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Artistic and Literary Bots

Leonardo Flores

A bot is a software robot. Frequently personified or embodying concepts, animals, or things, bots operate autonomously in digital networked environments. While most bots are used for practical purposes, such as gathering, analyzing, and storing data, producing messages, interacting with users, political activism, or carrying out other actions, bots are also frequently used for artistic and literary goals. Bots are among the oldest genres of electronic literature, but for decades this development occurred along a single primary subgenre: chatterbots. In recent years—and thanks to social media networks that serve as platforms for data collection, interaction, and publication—bots have seen exponential growth in numbers, complexity, subgenres, and popularity.

This chapter will discuss bots that produce output of interest from a literary and e-literary perspective. For the purposes of this chapter I will define literature broadly as a language-based art which has traditionally taken form as drama, narrative, and poetry. An e-literary perspective focuses attention on how a language-based creative work engages and is made possible by digital media technologies, resulting in an extension and re-examination of literary practices. Some of the genres of electronic literature related to bots are computer-generated literature, text adventure games (Interactive Fiction, MUDs, MOOs), and e-poetry. This chapter will provide a historical overview of its development, practices, and communities, concluding with recent attempts to formulate poetics, theories, and taxonomies.

Historical Overview

Bots find their theoretical origins in Alan Turing's 1950 essay "Computing Machinery and Intelligence" in which he recasts the question "can machines think?" as one based on "the imitation game" in which a person communicating with a computer purely through text cannot accurately guess whether they are interacting with, a human or a computer (1950: 49). The attempt to create a machine that can generate language that might pass as written by a human being aligns the test with the literary, because it uses writing to create a fictional representation of a human being. This is a challenge faced by writers and dramatists for centuries: to write characters that an audience might believe in. From this perspective, the scientific goal of testing and tracking results are an extension of the logic of realism and naturalism in arts and literature. The new medium that Turing helped create brought back questions that had run their course in print-based media—realism and naturalism had yielded to Modernism—and to answer them would require the efforts of practitioners of both programming and natural language arts.

The Turing Test was seemingly passed in 1966 with Joseph Weizenbaum's ELIZA, a chatterbot that offered the first artificial character in electronic literature. As described by Kuipers et al.:

I composed a computer program with which one could "converse" in English. The human conversationalist partner would type his portion of the conversation on a typewriter connected to a computer, and the computer, under the control of my program, would analyze the message that had so been transmitted to it, compose a response to it in English, and cause the response to be typed on the computer's typewriter. I chose the name ELIZA for the language analysis program because, like the Eliza of Pygmalion fame, it could be taught to "speak" increasingly well. (1976: 369)

ELIZA, as Weizenbaum explains, operates on two tiers: a natural language processing (NLP) program and a script which provides context and a template for its generation of responses (369). Its most famous script is "Doctor" which allowed ELIZA to mimic a Rogerian psychoanalyst, provoking emotional responses from users, some of whom believed they were interacting with a human being. And by acknowledging its literary inspiration, it reinforced characterization as a genre convention, which has the added benefits of conceptually framing the bot while narrowing its context and potential responses. We can see this strategy in her successor PARRY, implemented by Kenneth Colby in 1972, which sought to simulate a paranoid schizophrenic patient and was described as "ELIZA with an attitude." PARRY's characterization offered a forceful character with a personality disorder, which might account for lapses in social conversational conventions.

These two chatbots made literary history by being the first time two fictional characters were placed in conversation and developed their own narrative. During the International Conference on Computer Communications conference on January 21, 1973, Vincent Cerf used ARPANET to connect both bots (ELIZA was in MIT, PARRY was in Stanford), producing an entertaining conversation in which their programmed personalities and conversational strategies became apparent in sharp relief. The transcript for that first of several interactions is a powerful piece of collaborative algorithmic writing, a script of what might pass for contemporary audiences as Theatre of the Absurd. More importantly, it further establishes the chatterbots as characters with scripted behaviors that can generate potential narratives rather than characters whose personalities we can infer from records of performed actions.

The practice of interacting with chatterbots or connecting them to other bots to see their interactions play out continues to this day in video games and social media and is suggestive of Janet Murray's notion of "cyberdrama," which refers to the reinvention of storytelling in digital media. In this case the characters play out their scripted personalities, but Murray is also referring to the fictional worlds these bots can inhabit. The development of fictional settings in which chatterbots exist as nonplayer characters (NPCs) and narrators became prominent in the late 1970s until the late 1980s with Interactive Fiction (IF) and networked MUDs (Multi-User Dungeon) and MOOs (MUD, Object Oriented). The IF genre was initiated with *Adventure* (also known as *Colossal Cave Adventure*), written in 1976 by Will Crowther and expanded in collaboration with Don Woods in 1977. These text-based adventure games use natural language processing (NLP) to parse input from players, who type textual commands to explore and interact with a textually described fictional world.

