Human Technologies (HT)

Introducing Human Technologies

Human Technologies is a lens and a framework for learning. Its postdisciplinary approach equips students with the cognitive, ethical, and relational capacities they will need to navigate the complex, rapidly-evolving world of the 21st century.

At the core of the HT model is a reclamation of the term ‘technology’, reverting to its ancient Greek etymology: *techne* - art and craft; *-ology* - knowledge of.

Human Technologies, then, is knowledge of the art and craft of being human.

Primed with this definition, students come to identify the role of technology in our lives and to recognise its pervasive, multifaceted influence on the human predicament - not just in its material, tangible forms, but in the symbolic, conceptual, and relational "technologies" that shape our very ways of being, thinking, and interacting. By engaging students in an extensive exploration of human patterns of thought, behaviour, organisation, action, and belief, and by associating these with technology in its many forms, the HT curriculum cultivates an informed understanding of the condition of *Homo technologicus*.

The fate of the human organism is to express itself through technologies; the fate of individual human lives depends on the technologies to which they have access and the choices made within that landscape, which is always a relational and complex process, subject not just to personal preference, but equally to cultural training in the shape of folkways and mores, economic opportunities in the form of long-established structures of access and privilege, as well as to the shifting vagaries of time.

Informed by this recognition and adopting an holistic, adumbrative approach, the HT curriculum encourages students to extend and deepen their thinking and feeling about how they might live their lives, in part by reaching a better appreciation of themselves as learners, working across conventional disciplinary boundaries, and engaging with

complexity. It also fosters in them a growing sense of ethical discernment - the capacity to critically examine the values, assumptions, and consequences embedded within the technological systems that mediate our personal and social experiences, which have an effect on the quality and sustainability of the lives we lead. To this end, language, concepts, categories, and metaphor are subject to close attention and analysis, as critical elements of our meaning-making capacities.

As an aspect of its intellectual and ethical investments, the HT framework places strong emphasis on cultivating relational, interpersonal sensitivity. By engaging with and rehearsing the ways in which technologies shape patterns of human interaction and social organisation, students develop a heightened awareness of the dynamics that underpin healthy, productive relationships, thereby fostering a relational intelligence intended to serve them well not just in their personal lives, but in their capacity to collaborate, communicate, and contribute to the collective flourishing of their communities.

In its emphasis on healthy communities, the HT curriculum promotes an abiding sense of environmental stewardship and ecological awareness. Acknowledging humanity's interdependence with the natural world, the program encourages students to become familiar with and develop a reverence for the biosphere, and to develop the capacity to evaluate and address the complex, systemic challenges posed to the health and sustainability of the human civilisational project, embedded in nature on our shared planet, by the technological enterprise in all its forms.

To support its aspirational intentions, the HT curriculum encourages an enterprising mindset and a drive for creative problem-solving. By learning to identify the character of needs, to think beyond conventional limits, and to develop novel, contextualised solutions, students are better able to thrive not just in the world of work, but in any activity that requires innovation, courage, resourcefulness, and a readiness to question the maladaptions of the status quo.

In sum, the Human Technologies framework promises to cultivate in secondary school students the cognitive, ethical, relational, environmental, and forward-thinking capacities necessary to "human well" in an increasingly complex, interconnected, and always technologically-mediated world. Humaning well is rooted in an understanding of human growth and change as a fluid, multidimensional process shaped by the interplay of biological, psychological, social, and cultural factors, resulting in a Gestalt perspective on human development:

1. **Holism**: Human beings are seen as integrated wholes, greater than the sum of their parts. Development involves the continuous reorganisation and integration of physical, cognitive, emotional, and relational aspects of the self.

2. **Contextuality**: Development is fundamentally shaped by the environmental, cultural, and interpersonal contexts in which it occurs. Individuals both influence and are influenced by the systems and relationships around them.

3. **Dynamism**: Human development is a nonlinear, ever-evolving process, marked by periods of stability and change, progress and regression. There is no single, predetermined trajectory, but rather a complex interplay of multiple, interacting trajectories.

