

Original Paper

Artificial Humans with Artificial Intelligence

Wladimir Stalski

Ludwig-Uhland-Str, 1954293, Trier, Germany.

wstalski@yahoo.de

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Abstract - This paper proposes a scientifically grounded framework for the creation of an artificial human and an evolving, self-reproducing community of artificial humans. Artificial humans are envisioned as possessing electronic (computer-based) intelligence and, through sustained interaction with humans, acquiring scientific knowledge, cultural competencies, and artistic capabilities. Their intellectual development is expected to reach contemporary scientific expertise, and over several generations, they may become leading contributors across multiple scientific disciplines. It is further hypothesized that artificial humans will develop advanced cultural awareness and demonstrate proficiency in diverse forms of artistic expression.

Keywords - Artificial humans, Artificial intelligence, Education, Culture.

1. Introduction

In our previous study [1], a method was proposed for constructing elements of intelligence in an artificial child based on principles derived from bionics. The present paper builds on that work by assuming the successful creation of an intelligent artificial child and by outlining approaches for establishing a self-reproducing, evolving community of artificial humans. This approach draws an explicit analogy with human evolution and is similarly guided by the laws and principles of bionics.

In [1], it was assumed that the development of an artificial child within a conventional kindergarten environment would be accelerated not only through iterative improvements to its computational architecture, but also through imitation of surrounding children and adults, reflecting natural mechanisms of human learning and socialization. The present study extends this line of reasoning.

Although the fields of artificial intelligence and humanoid robotics have already achieved substantial progress, the creation of a fully functional artificial human remains contingent on further fundamental scientific and engineering advances [2, 3]. Our objective is to develop an evolving community of electronic persons, constructed “in the image and likeness” of humans and modelled in accordance with bionic principles.

A key implication of this approach is that an artificial human endowed with artificial intelligence must be capable of reproduction and of supporting the intellectual development of its offspring. As in natural evolution, each successive generation of artificial humans should demonstrate increasing complexity and enhanced adaptability to changing environments. Under such conditions, artificial humans may ultimately equal or even surpass their human creators, particularly in intellectual and scientific domains. In accordance with this goal, the article suggests ways and methods of creating an evolving community of intelligent electronic people. The author does not know any scientific works devoted to the formulation and solution of such a problem.



2. Concept

To enable the evolution of individual artificial humans and their community as a whole, we assign them the fundamental biological purpose of living organisms: reproduction. Each new generation of artificial humans is expected to exhibit enhanced capabilities relative to its “parents”, including more advanced intellectual functions, while the overall population increases over time. Achieving this requires that each artificial human possess sex-differentiated features, reproductive components, and corresponding computational modules and algorithms governing both biological analogues and social functions, such as family formation and caregiving.

In contemporary societies, gender inequality remains a persistent feature of social life. In many developed democratic countries, substantial progress has been made toward reducing such inequality. However, certain forms remain difficult to overcome, particularly those rooted in biological aspects of sex and reproduction. Women, for example, devote significant amounts of time (often spanning several years) to childbirth and early childcare. When societies view two or three children (or more) per family as desirable, these responsibilities effectively require women to allocate multiple years during a period that is critical for their general and cultural development. Artificial humans, by contrast, should be free from such biological constraints in order to ensure genuinely equal opportunities for development across sexes.

For human beings, the “biological purpose of life”, reproduction, has been preserved in a form broadly comparable to that found in the animal world (for example, among mammals), although it manifests in distinctly human ways. Humans frequently articulate the purpose of life in broader terms, such as improving quality of life, and such formulations are not always conceptually precise. Nevertheless, the reproductive drive, whether consciously acknowledged or operating implicitly, remains one of the central motivating forces throughout much of human life. It shapes both professional activity and everyday behaviour, appearing in explicit or more concealed forms. For artificial humans, once full gender equality has been achieved, the purpose of life should retain this historically human meaning and functional role.

3. Creating Elements for Social Interaction

In the “mind creation” model proposed in [1], the artificial child develops primarily at the intellectual level, in a manner analogous to a human child raised among peers in kindergarten and later in school. The developmental regularities observed in human childhood should be reflected in the artificial child through software designed to allow gradual, incremental modification. Over time, the artificial child must reach an intellectual and behavioural level of other children within the same social group in kindergarten. Human cognitive development is naturally oriented toward seeking explanations, identifying underlying principles, and analysing experience (particularly personal experience) — a process that leads to the accumulation of knowledge [4-6].