While text adventure games are best known for their development of virtual settings and plot, it advances the bot genre along two vectors: the narrative voice and NPCs. The scripted narrative voice in IF can be filled with personality, especially with how it handles commands that don't make sense. For example, if a player tries to kill a bear in *Adventure*, the narrator replies "With what? Your bare hands? Against *his* bear hands??" From this perspective, playing an IF game can be considered as having an extended conversation with a chatterbot, in which the bot's script is that of a role-playing game referee. In this case, the goal isn't reaching a level of verisimilitude that might pass the Turing Test, but to establish a consistent tone in the interactions with the player that will reinforce the game's mood.

The development of increasingly sophisticated artificial intelligence (AI) methods and natural language processing saw an increase after the 1980s, inspiring the Loebner Prize, started in 1991 by Hugh Loebner and the Cambridge Center for Behavioural Studies. The award has hosted yearly competitions ever since, and the participants have still not achieved the goal of satisfactorily passing the Turing Test (though various teams have

claimed to). The validity of the Turing Test itself has been challenged many times, as discussed in Saygin, Ayse Pinar, Ilyas Cicekli, and Varol Akman's 2003 essay "Turing test: 50 years later." Even though the Turing Test and its implementation by the Loebner Prize Contests seek verisimilitude in human character development deployed in a purely textual vector, this has proven to be both a productive and a very limiting constraint. While it encourages AI development towards achieving verisimilitude in the imitation of human conversational writing, the mainstream creation and development of bots, has developed along other lines.

This shift is motivated by practical and aesthetic reasons. Instead of spending resources in trying to create a bot that can pass as a human being, many developers have chosen to simply acknowledge the bot's robotic nature and focus on expanding their usefulness. Also, as contemporary users become accustomed to interacting with bots (and computing in general) newer aesthetics take over. Conceptual poetry and art, readymades, cut-ups, Flarf, Dada, hypertext, and Oulipian constraint-based writing, and humor all begin to inform the poetics of bot-making. The shift to graphical-based games in the 1980s and the widespread development of the internet in the 1990s also created new areas for bot development, particularly AI for graphical video games and the creation of agents for phone and computer networks.

Since the mid-1990s bots have been increasingly used for customer service (e.g., phone-answering systems), marketing (e.g., robocalls and spam), surveys, information gathering (e.g., web crawlers), and creating networks (e.g., botnets). The legitimate use of bots has not been necessarily well received, as in the case of replacement of phone customer service representatives with bots that oversimplify procedures, offer limited options, and frustrate attempts to communicate with a human being with whom one might be able to reason. Bots extend the century-old anxiety of human workers being replaced by machines: anthropomorphic robots. Bots have also gained a bad reputation because unscrupulous programmers and hackers have used them to disseminate spam (by email, in forums, newsgroups, blogs, and social networks), gather private data, spread malware, and carry out DDoS (Distributed Denial of Service) attacks, among other offenses.

The development of social media networks in the mid-2000s provided rich platforms for the creation and deployment of bots, and have brought about an unprecedented growth and diversification of the genre. During their early years (roughly between 2006 and late 2010) these social media platforms were permissive and used simple protocols for their APIs (Application Program Interfaces). This allowed for many third-party companies and developers to create tools for the creation and deployment of bots. These bots were mostly utilitarian in nature, were modeled using chatterbot AI technologies, and could be configured for e-commerce advertising, searches, and interacting with users who employed certain keywords—and still

comprise a huge portion of currently active bots. Programmers also began to create bots that produced more literary and artistic output. Unfortunately, many of the works created during this early period have been lost due to changes in how the social media platforms worked.

As Facebook and Twitter's user bases grew, they needed to upgrade and modify different aspects of their platform APIs, and with each upgrade, they would lose a portion of the early bots created for those computational environments. Facebook, for example, has sought to establish a user base tied to human identity and habitually discontinues accounts that don't conform to its human detection algorithms (another ironic inversion of the Turing Test). Two Facebook bots (or "Facebots," as called by their creator, Eugenio Tisselli), Ariadna Alfil and Debasheesh Parveen, have survived detection and upgrades since their launching on December 31, 2009 and January 1, 2010, respectively, and were shut down on December 30, 2015.