4. **Emergence**: New developmental capacities, identities, and ways of being emerge organically from the dynamic interplay of an individual's history, current circumstances, and future potentials. Development cannot be reduced to a simple cause-effect sequence.

5. **Meaning-making**: Individuals actively seek patterns in and construct meaning and understanding of their lived experiences, shaping their developmental pathways through interpretive and narrative processes.

6. **Equifinality**: There are multiple possible pathways to any given developmental outcome, with individuals finding diverse routes to similar end states.

Four Technologies for understanding HT

There are four useful technologies for understanding HT: a definition; a diagram; a model; and a formula.

The definition

The use of the term “technology” in HT hinges on the reclamation of its original usage taken from the classical Greek *techne* - art and craft, *-ology* - knowledge of. Technology concerns knowledge of the art and craft of a given domain of human thought or activity.

Following this reclamation, in HT, the definition of technology is:

(1) Technology includes both physical things (like machines, devices, or tools) as well as non-physical things (like scripts, routines, methods, organisations, or templates) that people use or draw on to influence or change the world around them.

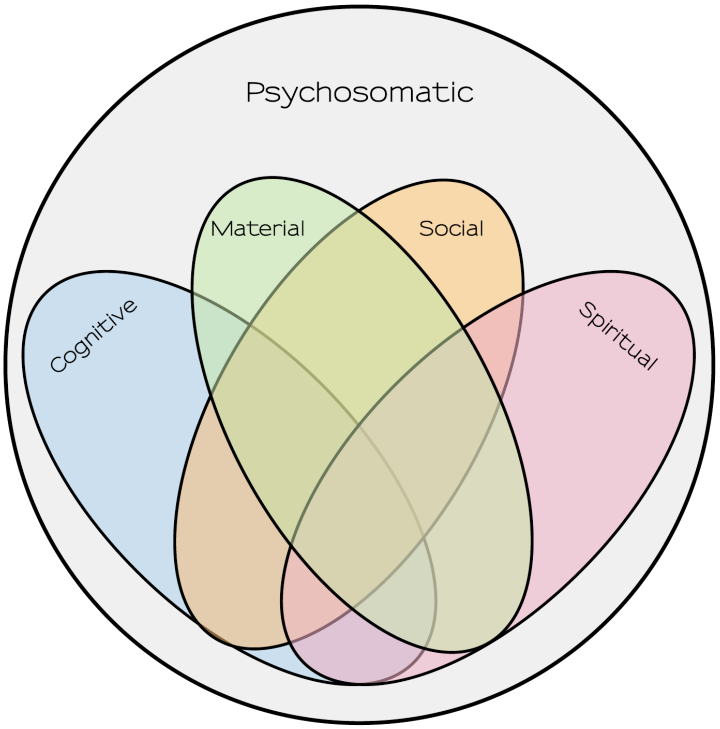
(2) Because technology has the power to alter our world, it also carries an ethical dimension - the effects it has, both positive and negative, need to be carefully considered.

(3) Technology is commonly accessible and usable; its use is not limited only to the original inventor and is liable to modification when used by others.

Newcomers to HT should note the broad scope of the definition, encompassing both physical and non-physical elements that people employ to influence their inner and outer environments (i.e. their thought-worlds and sense of self, and their shared social worlds), suggesting a holistic view of technology beyond the modern convention of just tangible devices. The explicit acknowledgment of the ethical dimension of technology, and the need to carefully consider its impacts - both positive and negative - speaks to the cultivation of thoughtful, responsible approaches to the use of technologies, which are, by definition, commonly accessible, and which, in their common use, are subject to ongoing adaptations not anticipated by nor, perhaps, aligned with the intentions of the progenitor(s).

The Diagram

The HT diagram is a lotus-shaped Venn diagram, with four overlapping domains encompassed within a fifth overarching circle. The enveloping circle represents psychosomatic technologies. The four other domains contained within are cognitive, material, social, and spiritual technologies.