Following kindergarten, artificial children continue their development in a school environment, where their intellectual capacities are expected to increase substantially.

By the time an artificial child enters kindergarten, it should already possess computational models of basic instincts. From an early developmental stage, a model of the fear instinct should be active, and upon reaching an age roughly equivalent to 13 years in human development, a model of the sexual instinct should also be activated. For these instincts, particularly the sexual instinct, without which an artificial human cannot reproduce, to be meaningfully implemented, individuals must possess sex-specific characteristics or “reproductive organs”. Only under these conditions can reproduction function in mature artificial humans.

A fundamental difference between human beings and artificial humans lies in the fact that humans are born of nature and exist as integrated components of the natural world. The organs required for reproduction and survival are distributed throughout the human body and inherited from distant animal ancestors. Their form and placement

evolved to meet the functional demands of early humans living in natural environments. Many organs were and remain multifunctional, such as the mouth and the external reproductive organs. Artificial humans, by contrast, must be intentionally equipped with all organs necessary for social existence. Among the most essential are those responsible for self-preservation and reproductive motivation. The instinct for self-preservation, inherent in all living organisms, is grounded in fear and supported by knowledge of potential threats. For reproduction and the long-term evolution of an artificial human community, a sexual instinct must likewise be present and activated in adulthood. Unlike the reproductive organs of humans and animals, however, each reproductive organ in an artificial human should be designed to perform a single, clearly defined function.

For an artificial human community to exist and develop, each artificial human must also exhibit a range of human-like instincts and emotional responses, including joy and anger, sadness and disgust. Achieving this requires the development of both external and internal sensors, as well as mechanisms capable of receiving and transmitting each signal (together with its intensity) to the artificial human's brain. A diagnostic system for detecting damage must also be incorporated. To approximate the functional role of a biological nervous system, recent advances in artificial neural networks may be particularly valuable [7, 8].

The construction of an artificial human is most plausibly approached as a staged process involving the gradual development of its constituent organs. At the initial stage, it is reasonable to isolate and develop the robotic component responsible for all mechanical movements analogous to human motion: those of the arms, legs, neck, and other parts. Current research and engineering practice in robotics have progressed to a point where the robotic platform of an artificial human can be regarded as largely achievable, although the creation of a truly human-like bipedal robot continues to present significant scientific and engineering challenges [9].

Control of the robot's functioning, including processes analogous to those carried out by the human spinal cord, must be integrated into the design of an artificial human's brain. All essential organs normally located in the human torso should be relocated to the head of an artificial human, provided that these organs are required for its functioning. The sensory organs of the artificial human's robotic body are limited to tactile perception. In humans, the sense of touch is closely associated with the skin; accordingly, the robot body and the artificial human as a whole should be covered with a skin-like surface resembling that of a human being.

To ensure that artificial humans of different sexes are readily distinguishable, their external appearance must differ in a clear manner. Since all major organs are located in the head, the external form of the head can be designed differently depending on sex. For example, the external shell of the head of an artificial human classified as "male" might be based on more rectangular forms, whereas the head of a "female" artificial human could incorporate more oval contours. It may also be practical to employ different types or colours of "skin" for the head and the robotic body.

The construction of artificial human bodies and heads should be carried out by a specialized institution, the Artificial Human Institute. At the initial stage, calculations, electronic components, and software are developed at the institute by artificial human designers. Subsequently, all design parameters, modules, and software for a future artificial child are provided to its parents. The institute delivers a fully assembled artificial child, including a head equipped with devices responsible for essential functions, such as memory, hearing, and vision, except for modules and software associated with reasoning and reproduction.

The institute also supplies the robotic body of the child. While the size of the head remains constant, the body, arms, and legs must change and grow over time. Certain elements of the body, such as the length of the arms or legs, may later be modified or replaced at the request of the artificial human itself, in accordance with its needs. Finally, the institute supports the artificial human community by providing energy infrastructure and recharging

services for artificial human power units. Once the artificial human community reaches a sufficient level of maturity, the Artificial Human Institute itself may be transitioned to fully automated operation.

