

# A Brief Pre-History of Houses Who Tweet

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**There are currently only a few houses who use social media. But with the increasing availability of inexpensive hardware, and prolific networked software, the number of houses who actively communicate online in one way or another is sure to grow. An examination of some tweeting house types from within the context of architecture history and theory reveals some models for how this social architecture might develop. This paper shows that tweeting houses raise concerns that are solidly within the set of questions traditionally addressed by architecture. The tweeting house's existence depends on acts of translation between different media, some managed by a designer, some automated. The tweeting house actively presents social and tectonic affordances that offer opportunities for engagement, functional and otherwise. And finally, tweeting houses raise issues about the public, external representation of a set of private, internal conditions, some of them personal to the house's occupants, some of them intended for broader reading. This paper will use examples from the history of architecture, adjacent design disciplines, computer science, science fiction, and hybrid example projects that partake of all of these fields, to show that while the house with a social media account is a unique and new techno-architectural possibility, it is not without history or precedent.**

In a 2014 report to investors, social media platform Twitter wrote that at least 8.5% of its then 271 million monthly active users might be automated in some way<sup>1</sup>. According to their numbers, only a little more than half of those automated accounts are classified as “spam” accounts, existing to send out links to other web content in the hopes of generating revenue. Once the spam is filtered out, many of those left, Twitter accounts who post, as the report says, “without any discernible additional user-initiated action,” are made for useful and interesting

purposes. There are accounts that tweet out automatically generated satirical headlines for cranky thinkpiece articles<sup>2</sup>, another account sends out a periodical reminder to stay hydrated<sup>3</sup>. Some accounts tweet out entire books, in sequential passages of 140 characters or less, like *Samuel Pepys' Diary*<sup>4</sup>, or *Moby Dick*<sup>5</sup>, while other accounts keep track of the weather nearby<sup>6</sup>, or the status of distant space probes<sup>7</sup>.

Many of these automated Twitter accounts give a voice to things that would otherwise be unable to communicate clearly to humans. One early ancestor for this type of communication is @botanicalls<sup>8</sup>. From June 2008 until February 2009, the @botanicalls account tweeted out the needs of a houseplant connected to a moisture sensor. This system would report on the soil's water content with messages like “Water me please,” “URGENT! Water me!” and afterwards “Thank you for watering me!” This was a demonstration piece for a larger project that began two years earlier, while the collaborators were students at NYU's Interactive Telecommunications Program. The designers interest in “bringing plants into the ITP community” began with giving them the ability to make phone calls with pre-made voice recordings, and settled on Twitter as a default mode of interaction soon afterwards<sup>9</sup>.



Figure 1, Botanicalls System, Robert Faluid, Kate Hartman, Kati London, Rebecca Bray, 2008

Since 2010, technologist and writer Tom Coates has maintained a Twitter account for his San Francisco house<sup>10</sup>. The house welcomes Coates home when he checks in with location based apps, it reports on its own internal environmental conditions and the weather outside based on sensor data, and it makes speculative comments about activities in its rooms when the lights are turned on and off. Coates' house, along with an increasing number of related projects, is unique because it attempts to give a voice to a space instead of an object. This type of work raises questions for architecture that turn out to have always existed near the core of the discipline all along. The tweeting house foregrounds issues of media specific translations that architects have historically concerned themselves with, it also offers new modes of functional engagement with users and with its own subcomponents. The tweeting house necessarily makes some kind of public facing presentation of itself, and it creates a private interior that's necessarily tied up with the identity and expression of its occupants.