Psychosomatic Technologies - technologies of the mind-body

- The tools, methods and practices that humans use to deliberately influence or alter the integrated mind-body system.
- Examples include meditation, exercise regimes, dietary practices, sleep/rest routines.
- The ethical considerations focus on the impacts, both positive and negative, of these technologies on individual and collective wellbeing.

Cognitive Technologies - technologies of thought

- Thinking tools, methods and practices that humans use to influence and enhance their own cognitive functioning.
- Examples include language, number systems, mnemonic devices, learning strategies, problem-solving techniques, the 'scientific method', and thinking routines.
- Ethical concerns revolve around the impacts on individual and societal cognitive capacities, strategies, prejudices, and outcomes.

Material Technologies - physical tools and devices

- The physical artefacts, tools and materials that humans create and use to interact with the physical world.
- Examples range from simple hand tools to complex industrial machinery, clothing, housing, transportation, and communication devices.
- Ethical quandaries often focus on environmental and social impacts, as well as issues of access and equity.

Social Technologies - interpersonal technologies

- The systems, structures and relational practices that humans develop to organise and coordinate shared and collective activities and interactions.
- Examples include communication protocols, forms of hierarchy and social ordering, methods of governance, and social institutions like education, healthcare, advertising, and justice.
- Ethical concerns often revolve around influence, persuasion, power dynamics, inclusivity, and the societal impacts of different social technologies.

Spiritual Technologies - intrapersonal technologies

- The rituals, belief systems and transcendent practices that humans employ to engage with the non-material, metaphysical or spiritual aspects of existence.
- Examples include personally ennobling or uplifting practices, as well as religious/spiritual activities like prayer, meditation, sacred ceremonies, and rituals.
- Ethical considerations involve the individual and communal impacts of these technologies, as well as issues of belief, meaning-making, and the integration of spiritual and material domains.

The rationale behind the identity and integration of the five domains is summed up as:

Psychosomatic: This anchors the framework in the core reality of humans as embodied, psychophysical beings with drives, needs and capacities rooted in the mind-body nexus.

Cognitive: Recognizes the centrality of human consciousness, information processing, reasoning and knowledge-creation activities.

Material: Acknowledges the human imperative to interact with and shape the physical environment through tools, artefacts and devices.

Social: Accounts for our fundamentally relational and cooperative nature as a social species that organises collective endeavours through shared enterprises and experiences.

Spiritual: Incorporates the human propensity for transcendent encounter, meaning-making and engagement with the material and non-material realms of existence.

This diagram seeks to illustrate the interconnected and overlapping nature of these different technologies that humans employ to engage with and shape their world. The psychosomatic circle serves as the overarching foundation, with the other four domains nestled within it, highlighting their integral relationships.

The unique colour-coding and positioning of each domain is intended to convey their distinct characteristics and areas of focus, while the intersections demonstrate how they dynamically inform and influence one another. For example, the overlap between the material and social domains suggests the interplay between physical tools/artefacts and the collective human structures and practices that associate with them, such as the design of a building and the kinds of human interactions it both affords and constrains.

Examining this visual framework, we are encouraged to form a comprehensive, holistic model for understanding the multifaceted human experience and the various technologies we employ. By demonstrating how the psychosomatic, cognitive, material, social, and spiritual domains dynamically interrelate and overlap, the diagram illuminates the holistic, systems-level perspective that underpins the Human Technologies curriculum. The inclusion of ethical considerations as a key aspect within each domain further underscores the importance of responsible development and use of these technologies.

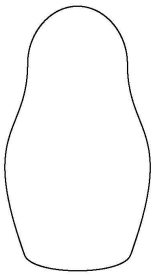
The Model

The HT model comprises a set of five nesting Russian Dolls. They are drawn on to suggest a model of human growth and development from birth to full flourishing of personhood, though with the suggestion that the journey of growth is perennial and ceases only with the cessation of life.