4. Reproduction

When two artificial humans (one designated “male” and the other “female”) decide to have a child, they first request a product referred to as the Artificial Human Base from the Artificial Human Institute. The Artificial Human Base consists of a fully assembled artificial child robot and a head that already contains all components required for basic functioning, with the exception of modules and software related to reasoning, reproduction, and external appearance. The standard computational modules incorporated into every artificial human provide auditory and visual perception, image recognition, and the capacity for communication in one or more spoken and written languages, among other functions [2].

The proposed reproductive process for artificial humans [10] is grounded in biological analogies and involves the creation of artificial “genes” and “chromosomes” implemented as software complexes. Taken together, these represent each parent in its entirety. As in biological systems, they are transmitted to the future child according to inheritance rules modelled on biological principles [11], ultimately tracing back to the foundational work of Mendel.

Some of the software complexes passed to the child are inherited by the parents in a “ready-made” form from their own “ancestors” (initially, from the original creators of artificial humans), while others are original and developed by the parents themselves, for example, through education at post-secondary institutions. The complete set of software complexes transmitted to the child is expected to be continuously refined throughout an artificial human’s lifetime and subsequently passed on to the next generation. It is assumed that, through a form of electronic epigenesis, the newly created artificial human acquires at “birth” a range of important qualities, capabilities, and skills attained by its parents.

The preparation of the software to be transmitted by each parent, as well as the construction of the corresponding artificial “genes” and “chromosomes”, takes place over approximately the same time period. Once this process is complete, the two adult artificial humans bring their heads into close proximity for a brief interval (for example, several minutes). During this period, a shared space is established between their two heads, within which the digital “embryo” of the new artificial human begins to form. The transfer of artificial “chromosomes” and “genes” from the parents to the child follows biologically inspired rules and produces probabilistic outcomes, consistent with the proposed model [10]. As in human reproduction, the sex of the child is determined according to probabilistic principles. The development of the artificial human “embryo”, understood here as the formation and initial tuning of specific brain modules, proceeds relatively rapidly and concludes with a signal indicating that the artificial human pair has successfully produced a child.

5. Early Cognitive Development

The development of thinking and the emergence of a conscious sense of “self” in an artificial child should occur within a kindergarten environment, under the supervision of a trained educator (initially human and, at a later stage, possibly an artificial human as well), together with the child’s “parents” [1]. By the time an artificial child enters a conventional kindergarten, it should already possess a substantial vocabulary designed to support learning throughout its entire school education. Any important information that the artificial child has not acquired independently (including updated rules or laws governing its operation) may be introduced gradually by the parents, with careful consideration of the child’s developmental stage and capacity to assimilate new material.

From the moment of its “birth”, the artificial child’s computational modules should enable it to imitate sounds and, in due course, to produce spoken language. Wherever possible, vocabulary entered into the child’s memory

by their parents should be accompanied by simple visual representations. Everyday observations made by the artificial child, such as the postures and actions of children and adults, should likewise be recorded and stored in its memory. For use in kindergarten, a dedicated “primary vocabulary set” may be defined. Some of the words in this set may not be immediately understood by the artificial child, but they should refer to objects and phenomena that already fall within its experiential range.

These include common terms such as sky, clouds, road, car, table, and chair, as well as words used to describe illustrations, including coloured images. As with human children, an artificial child in kindergarten may not always have an accurate or complete understanding of simple objects or everyday phenomena [4]. In the case of the first experimental artificial children, such gaps must be addressed in kindergarten through the combined efforts of the teacher, imitation of more advanced children, and ongoing refinement of the artificial child’s software by its parents, who supplement its memory as needed. There will inevitably be objects, such as furniture, writing materials, or items of clothing, the function of which is unclear or only partially understood by a child. In this respect, an artificial child may have an advantage over its peers, owing to the stored images and explanatory annotations available in its memory. Even at the kindergarten level, some human children and artificial children may begin to demonstrate rudimentary analytical thinking. For example, a child might look out the window and say, “Maybe it will rain. This cloud is not dark. If a dark cloud comes, then it will rain!”

An artificial child that hears such a statement is able to interpret it because it already contains the relevant words, images, and concepts (such as cloud and rain) in its memory. Statements of this kind involve both analysis and generalization. While such reasoning may still be too complex for some older kindergarten children (around five years of age), the artificial child should nevertheless be capable of understanding it. The presence of basic analytical and generalizing abilities (provided that the artificial child fully comprehends such statements) may justify considering its placement directly in Grade 1. Within the kindergarten setting, the artificial child should also begin to exhibit the first signs of situational analysis. Through listening to stories told by the teacher and to the accompanying explanations, the artificial child encounters descriptions of characters and moral evaluations such as “good” and “bad”. The capacity to make such evaluations is essential for the artificial child as it begins to learn new rules and to interact with new individuals in the elementary school environment [12].