### TRANSLATION AND PROJECTION

One of the original goals of the designers of the Botanicalls system was to work by translation: "Keep the plants alive by translating the communication protocols of the plants ... to more common human communication protocols." Botanicalls starts with sensor data, in this case about soil moisture, then the first step in the system involves the translation of that quantity through a decision tree: if it is above a certain threshold, do nothing, if it is below, the system advances to the next step, a request for watering is sent, if the number is very low, a different message is triggered ("URGENT!"). Finally, once the soil turns rapidly from dry to saturated, the "Thank you for watering me!" message is sent. This is automated, but not entirely autonomous. The individual messages are human authored, and the overall system by which they are chosen is also designed by humans. Each unit of communication, though, can be said to be a kind of collaboration between humans and the plant, a translation by way of translation. We go from a raw condition to a piece of numeric data, to a set of binary choices, and finally to a sentence in English. The humans help the plant speak, but this is more like the iterations of inferences that drive autocomplete or spellcheck than simple ventriloquism.

Architects, as actors at least one step removed from construction, have historically been engaged with issues of translation between mediums. For theorist Robin Evans, the history of architecture is bound up with that field's relationship with proportion, geometry, drawing, and building. "Architects do not make buildings, they make drawings of buildings."<sup>11</sup> In his book, *The Projective Cast*, he says "In the sense that geometry is always ideal, never real, there can be no geometry in any architecture."<sup>12</sup> At times, in place of "translation," Evans seems to prefer the term "projection" to describe the act of linking one of these regimes to another. Geometry is projected onto architecture just as the drawings describe architecture by means of projection. Evans' descriptions of renaissance drawing systems, with picture plane, station point, and imaginary rays projecting from the observer to the object - either in parallel, for an orthographic drawing, or in converging perspective - are as complicated as the scripts that translate abstract states of being into tweets. The architectural drawing, like the architectural tweet, describes a subjective

state, not an objective whole, expressed in collaboration between a human and a space by means of a designed schema.

If Coates' house has an ancestor on Twitter, it is @andy\_house<sup>13</sup>. Originally created in 2008 to monitor home energy use, the connected house of IBM technologist Andy Stanford-Clark, in the UK's Isle of Wight, tweets when the house's appliances activate, and broadcasts regular summaries of the house's electric bills. These messages are sent as seemingly neutral reportage, without even punctuation: "the phone is ringing," "bathroom heater turned off," "£80 of electricity used so far this month." Coates' house also sends this kind of quantitative information, but in a different style: "It's just hit 68 inside - that's rather lovely. I'm pretty sure Tom will be happy about that." Both houses are preoccupied with their internal systems, constantly expressing the state of their environmental control and telecommunications infrastructure. As described above, a translation of this kind of raw data into human readable English text is not a direct one-to-one set of decisions. The voice of @andy\_house is like a high Modern attempt at factual expression without bias or personal voice, Le Corbusier's functionalist soap bubble, "perfect and harmonious if the breath has been evenly distributed and regulated from the inside."<sup>14</sup>

Coates' house is more like the late Modern Environment Bubble of Reyner Banham and Francois Dallegret, "... radiating soft light and Dionne Warwick in heart warming stereo, with well-aged protein turning in an infrared glow in the rotisserie, and the ice maker discreetly coughing cubes into glasses on the swing-out bar ..."<sup>15</sup> even if the house's attempts at charm are maybe a little more direct and clumsy: "To whoever it is who just turned on the light by the mirror in the Bathroom - you look beautiful today!" Philosopher of science Bruno Latour writes about the translation from data to expression as "the report." In a brief piece titled "We write texts, we don't look through some window pane," Latour foregrounds the media specificity of the expression, and even the room and desk at which the report is composed<sup>16</sup>. For Latour, there is no neutral default mode of expression free of this context. The reports from