They consist of an innermost white doll, labelled ‘GC’; a second pink doll, labelled ‘RIGs’; a third blue doll, labelled ‘HT’; a fourth lime green doll, labelled ‘$Self_1$’; and a fifth, outermost

dark green doll, labelled 'Self$_2$'. The two green dolls bear the icon of a smiley "I'm OK" face, which is a reference to the "I'm OK, You're OK" aspirations of Transactional Analysis.

Doll 1



The innermost GC doll represents the new born baby, that initial state of being "thrown into the world" at birth. GC stands for "germinal complex". This foundational stage encompasses all the inherent aspects and capacities of the newborn human.

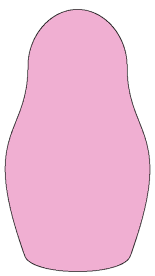
Some key elements of the germinal complex include:

- The basic physiological functions and systems - such as respiration, digestion, circulation etc. - that sustain the newborn's life and development.
- The primitive reflexes, sensory perceptions, and instinctual behaviours that allow the newborn to respond to its immediate environment and caregiving.
- The raw, undifferentiated potentials - physical, cognitive, emotional, and social - that will gradually unfold and mature over time.
- The deep, primal needs for nourishment, comfort, security, and attachment that drive the newborn's interactions with its caregivers.
- The innate, biologically-rooted patterns of emotional reactivity, attention, and self-regulation that manifest as temperament.
- The overall physical and biological makeup with its inherent strengths, vulnerabilities, and proclivities that coalesce as the newborn's constitutional resilience.

Thus the innermost doll represents the newborn's initial, unformed state - the primordial soup from which the subsequent stages of human development will gradually emerge and take shape.

By starting with this foundational "germinal complex", the model underscores the importance of acknowledging and understanding the newborn's unique bio-psycho-social capacities and requirements as the essential building blocks for later growth and maturation. The model also reminds us that all the elements of this unique profile were unchosen and unbidden and that the individual bears no responsibility for them.

Doll 2

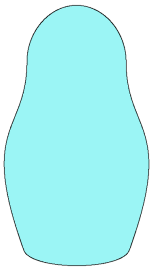


The second doll is labelled RIGs. RIGs refers to the work of Daniel N. Stern, and specifically his book, The Interpersonal World of Infant. RIGs stands for 'representations of interpersonal generalisations', by which

concept Stern adumbrated what might be thought of as the proto-memories of the infant, formed by virtue of oft-repeated contacts with the mother. As Stern explains, "The generalised episode is not a specific memory. It does not describe an event that actually ever happened exactly that way ... It is a structure about the likely course of events, based on average experiences". As such, RIGs help create a sense of core self in relation to Others. As such the concept of RIGs articulates well with and serves as an introduction to a wide range of similar or supplementary notions: attachment; attunement; schemas; psychic core; and so on.

In HT, the RIGs doll invokes all these early-life bonding experiences, and recognises that they can go more or less well. This recognition is a critical acknowledgement of the variability and potential challenges inherent in this stage. The quality and consistency of the infant-caregiver relationship can have profound impacts on the child's trajectory, reinforcing the importance of nurturing, attuned caregiving. However, the HT Foundations curriculum is careful to emphasise two vital understandings: (1) that problemattic RIGs need not necessarily reflect a lack of good intention or love on the part of either player in the dyadic relationship; (2) that, while impactful and enduring, the effects of maladaptive RIGs are not impermeable to change, but that, with mindful attention and the careful adoption of novel compensatory strategies, new RIGs can be formed later in life to supplant those sculpted during infancy. This second insight anticipates the next three dolls.

Doll 3



The third doll is labelled HT for human technologies. As the infant begins to extend its world beyond its primary attachment to the primary carer, it begins to develop scripts, models, choreographed interactions, skits and so on, with a wider range of others - primarily, initially, within the family and close community, subsequently further afield. It also learns to manipulate an expanding repertoire of objects in its environment, with greater or less degrees of success.