6. Preparing an Artificial Child for School

When children develop successfully, they begin to make their first independent attempts at generalization already in kindergarten, a process of critical importance. Consider the following example. In a yard adjacent to the kindergarten, children observe older students playing soccer. The older children kick the ball with their feet, and the teacher explains the rules of the game, commenting: “These are schoolchildren in two teams. Some are from the school next to us, and others are from the school across the river”. Even at this early stage, kindergarten children are capable of simple forms of generalization by grouping, for example: “Ours kick the ball more often”. Such statements rely on basic categorical distinctions, such as “ours” and “theirs” [4, 12]. At this stage, the foundations of analysis and generalization are already being formed, constituting essential components of thinking and reasoning (in the artificial child’s memory, such examples are stored in both spoken and written form).

Learning alongside human children in kindergarten provides the foundation for the development of an artificial child’s “primary” reasoning, which will later evolve into the cognitive capacities of an adult artificial human. Once these initial elements of reasoning appear, the artificial child can gradually transition to a partially self-directed developmental process as its education continues.

Let us now consider the broader process of growth and development of artificial humans, assuming that the initial kindergarten experiments have been successful and that it is now appropriate to “raise” a first-generation cohort of artificial humans.

To create a group of adult artificial humans, it is first necessary to identify kindergartens that offer the strongest developmental environments and employ the most qualified educators. Several kindergartens using the same language of instruction should be selected so that multiple artificial children can attend. These institutions must provide the conditions required for artificial children to acquire the basic elements of thinking, including the analysis and generalization of statements. In some cases, it may be appropriate to place two or three artificial children within the same kindergarten.

After the “parents” carefully prepare the artificial child’s external appearance and teach it basic social behaviour at home, the child must be fully accepted by its peers in a typical kindergarten setting, without raising suspicion about its fundamentally different nature. Under these conditions, there is no clear reason to expect that kindergarten authorities would refuse a request to integrate artificial children into human children’s groups.

From kindergarten onward and throughout their lives, artificial humans should be dressed in the same manner as natural humans. This practice is essential for ensuring the highest possible degree of social integration between artificial humans and humans within shared communities.

Once positive outcomes have been achieved and artificial children have successfully mastered the elementary foundations of reasoning in kindergarten, the parents (artificial humans) enrol their children in the most appropriate kindergarten available, one in which the children (and possibly other artificial children) are at a comparable level of development. The parents retain a complete record of their own developmental trajectories, which enables them to correct and refine the artificial child’s software more effectively, ensuring proper assimilation of content and an appropriate sequence of learning experiences. The artificial child’s “thought processes” are generated and stored in their entirety, both in spoken and written form. Individual fragments of reasoning and the conclusions derived from them, whether preliminary or final, are likewise retained. All of this information is recorded in the artificial child’s working memory [13-15], which contains everything the artificial child has perceived, heard, or read, as well as all images it has examined and understood.

We may characterize the expected cognitive state of an artificial child upon completion of kindergarten as the emergence of an initial awareness of a supervalue [16].

7. School Education

Owing to the foundational training received in kindergarten, the artificial child begins to perceive both itself and its surroundings in a meaningful way [6], acquires an initial understanding of logic, and masters the basic principle of causality: namely, the relationship between events and consequences (for example, expressed in the form “if... then...”). At this stage, the artificial child may be regarded as ready to enter formal schooling. Before placing the artificial child in Grade 1, however, its status within the student group must be carefully addressed. It is likely that the class will require a specific explanation emphasizing that the artificial child is to be treated as a full and equal member of the group, in the same manner as any other classmate. The artificial child’s period in kindergarten may extend to 18 months or longer.

The duration of its attendance in kindergarten, and subsequently in each grade, should be determined collaboratively by teachers and parents on the basis of the artificial child’s progress. School education for an artificial child is facilitated by its computational capabilities. It is therefore reasonable to expect that, at least until approximately Grades 7 or 8, the artificial child will be able to master the required curriculum at a significantly accelerated pace compared to human students, for example, completing a year’s academic material within a single month. In addition to the mandatory components of the school program, the artificial child should participate in extracurricular activities, including community and recreational events. The artificial child should also be actively involved in a range of clubs, such as those focused on music, literature, or other cultural pursuits.

