demand new approaches that transcend existing frameworks. Antidisciplinary work is our response to this necessity.

Paradigms shape systems across multiple perspectives<sup>4</sup>. From the scientific lens, Thomas Kuhn defined a paradigm as the set of common beliefs and agreements shared between scientists about how problems should be understood and addressed<sup>5</sup>. The shift from Newtonian mechanics to Einstein's relativity didn't just solve problems differently, it redefined what the problems were. From systems dynamics, Donella Meadows describes the paradigm as "that out of which the system—its goals, power structure, rules, its culture—arises."<sup>6</sup> Whether a society operates under capitalism or socialism generates fundamentally different goals (GDP vs. equality metrics), rules (property rights vs. collective ownership), and culture (entrepreneurship vs. solidarity). From evolutionary dynamics, Martin Nowak shows how paradigms determine the unit of payout (what gets measured and rewarded), which then

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<sup>3</sup> Joichi Ito, "Antidisciplinary," *Joi Ito's Web*, October 2, 2014, <https://doi.org/10.31859/20141002.1939>.

<sup>4</sup> Joichi Ito, "The Practice of Change" (PhD diss., Keio University Graduate School of Media and Governance, 2018).

<sup>5</sup> Thomas S. Kuhn, *The Structure of Scientific Revolutions*, 2nd ed., enlarged, International Encyclopedia of Unified Science 2, no. 2 (Chicago: University of Chicago Press, 1994).

<sup>6</sup> Donella Meadows, "Leverage Points: Places to Intervene in a System" (Hartland, VT: Sustainability Institute, 1999), <https://donellameadows.org/archives/leverage-points-places-to-intervene-in-a-system/>.

enforces structure<sup>7</sup>. In evolutionary games, a well-mixed population versus spatially structured interactions changes the fitness unit from individual accumulation to neighborhood-level cooperation, fundamentally altering which structures can survive. Regardless of where one stands, paradigms influence all.

Paradigms can be transcended and altered, however, we are always operating within some paradigm. The work lies in identifying which paradigm shapes our system, then intervening deliberately. We can intervene by adjusting flows, feedback, goals, rules, and connections, but the highest-leverage intervention is shifting to a new paradigm, altering the very ground from which systems arise.

The connection between antidisciplinary work and paradigm shifts is nearly definitional. Current paradigms created our disciplinary organization; transcending paradigms requires transcending these boundaries. If we seek maximal impact, the answer lies not within existing disciplines but between them, breaking silos while building rigor through practice rather than inherited methods.

Interdisciplinary work has succeeded in creating fields like bioengineering, but it's no longer sufficient. As cross-cutting forces like computation accelerate, traditional disciplines cannot evolve fast enough. Antidisciplinary culture provides the speed and flexibility to match the pace of change.

This paradigm-transcending work already manifests across our faculty in ways that demonstrate its transformative potential.

Professors Mizuki Oka and Hiroki Kojima study Artificial Life, challenging the pure optimization, convergence approach dominant in AI development today. Rather than prescribing outcomes through fixed objectives, they use minimal fitness criteria that generate diverse results through exploration, much as natural evolution created tremendous diversity in species and environments through the base requirement of survival. At the field's forefront, their work demands new computational primitives. Professor Joe Austerweil develops probabilistic computing approaches that embrace uncertainty and stochasticity rather than deterministic binary logic, providing the substrate for open-ended exploration. Antidisciplinary fields generate antidisciplinary methods all the way down; simply put, new paradigms require new tools.

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<sup>7</sup> Martin A. Nowak, "Five Rules for the Evolution of Cooperation," *Science* 314, no. 5805 (2006): 1560-63, <https://doi.org/10.1126/science.1133755>.

Professors Oka and Kojima's work also reframes how we measure progress, valuing exploration and novelty over convergence to predefined optima. This perspective resonates with colleagues in considerably different mediums. Director Joi Ito and Professor Daum Kim collaborate with government officials in the design of a new special jurisdiction in Bhutan. Rather than traditional state-planning, an approach that produced Corbusian failures like Brasília, Ito and Kim view societal flourishing through the lens of evolutionary dynamics, encouraging possibilities to emerge rather than prescribing them.

Antidisciplinary work, when deeply integrated, can transcend creative domains. We see this today from our professors of artificial life, scientists who are dually reshaping governance frameworks. We intend for our school to be exactly the type of ripe grounds for this form of fluid collaboration to happen, and we follow the field of artificial life as a happy example.