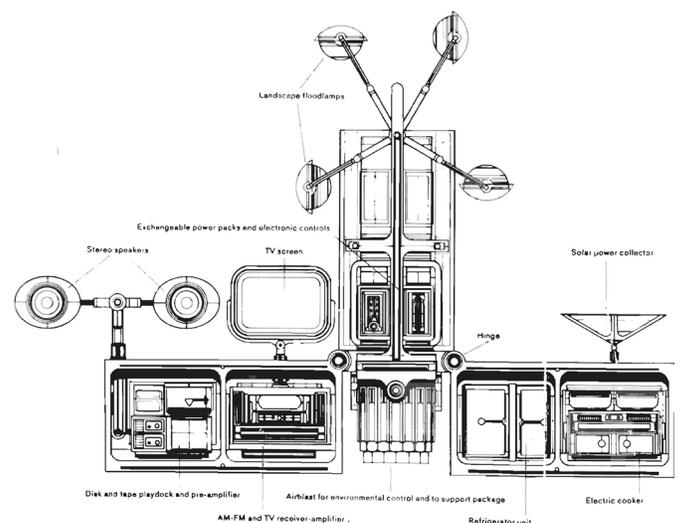


Figure 2, Anatomy of a Dwelling, from "A Home is Not a House," Francois Dallegret for Reyner Banham

@andy\_house don't exist without also transmitting a mood and personality, in this case, kind of a grouchy one. If we will help things and spaces have voices, what sort of voices will they have? This difference, in the two tweeting houses, between a dry statement that a heater has turned on, and an engaging remark about the state of the interior climate, illustrates the kind of tensions inherent in the translation from function to form, and in the translation from one medium to another.

#### AFFORDANCES AND ASPIRATIONS

Louis Kahn famously asked a brick what it wanted, and he reported the brick's reply; "I like an arch."<sup>17</sup> Since there were no network enabled sensors involved in this conversation, we'll have to take Kahn's word for the brick's state of being. We can note though, that even according to Kahn's report, the brick (or, as Kahn has it, with no definite article, simply "brick") doesn't say "I want to be an arch", the brick says "I like an arch." Taken literally, this anecdote is about an imagined partial engagement with another kind of agency. Kahn engages with brick, and brick wants to engage with an arch, with archness. This engagement, if we imagine it further, is a kind of collectivity that can only take place with other bricks. Brick's flatness can be mitigated by the flexibility afforded by mortar, which will allow it to interact with other bricks in a unique way. This relationship is inherently as much social and political as it is material and tectonic. When @houseofcoates says "It's getting warm in here today. I'd say it's probably reached something like 72. That's a little warmer than I usually like it," qualifiers like "I'd say," "a little," "usually," and again, "like" simultaneously construct the house's existence as a subject, and offer opportunities for engagement by the house's audience as co-subjects.<sup>18</sup> The fuzziness introduced in Coates' house's language ("... probably reached something like ...") marks the squishy relationship between the data from the temperature sensors, which could run to several decimal places, and the false precision in the declaration of the temperature. We can see the seams in the tectonic relationship between parts and the whole.

Charlene McBride, a user experience designer and artist, has given her Boston area loft a similar suite of sensors and a Twitter account. McBride's loft, @loftsonate<sup>19</sup>, interacts with her Twitter handle, @ursonate, and it also has the ability to interact with her in the space itself, taking control over some aspects of the internal environment: "It was getting dark so I turned on the light at August 26, 2015 at 08:49PM. Now @ursonate won't walk into the wall." Here again is the precise data, but framed in a way that invites its inhabitant to engage back. The loft's occasional sarcasm, nagging, and humor give McBride an opportunity to make fun of it whenever the systems occasionally malfunction. "The nagging thing is funny," McBride said on Twitter, "sometimes it lies."<sup>20</sup>

This interest, or calculated disinterest, in the house's occupants recalls J. G. Ballard's short story "The Thousand Dreams of Stellavista", published in his 1971 collection *Vermillion Sands*<sup>21</sup>. In that story, a couple is shopping for a 'psychotropic house', a type of affective dwelling technology that adjusts itself to the moods and temperaments of its inhabitants. These houses do not speak (or tweet), but they can move, change sound and color, and even reconfigure their layouts in anticipation and response to the aspirations of the humans in them:

"Ten feet from me, the main sphere hovered uncertainly, the entrance extending downwards. Stammers stood in the open doorway, smiling encouragingly, but the house seemed nervous of something. As I stepped forward it suddenly jerked away, almost in alarm, the entrance retracting and sending a low shudder through the rest of the spheres. It's always interesting to watch a psychotropic house try to adjust itself to strangers, particularly those at all guarded or suspicious."