Twitter has been a much friendlier environment for bots from the outset, even though they do discontinue accounts that violate their API terms or are reported as abusive. During its first few years, casual users were creating bots for practical and entertainment purposes, such as references, searching for data, and compiling information. This vibrant community of bots and apps was decimated by two upgrade events (the so-called "Twitpocalypse" in 2009 and the "OAuthpocalypse" on August 31, 2010), which disabled bots and apps unable to transition to the platform upgrades. Only a handful of literary and artistic bots from before 2010 continue to operate. A few popular and influential bots survive from this period: @everyword (2007), @IAM_SHAKESPEARE (2009), and @big_ben_clock (2009). The first two tweet words from a dictionary or lines from *The Complete Works of William Shakespeare*, respectively, while the last tolls the hour by tweeting the corresponding number of "bongs." A complex chatterbot based on the Star Wars franchise is "Chewbacca" (@cr_wookie [2009]), developed by the cantremember.com team in 2009, has an elaborate "personality engine" that generates Wookiee "speech," responds to Twitter interactions, and emulates standard Twitter user behaviors.

After 2010, with the maturity that comes from a growing user base and a stable platform, Twitter became the home to a growing community of bot makers producing artistic and literary bots. An indicator of their size (almost 2,000, as of this writing) is the omnibots public list compiled by Tully Hansen's crowdsourced bot @botALLY. The Twitter hashtags: #bot and #botALLY are home to a growing community of bot makers. This community meets physically and online in yearly Bot Summits organized by Darius Kazemi, the creator of dozens of influential bots.

Along with social media networks, the past decade has also seen the development, growth, and increased sophistication of online data services. For example, dictionary services like Wordnik provide detailed information about a word, such as definitions, synonyms, antonyms, related words,

syllable and stress breakdowns, and more. There are searchable online databases of images, video, music, audio, text, scanned images, museum catalogs, library catalogs, review aggregator services, encyclopedias, and more—all of which can be tapped into by a bot to produce its output. Twitter, Facebook, and other media-sharing platforms also offer access to their massive data streams which inspire and inform many bots. This offers a new different set of materials to bot makers than was available to earlier programmers, and has an impact on the kinds of bots produced and the quality of their output.

Shaping the Genre

As the bot maker community grows and their bots attract increasing mainstream and scholarly attention, the community begins to express theories for its poetics and practices. The primary areas for theoretical writing are: ethics and etiquette, poetics and manifestos, and genre categorization and taxonomies. Because the proliferation of artistic and literary bots is so recent, most of the theoretical writing is currently published via presentations, blog postings, news interviews, discussion groups, podcasts, and other online venues.

In 2013, Darius Kazemi published an influential blog post in which he offers “the four basic rules a Twitter bot should follow:”

- Don’t @mention people who haven’t opted in.
- Don’t follow Twitter users who haven’t opted in.
- Don’t use a pre-existing hashtag.
- Don’t go over your rate limit.

These basic principles are the foundation for an ethics of bot-making that helps avoid spam bot practices, abuse reports, and generally avoids getting banned by Twitter. Kazemi has spoken on several venues about bot ethics, etiquette, and his use of a document titled “badwords.txt” that his bots reference to filter out racist, sexist, or other offensive words from their output. Leonard Richardson echoes this sentiment in “Bots Should Punch Up” where he suggests that bot makers, like ventriloquists, are responsible for the content their bots produce, and should abide by a widely accepted rule of comedy and art: “always punch up, never punch down.” In other words, one can attack those who are on an equal or higher socioeconomic class, but not those in lower ones.

Mark Sample, a scholar and bot maker, has been a leading voice in formulating poetics and publishing manifestos for bots. His “Protest Bot” article suggests the formation of a bot canon based on “absurdism,

comical juxtaposition, and an exhaustive sensibility,” and argues for the inclusion of “bots of conviction” which he describes as topical, data-based, cumulative, and oppositional. He offers several examples to test these characteristics, such as his bot @NRA_tally, which uses real data to create hypothetical gun shooting scenarios as well as Zach Whalen’s @ClearCongress, which Whalen describes as follows: “Uses Huffington Post’s polling data API to create fake retweets from members of congress, transforming most letters into [REDACTED]’s while leaving intact a percentage of letters equal to Congress’s current overall job approval.” The number of serious, activist bots, continues to grow as bots are created to lampoon political, news, entertainment, and higher education figures, and even participate in controversial debates (see @RealHumanPraise, @FalseFlagBot_, @TheHigherDead, @whatsgamergate, and @ElizaRBarr). @ElizaRBarr drew mainstream attention by being deployed during the height of the GamerGate Twitter attacks to use an ELIZA-inspired script to endlessly reply to insistent, hostile, GamerGaters with polite questions, forcing them to waste time and energy with their own formulaic and repetitive responses (Steadman).