Professors Ira Winder and Catharina Maracke have spent their careers reimagining cooperation through incentive structures and technology. Ira uses computational platforms to shift the paradigm from *planners design, citizens inhabit* to genuine co-creation, as deployed in Dubai, Toronto, and Beijing. Catharina is a legal scholar who decomposes law itself, reframing law from a protective system of rules and regulations to a tool for structuring cooperation. That cooperation is best captured in her contributions to the groundbreaking Creative Commons licensing system; rather than the traditional intellectual property paradigm of scarcity and exclusive ownership, Creative Commons emerges from a paradigm of knowledge as a shared commons, fundamentally restructuring cooperation from permission-seeking to default sharing with conditions.

We describe ourselves as antidisciplinary to signal two commitments. First, that people joining SDS will implicitly bring certain intellectual and aesthetic traditions of their own disciplines while also having prior practice navigating beyond these very fields; second, that the way we transcend disciplinary traditions is through collaboration, creating fundamentally new outputs. Our emphasis on collaboration is necessitated by a small founding cohort.

We expect diverse outputs ranging from artwork, startups, legal frameworks, digital platforms, institutions, and more. We also expect that our outputs will deliberately explore multiple timescales, from Professor Sputniko!'s speculative art, which imagines society generations away, to more nearterm entrepreneurial ventures. We encourage all SDS members to experiment across this temporal spectrum,

working simultaneously on near-term interventions and long-horizon provocations.

Ralph Bown, former Vice President of Research at AT&T Bell Laboratories<sup>8</sup>, wisely remarked that the vitality of a research organization is only a composite of the spirit of the people in it<sup>9</sup>. We believe we possess not only this founding group of faculty, students, researchers, and administrators, but also a unique geographical positioning that charges our work with essential context.

We are an English-speaking university with international faculty, from Germany to the United States, situated in Chiba, Japan, ninety minutes by train outside of Tokyo. Japan and the U.S. are both pluralistic traditions with fundamentally different growth dynamics and timescales. Consider Japanese tea ceremonies (茶道, chado), where masters spend decades perfecting the craft and introduce new perspectives only after decades of mastery, contrasted with Silicon Valley's mantra, "move fast and break things." Both societies embrace disruption but on different timescales. These dichotomies are difficult for most institutions to grapple with, but we embrace them deliberately. Henkaku, or radical change, requires both forward-thinking experimentation, the type an antidisciplinary institute like SDS can spur, and the ability to pull from a plurality of systems and archetypes to build new futures – new paradigms to be exact.

### III. Degree Requirements

#### Learning at SDS

SDS is taught entirely in English and open to students from any background, discipline, or country. We don't believe in one-size-fits-all pathways. Instead, SDS offers tools, projects, and guidance that help you define your own direction.

All major projects culminate in public artifacts or applied contributions, whether research papers, prototype demos, artworks, platforms, institutions, or legal frameworks. Project evaluation incorporates feedback from faculty and students alike.

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<sup>8</sup> The legendary research institution whose invention portfolio includes transistors, solar cells, and lasers.

<sup>9</sup> Ralph Bown, "Vitality of a Research Institution and How to Maintain It" (paper presented at the Sixth Annual Conference on the Administration of Research, 1952), Bell Telephone System Technical Publications, Monograph 2207.

Students are asked to bring their full intellectual and creative selves, and to work with faculty not just as students, but as partners in inquiry. Each student is assigned an advisor on enrollment. The advisor is expected to meet regularly with the student and to file a written report once a semester which will be available to the faculty.

## Curriculum Structure

All masters students must complete 30 course credits. There are 5 required courses and 9 elective courses that will be taught.

### Mandatory:

- The Antidisciplinary Approach to the Modern World (DNA) (1)
- Principles of Awareness (2)
- Practical Antidisciplinary Problem Solving I (APS) (6)
- Practical Antidisciplinary Problem Solving II (APS) (6)
- Advanced Research in Master' s Program (6)

### Electives:

- Intelligent Agent (2)
- Law and Governance (2)
- Technology and Values (2)
- Digital Media & Flourishing (2)
- Modern Physics (2)
- Complex System Science (2)
- Design & Prototyping (2)
- Human and Machine Learning (2)
- Modular Practice Seminar (1)

## Institutional Collaboration

The conceptual planning for SDS was made in close collaboration with CIT. SDS should endeavor to always work closely with CIT to develop programs and operating and administrative procedures for their mutual benefit. Similar collaboration with other schools should be actively sought.

SDS will be connected via affiliated faculty and senior researchers to the Henkaku Center.

Signed by:

Joe Austerweil

Joi Ito

Daum Kim

Hiroki Kojima

Catharina Maracke

Mizuki Oka

Sputniko! (Hiro Ozaki)

Ira Winder