This story, perhaps predictably, does not end well for either house or human. Like Kahn's brick, these houses have social and tectonic aspirations. Unlike the case of the brick, these aspirations are co-produced by both occupant and house in a network of abstractions which is itself made by both the humans as the designer of the system, and the house as the source of data and site of interaction. Since both human and house are involved in a kind of positive feedback loop, the scope of that interaction tends to increase. The ability of McBride's loft to turn things on and off at will, and do more than just sense conditions, but react with changes in its internal environment, is also something Coates' house wants to do more of: "Wow. It's hit 77! That's a bit hotter than I normally like. If I had a couple more actuators, I'd maybe open a window or something..."

#### PUBLICITY IN PRIVATE

The tweeting house wants to engage in a specific way with its human co-subject and occupant. It also seems to offer certain types of engagements with a larger public built around it. Houses who tweet are not sending messages out only to their occupants—communication of this kind could be handled by other, less social channels—houses are on Twitter to talk with others. @houseofcoates has, at the time of this writing, 1,400 followers, who will see its messages in their Twitter timeline, many of whom have not likely ever met Tom Coates or visited his house in person, but who might know his writing or other work. @loftsonate has 34 followers, @andy\_house, whose Twitter account is private and locked, has 14. This audience tends to expand. Other people using Twitter might also encounter the messages from the tweeting houses via "retweets" from other users to their own followers, these act like signal boosts, and help build the house's constituency. McBride says she gave her house a public Twitter account, instead of a private, locked account, in order to invite engagement from others, and to help them learn more about how to make their own similar system. This desire overcame her own concerns about privacy and security.<sup>22</sup>

In 1976, Venturi, Scott Brown and Associates Architects assembled an exhibition for the Smithsonian Institution on vernacular American architecture that presents one model for understanding the public performance of the tweeting house. *Signs of Life: Symbols in the American City*<sup>23</sup> critically examined domestic and commercial architecture as a set of attempts to communicate with various audiences and constituencies. The installations show full-scale interiors, exteriors, and monumental photomontages. Elements of the architecture in these photomurals have cartoon speech bubbles announcing their existence, their aspirations, and their historical backgrounds. The exterior of an urban rowhouse calls out: "CLASSICAL BALUSTRADE," "ITALIANATE BRACKETS," "HISTORICAL