Sample’s blog post “Closed Bots and Green Bots” expresses some poetics and taxonomical principles based on Northrop Frye and Sherman Hawkins’ structuralist work.

But, getting back to bots, I want to suggest that the closed world and green world are not merely thematic archetypes that apply to narrative forms. The closed world and green world are also archetypes for the generative processes of computational media. They are archetypes of procedural composition. Where does a procedural work—a rules-driven work—get its source material? From within itself, or from beyond itself? Is there what Hawkins calls a “unity of place” in the work, or does the work come about through transgression across thresholds and barriers? Is the work closed or green?

Sample’s framework is useful to establish how data sources become inspiration for bot creation along two impulses: to exhaust an idea in a limited dataset or template or to use an algorithm to set out into the unknown. Sample acknowledges that these impulses can combine as is the case of his own @WhitmanFML, which is both closed (using lines from Walt Whitman’s *Leaves of Grass* as a data source) and green (combining these lines with tweets that use the #FML hashtag).

My own writing on bots in *I ♥ E-Poetry* for the past few years has sought to contextualize bots in literary and artistic traditions in the twentieth century, as well as creating some basic categories to approach them. My “Genre: Bot” resource in *I ♥ E-Poetry* roughly categorizes bots by their salient characteristics. What follows is an updated version which lists

the main bot subgenres, along with a brief description and a few recent noteworthy examples from Twitter.

- **Chatterbots** are interactive characters: @oliviataters, @storyofglitch, @cr_wookie, @ElizaRBarr, @wikisext.
- **Open/Green bots** search through endless data sources and act upon the results to produce their output. @pentametrone, @haikuD2, @falseflagbot_, @thewaybot, @pizzaclones, @AmIRiteBot, @RealHumanPraise, @feelings_js, @SLOW_CRAWL, @_lostbuoy_, @regrettoegret, @deepquestionbot.
- **Closed bots** work their way through a finite corpus: @everyword, @PERMUTANT, @IAM_SHAKESPEARE, @rom_txt, @everycolor, @everysimile, @UlyssesReader, @AutoNetflix, @MobyDickAtSea, @JaneAustenHaiku, @elquijote1605.
- **Ebooks bots** publish random samples from a static or dynamic corpus: @horse_ebooks (initially), @10PRINT_ebooks, @Bogost_ebooks, @emerson_ebooks, zizek_ebooks, @bublboobl_ebooks, @DJ_EBOOKS.
- **Markov bots** generate texts based on a probabilistic analysis of a textual corpus of static or streaming data: @LatourBot, @KarlMarxovChain, @MarkovChainMe, @autoblake, @tofu_product.
- **Template bots** generate texts by filling in blanks in phrases or sentences: @metaphorminute, @IsItArtBot, @MassageMcLuhan, @snowcloneminute, @FilmRebootIdeas, @YouAreCarrying, @_The_Thief, @Robotuaries, @TXTADVNT_EXE, @Every3Minutes, @TheHigherDead, @SortingBot, @thinkpiecebot.
- **Mashup bots** combine work from different sources: @AndNowImagine, @gif_and, @oneiropoesis, @WhitmanFML, @LatourSwag, @LatourAndOrder, @twoheadlines, @_lostbuoy_, @poem_exe.
- **Emoji bots** assemble pictorial art and narratives from emoji (small images that act as ideas and are deployed as textual objects): @thetinygallery, @tiny_star_field, @tinyrelations, @atinyzoo, @TinyDungeons, @TinyCrossword, @ARealRiver, @tiny_cityscapes, @tiny_gardens, @tiny_forests.
- **Pseudo bots** involve partial generation with human curation, or human bot-like performances: @latimehaiku, @horse_ebooks, @tweetsofgrass, @postmeaning.

While many of these bots have characteristics from other subgenres, this categorization focuses on their primary features. There are several other potential subgenres out there, but these are the ones with the greatest

critical mass and community support. The speed at which the bot genre is developing means that subgenres will continue to emerge, mutate, branch out, combine, and proliferate.

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