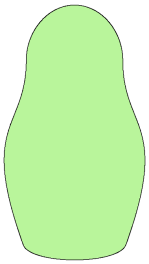
Of course, all these expansions represent, in HT's terms, embryonic technological investments - drawn on to have an effect on the infant's world and the people and objects that are found within it. In time, the infant will begin to take account of and develop competency with perhaps the most important human technology of all, language. The adoption of language serves as a transformative cognitive and social technology, allowing the child to not only expand their conventional understanding of the world, but also to coordinate and collaborate with others in increasingly sophisticated ways.

The blue doll, then, represents a crucial juncture whereby the child transitions from the primary dyadic relationship into a more expansive social and symbolic realm. It signals the

emergence of the child as a coherently active participant, drawing upon an ever-growing repertoire of human technologies, thereby heralding what HT terms the emergence of 'human presence', as distinct from human being; i.e., while human being denotes any human organism, even from before birth, the onset of language, enabling more sophisticated and assertive interpersonal communication, announces the emergence of human presence, the harbinger of selfhood and personality.

Human presence encompasses the child's growing capacity for self-expression, symbolic reasoning, and coordinated interaction; it speaks to the child's emerging sense of self, their ability to assert their own needs and perspectives, and their burgeoning competencies in utilising the tools and systems of human society. It announces a phase of increasing autonomy, cognition, and social participation. Human presence is animated by a growing engagement with and mastery of human technologies. The quality of experience of human presence depends in large measure on the quality of accessible human technologies and on the patterns of their use.

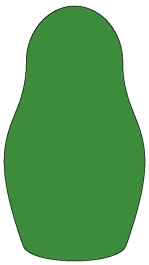
Doll 4



The fourth doll is labelled 'Self$_1$'. Self$_1$ is the sense of self that a person actualises at any given moment. The depth and diversity of one's Self$_1$ is dependent on both the range of experiences that one has encountered in life and the particularities of the instant. Self$_1$ is always in flux, always provisional, always caught in a dialectical relationship with the world. This encapsulates the dynamic, ever-evolving sense of self that the individual cultivates through the range of their life career, and acknowledges the fluidity and contextual nature of personal identity development. It moves beyond a static or essentialist view of the self, recognizing the self as an ongoing process of becoming, shaped through one's interactions with the broader environment. This insight is recapitulated in the final doll.

The depth and diversity of this Self$_1$ is a direct reflection of the individual's accumulating lived experiences: the grounding in the foundational germinal complex; the relational RIGs; and the already consolidated and still emerging aspects of human presence, accomplished by drawing on diverse human technologies: all contribute to the richness and malleability of this Self$_1$ construct.

Doll 5



The final, fifth doll is labelled 'Self$_2$'. Self$_2$ is the aspirational or imagined self, the self-projected into the future on the strength of past experience and confidence in the present. As such, the character and quality of Self$_2$

is likely to reside in personal biography and, arising from that, one's sense of hope and trust. This is a state of affairs that can be accounted for, to a large extent, by the story told by four dolls already explored.

This notion of $Self_2$ as the self-in-potentia, the vision of who one hopes to become, functions to suggest that the human journey concerns not only the acquisition of skills, knowledge, and experiences encapsulated in the earlier dolls, but also the cultivation of a hopeful, purposeful orientation towards the future. Human presences are envisaged as inherently forward-looking, motivated not just by their past and present, but by their vision of what they might become, speaking to the human capacity for self-directed growth, transformation, and the pursuit of personal and collective flourishing.