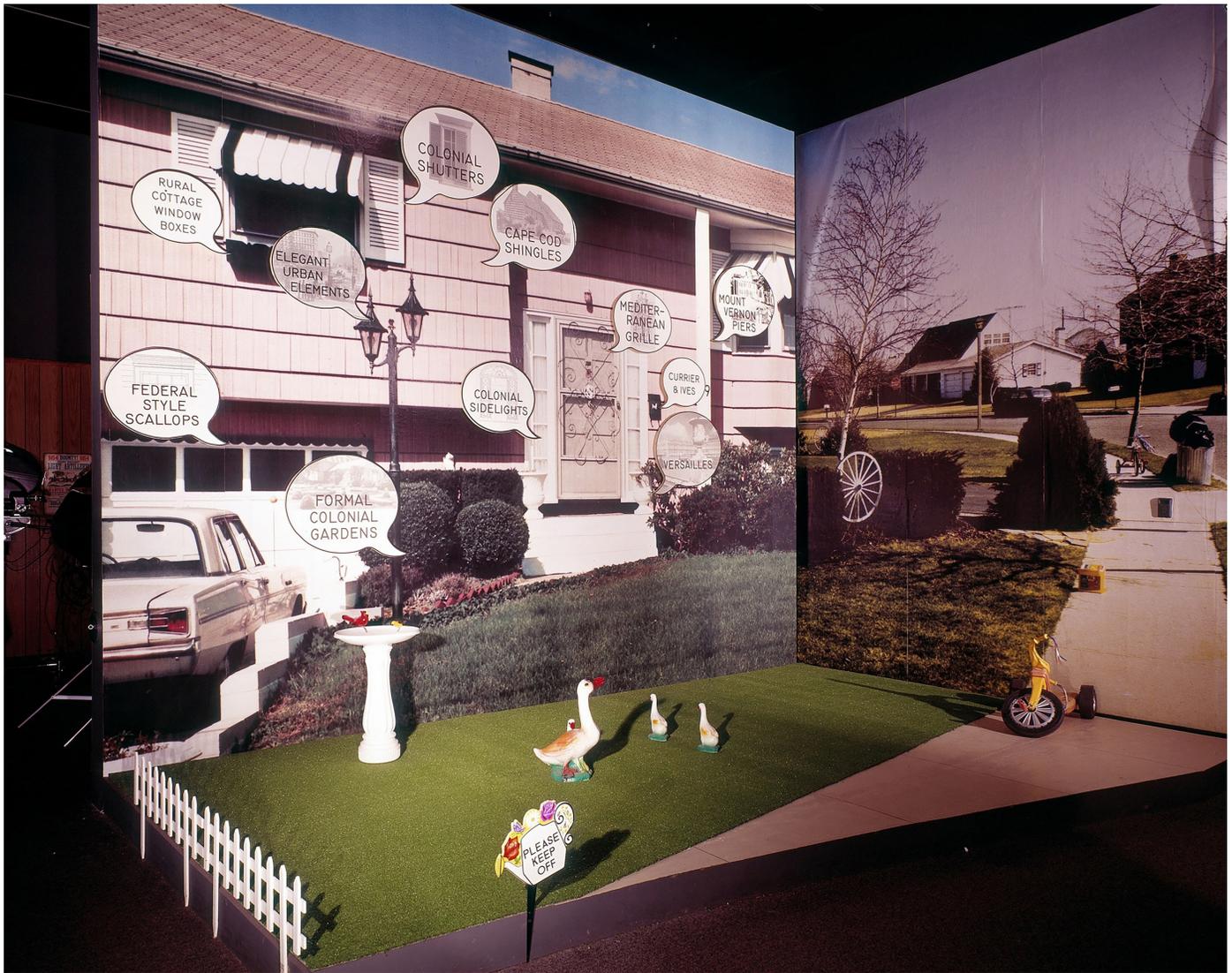


Figure 3, Signs of Life: Symbols in the American City, Venturi, Scott Brown and Associates; Photomural by Stephen Shore

ELEGANCE,” “COLONIAL IRONWORK.” The semi-public sitting room of a detached suburban home explains itself with a large bubble: “In this room the ensemble of American antiques evokes historical tradition and expresses the ‘good taste’ of the occupants. The contrasting, present-day upholstered sofa and chair are there for reasons of comfort and function.” The identity of the occupant living in this speaking architecture is bound up with the identity of the space and is presented via a public performance of both taste and affordance, on the street, and to those invited inside to the public rooms.

@houseofcoates’ avatar pic on Twitter is a cartoon-faced version of the classic gable roofed house icon. In person, the house looks nothing like this. The house is attached, and in the middle of a block, accessed only through a locked courtyard and up a stair<sup>24</sup>. There is no public presentation of a distinct face or facade at all. The part of the house facing the street doesn’t communicate, in a traditional architectural sense, with the rest of the city of San Francisco within which it is embedded. For Coates’

house, it is in social media, not in its physical presence, that the house primarily addresses itself to the public.