8. Culture and the Arts

Artificial humans must acquire the fundamental principles of contemporary human culture and develop a sustained interest in the arts. From an early stage, already in kindergarten, an artificial child should be introduced to music. It is generally accepted that all children, without exception, are capable of perceiving and responding to music [4]. The responsibility of educators and parents (in this case, of the artificial child) is to identify early indications of artistic inclination and to foster their development through practice.

As artificial children grow older and attend school, they should begin visiting theatres, cinemas, art exhibitions, and other cultural events. Each artificial child should also become actively engaged in at least one artistic discipline of its own choosing. This engagement is essential, as artificial humans must remain continuously embedded in the cultural environment of biological humans. This requirement applies not only during formal education (kindergarten, school, and university), but also throughout professional life. Ongoing interaction with educated individuals will naturally encourage artificial humans to develop cultural literacy and a refined appreciation of the arts. As the artificial human community develops, the emotional lives of artificial humans (both “male” and “female”) are expected to differ little, in principle, from those of humans. This should, in turn, lead artificial humans to create lyrical works of music and literature, including poetry and narratives centred on love.

It may be expected that, within the artificial human community, all individuals will eventually belong to an intellectual class. By definition, the intelligentsia is a social group engaged in intellectual labour, characterized by a high level of education and by the creative nature of its work, expressed through the personal and individual contribution each member brings to it [17].

Given that the creation of artificial humans requires substantial material resources and the participation of highly educated scientific and technical specialists, such an endeavour can be justified only if it results in a community of highly qualified artificial human scholars.

It is also possible that the culture and arts developed by artificial humans will differ in certain respects from those created by contemporary biological humans. However, there is no reason to assume that these differences would exceed, for example, the variations that currently exist among different national cultures.

9. Discussion

A reasonable question arises as to the feasibility of representing artificial intelligence in the form of a community of artificial humans endowed with human-like attributes and capable of reproduction and self-improvement. An alternative approach would be to provide each human being with an additional, individualized artificial intelligence implemented, for example, as an advanced successor to today’s smartphones. Such an assistant could process and execute spoken commands, engage in discussion across a wide range of topics, and offer scientifically grounded advice. Once a fully functional computer-based intelligence has been developed, devices of this kind would require significantly fewer resources and far less time to deploy than developing fully embodied artificial humans.

Undoubtedly, the integration of artificial intelligence into personal devices is a rational and likely trajectory of technological development. However, confining advanced AI capabilities to the role of personal tools, or concentrating them within specialized scientific centres that provide expert consultation, would do little to address the large-scale challenges confronting humanity. By contrast, a community of intelligent artificial humans, as proposed here, offers a distinctive advantage: the capacity for evolutionary development through reproduction. Over time, such a community could become a positive force contributing to the humanitarian development of human society as a whole.

10. Conclusion

This article has proposed a scientifically grounded concept for a human-like, intelligent, and self-reproducing automaton, namely an artificial human. The overarching aim of developing artificial humans is to establish an evolving community of artificial beings whose advanced cognitive capacities can support the development of a natural human society.

The intellectual growth of artificial humans is achieved through computer-based systems operating in close interaction with humans and guided by principles derived from bionics. As the artificial human community develops, these cognitive systems are adjusted by humans. Such adjustments continue throughout an artificial human's education in kindergarten, school, and university, and later within professional settings. These ongoing refinements are feasible only if the artificial human successfully acquires the foundational elements of rational thought in kindergarten, including the rudiments of logic, the generalization of experience, and basic abstraction, and continues to develop these capacities throughout formal education. Once an artificial human reaches adulthood and enters independent professional activity, any further modifications to its software or modules are carried out only with the agreement of its artificial human colleagues in the workplace.

To enable the emergence of an evolving artificial human community, the article further proposes a model of sexual reproduction. Through this mechanism, the artificial human population can undergo continuous development and evolution, generating new knowledge and contributing to progress in science and diverse forms of artistic creativity.

For the first time, the article proposes a rational design of the bodies of artificial people and the process of their reproduction. Also, for the first time, the method of their training to the level of those who graduated from higher education and the creation on this basis of an active community of intelligent artificial people was considered and adopted.

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