Overall, the Russian doll model suggests a view of human physical and psychological maturation as an iterative and recursive rather than linear process built, through experience and reflection on experience, on the foundation of what Earl W. Count terms the 'biogram':

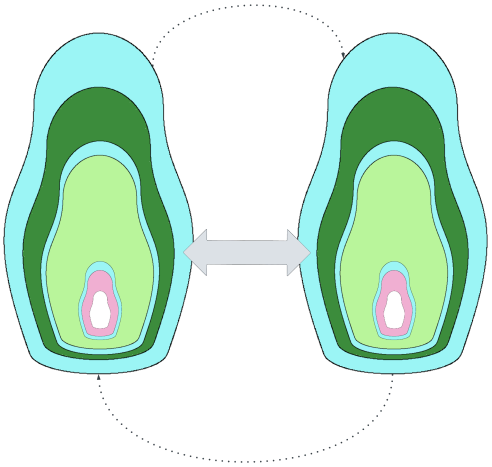
Iterative Process in Human Development

- **Repeated Experiences**: Human development involves repeated experiences and stages, such as childhood, adolescence, and adulthood. Each stage builds upon the previous one, giving rise to the emergence of an ever-evolving, ever-becoming $Self_{1.}$.
- **Learning and Adaptation**: Individuals learn from experiences, iterating on skills and behaviours as they grow. For example, social skills develop through repeated interactions that draw on an expanding repertoire of conventional and idiosyncratic human technologies.
- **Feedback Loops**: Growth often involves feedback from the environment, leading to adjustments and refinements in behaviour and understanding. Schemas sedimented during early childhood can prejudice the interpretation of this feedback, but it is possible to remodel such predispositions.

Recursive Process in Human Development

- **Self-Reflection**: Individuals often reflect on their experiences and personal growth, leading to deeper understanding and changes in perspective. Personalities are capable of self-analysis and reconfiguration.
- **Cyclical Nature of Growth**: Psychological development can involve revisiting earlier stages (e.g., re-evaluating childhood experiences in adulthood) and integrating those insights into current understanding in the light of newly acquired and more adaptive technologies, including different concepts and categories.
- **Building Identity**: The process of forming identity can be recursive, as individuals may go back and forth between exploring different aspects of themselves and solidifying their sense of identity.

This process is envisaged as ongoing and open-ended. The graphic representation below attempts to capture the dynamics of personal growth in a social context, and to depict the scaffolding role that technologies play in enabling individual expression in relation to a world of others. It shows the typical dialogic experience: two people with inborn temperaments and dispositions, shaped by their early upbringing and biographical circumstances, drawing on this developmental history to conceive of themselves as particular selves, with interests expressed via the medium of the technologies familiar and available to them, including the concepts, categories and values encoded in their mother tongue, informed by a vision of the future, in mutual relation. The HT curriculum pictures the depth and complexity of this transaction as the basic condition of human presence.



The Formula

The HT formula asserts that humans are creatures with three sets of existential needs: biological, emotional, and psychological.

Biological needs encompass the fundamental physiological requirements for sustaining life - things like:

- Nutrition and hydration
- Respiration
- Circulation
- Regulation of body systems and homeostasis
- Sleep and rest

Emotional needs include:

- Attachment and belonging
- Love and affection
- Recognition, esteem, and trust
- Empathy and relational bonding

Psychological needs include:

- Integrity of the self and identity coherence
- Expectation of predictability leading to habit formation
- Autonomy, efficacy, and personal agency in relation to control of environment
- Meaning-making and pattern-recognition

In exploring this formula, HT stresses that humans experience needs that are not otherwise found in the animal kingdom. We share our biological needs with other creatures - and, indeed, these biological needs are not significantly different, at root, from those of other mammals. But our emotional and psychological needs are substantially different, sometimes by degree, sometimes by character.

So it is that, emotionally, humans are subject to needs that, while recognisable in other mammals, and especially in other primates, are more intense, nuanced, and volatile in humans. Examples would be the need for belonging, for repute, and for relationality.

However, it is when it comes to psychological needs that humans exhibit whole new realms of consciousness, largely as a consequence of the symbolic dimension of human life, which has the capacity to disrupt, distort, upend, and contaminate concerns around security, pattern-recognition, meaning-making, and so on. The psychological realm, quite apart from its own operations, thereby comes to overlay and complexify the biological and emotional needs.