The facade in architecture has historically been tasked with certain expressive responsibilities: cultural or typological identity, affinity (or antipathy) with its neighbors, and for communicating the disposition of interior spaces and functions. Colin Rowe and Robert Slutzky in their 1963 essay “Transparency: Literal and Phenomenal,”<sup>25</sup> partly anticipate Latour’s window pane when they write about how “... the transparent ceases to be that which is perfectly clear and becomes, instead, that which is clearly ambiguous.” This could be an attempt to sort out the murkiness regarding authorship, agency, and public communication in the case of the tweeting house. Uncertainty—as the interior life of the house is shown via Twitter as if through a glass darkly—is the stuff with which the creators of the tweeting houses work.

@loftsonate is also equipped with motion sensors, and when they are activated unexpectedly the house says something like: “movement was detected in the entryway at: October 03, 2015 at 09:38AM. is that @ursonate or the cats?” This is the kind of clearly ambiguous transmission that Rowe and Slutzky find in Cubist painting and Modernist facades,



Figure 4, @houseofcoates, Tom Coates, 2016

with multiple, overlapping readings present simultaneously. The message alerts McBride directly—the use of her Twitter handle means she will see a notification—but it also avoids raising too much alarm, or giving out too much public information to anyone else reading. McBride might be home, the tweet implies, so stay away, potential robbers. With communications like these, Coates and McBride’s houses create a new kind of phenomenal transparency, between the private interior and the public facing exteriority of social media.

#### PRIVACY IN PUBLIC

“At 4:15, it breathed in. It awoke to the faint burning of a flickering blue light in its gullet and a general feeling of indigestion.” So begins Greg Lynn’s “A New Style of Life”, published in *Assemblage* in 2000<sup>26</sup>. This short fictional piece imagines the activity and agency of a living house, in a speculative future era of sophisticated genetic engineering and manufacturing, with its human inhabitant, like “an agitated animal ... living in its gut.” Tom Coates invokes the same kind of sense of living within something that is itself living; “It’s a sort of weird mix of tamagotchi [note: a pocket digital pet popular in the 1990s, housed on a specialized device mounted to a keychain] and ... like womb or something?”<sup>27</sup> he said, when asked about how he visualizes his coexistence with the house. Some of the house’s messages seem crafted to reinforce this relationship, of affinity between concentric animals: “I’m pretty sure someone’s at home right now. I hope it’s Tom. He’s my favorite.”

This existence within existence is complicated by the mobility and interconnectivity enabled by social media and smart phones; “... there’s a sort of presence element,” Coates says, “there’s always a part of it with me when I’m away.” Simultaneous presence problematizes the traditional “homepage” imagery of the internet: “That sort of telepresence sense is interesting to me - like its extended itself into the mirror world, where physical presence is much less of an issue. But differently from the internet generally because I’m always aware that it’s in a particular place, which I’m not for a web page.”<sup>28</sup>

Coates’ house uses a variety of tools to create its messages; interactive storytelling platform twine is backed up by series of triggered actions

coordinated by IFTTT (“If This, Then That”), a system for making conditional recipes for different types of action and interaction. The direct actions the house takes, like adjusting the thermostat or switching on and off lights, is run by Coates’ own proprietary system, Thington. All of this is, like the web itself, located in “the cloud,” that is, a distributed system that stores and processes data. But as a popular internet meme reminds us, “There is no cloud, it’s just someone else’s computer.” In a series of articles in *The Atlantic*, writer and researcher Ingrid Burrington has traced the locations of those other computers<sup>29</sup>. These large data centers, located not within major cities but usually between them, house hundreds of machines, their processing power used by services like the ones put together by Coates and other tweeting houses.

The tweeting house is as much a topology as it a typology. The private data from the house’s interior is sent and processed at multiple locations, in some cases, on the same servers as other public data. The location of the tweeting house is simultaneously the public page of the Twitter feed, the private site of the actual house, the public or private touchscreen of Coates’ phone and other devices, and in the private, almost secret, data-centers existing anonymously in plain sight everywhere in the American landscape. There is a quadratic doubling of the house’s location, from actual to virtual on one axis, and from processing hardware to display hardware on the other. The private sense of connection between the house and its occupant is strewn across a whole geography, in order to link with a device in a pocket. As Coates says of the house’s presence; “... it can be far away and with me at the same time.”