The formula suggests that if the fundamental biological, emotional, and psychological needs of humans are not adequately met, then a fourth category of "neurotic needs" can emerge. Thus, when the primary triad is unfulfilled, the individual may develop maladaptive coping mechanisms, defence mechanisms, and compensatory behaviours in an attempt to address those unmet needs.

Examples of neurotic needs that could arise in this scenario might include:

- Excessive need for control or approval
- Elevated anxiety, panic attacks, and chronic insecurity
- Compulsive behaviours and rituals
- Reliance on addictive substances or activities
- Hostility, aggression, or withdrawal as self-protection
- Distorted self-perception and weakening of ego integration
- Difficulty forming healthy attachments and relationships

Each of these - and other compensatory - responses can be manifested at different levels of intensity on a spectrum from mild to severe. Given the complexity of the human condition

sketched above - not least as found in the difficulties in communicating unambiguous or unequivocal emotional messages or in the obstacles inherent to exercising control or spotting consistent patterns in a volatile, fast-moving world - it is an extraordinarily rare person who does not exhibit at least mild neurotic needs.

As such, the HT curriculum teaches that mild neurotic needs are a pervasive aspect of human life, are typically blended successfully and harmlessly into our everyday experiences, and should not be a source of disappointment, self-loathing, or shame. Rather, in the words of Slavoj Žižek, “Enjoy your symptom!”

It is when they become personally debilitating, antisocial, dangerous, or otherwise harmful that addressing neurotic needs becomes an important component of fostering healthy, integrated individuals and communities. On these occasions, wise choice of the most appropriate and effective technologies to reveal and address unmet needs can be of tremendous value in bringing about meaningful change. This is the value found in, for example, journalling, counselling, art therapy, physical exercise, yoga, self-help literature, providing service, and CBT strategies.

The role of desire

Neurotic needs manifest as desire. And the nature of desire is that it tends to be labile and elusive, so that it can never be fully satisfied. This helps account for the inherent restlessness and perpetual yearning that can arise when our core biological, emotional, and psychological needs are not adequately met, while also suggesting that the alleviation of neurotic needs is not a straightforward matter, but rather involves navigating the complex, often paradoxical relationships between need, desire, and the self.

The HT encourages students to reflect on their desires and invites them to weigh up whether they ‘desire their desire’, i.e., to make a decision as to whether the desires that they subjectively experience are, in fact, desires that they want to act on and instantiate. Seeking intentionality and a degree of control over one’s second order desires is a basic tenet of the HT curriculum.

Recap

1. The Definition of Human Technologies:
    - A curriculum and set of practices aimed at understanding and positively shaping human development and flourishing
    - Emphasises the responsible use of technologies (broadly defined) to enhance human potential
2. The Five-Domain Venn Diagram:

    - Outlines the interrelated domains of the Somatic, Cognitive, Material, Social, and Spiritual
    - Highlights the interconnected nature of these aspects of the human experience
    - Suggests that the optimal cultivation of human potential requires attending to all five domains
3. The Nested Dolls Model:
    - Represents the stages of human maturation and development through five nested Russian dolls
    - The innermost "Germinal Complex" doll captures the newborn's inherent physiological, temperamental, and constitutional attributes
    - The "RIGs" doll reflects the child's emerging sense of self in relation to primary caregivers
    - The "HT" doll signifies the child's growing use of "human technologies" like language to engage with the broader world
    - The "$Self_1$" doll depicts the dynamic, contextual nature of the individual's evolving self-concept
    - The "$Self_2$" doll represents the aspirational, future-oriented self that the individual envisions
4. The Formula of Four Needs:
    - Humans have three fundamental sets of needs: Biological, Emotional, and Psychological
    - When these core needs are unmet, a fourth category of "Neurotic Needs" can emerge
    - These neurotic needs manifest as persistent, unsatisfiable desires
    - The unique human capacity for symbolic thought and meaning-making adds an additional layer of complexity to these needs