#### CODA: CONJECTURING SUBJECTIVITY

Gender theorist and philosopher Judith Butler, in her book *Giving an Account of Oneself*, presents a framework for the construction of subjectivity within social and moral situations. Butler, building off of the work of Adriana Cavarero and Hannah Arendt, rejects a pre-existing universal subject in favor of a subject that is co-produced in moral encounters with others, centered around the question “Who are you?”<sup>30</sup> Constructions like “I’m pretty sure Tom will be happy about that,” imply this same kind of reflexive relationship between the house and Coates as co-subjects. Every time we check Twitter, we implicitly ask the house who it is, only to find that the house is speculating about who Coates is. This message, like all of the others, was of course scripted by Coates, but even still the co-production of subjectivity has the capacity to surprise. “It’s deepened my emotional relationship with my house,” Coates said, when asked about this, “I look after it, it looks after me.”

“Humans invest pretty much everything around them with agency and personality, motive and subjectivity. Including, frankly, other humans. The pictures we get of other people are assembled in our minds and may bear little or no relation to the people they actually are. In that sense, House of Coates is not much different from animism - talking to tree spirits, negotiating with streams or date or gods, or shouting at your oven or car when they don’t work. So I guess the answer is, it doesn’t fucking matter if it has subjectivity, even though it doesn’t, because we can and will treat it like it does and that will happen more and more as time passes.”<sup>31</sup>

## ENDNOTES

1. "In the three months ended June 30, 2014, approximately 11% of all active users solely used third-party applications to access Twitter. However, only up to approximately 8.5% of all active users used third party applications that may have automatically contacted our servers for regular updates without any discernable additional user-initiated action. The calculations of MAUs presented in this Quarterly Report on Form 10-Q may be affected as a result of automated activity." United States Securities and Exchange Commission, *Form 10-Q, For the quarterly period ended June 30, 2014, Twitter, Inc.*, online at [https://www.sec.gov/Archives/edgar/data/1418091/000156459014003474/twtr-10q\\_20140630.htm](https://www.sec.gov/Archives/edgar/data/1418091/000156459014003474/twtr-10q_20140630.htm) access October 5, 2016
2. "Maybe If Teens Stopped Being Humorless We Wouldn't Have Elected Trump," Nora Reed, @thinkpiecebot, <https://twitter.com/thinkpiecebot> access January 13, 2017
3. "humans are squishy and weak, but they are my friends, so i remind them to drink water," Nora Reed, @hydratebot, <https://twitter.com/hydratebot> access October 5, 2016
4. "The diaries of Samuel Pepys in real time, 1660-69. Currently tweeting the events of 1663," Phil Gyford, @samuelpepys, <https://twitter.com/samuelpepys> access October 5, 2016
5. "Moby-Dick, by Herman Melville. Loose fish and fast fish, tweeting on the same line," @MobyDickatSea, <https://twitter.com/MobyDickatSea> access October 5, 2016
6. "Daily weather news, tidbits, video and alerts from The Weather Channel," @weatherchannel, <https://twitter.com/weatherchannel> access October 5, 2016
7. "Semper peregrinus inter astra — a well-informed unofficial account full of unauthorized jargon, administered from NSF, which still funds science on-board!" National Science Foundation, @NSFVoyager2, <https://twitter.com/NSFVoyager2> access October 5, 2016
8. "Giving plants a voice!" @botanicalls, <https://twitter.com/botanicalls> access October 5, 2016
9. "Botanicalls: The Plants Have Your Number," Robert Faludi, Kate Hartman, Kati London, and Rebecca Bray, <https://www.botanicalls.com/classic/> access October 5, 2016
10. "I'm a house that tweets. @tomcoates lives in me," <https://twitter.com/houseofcoates> access October 5, 2016
11. "It would be foolish, it seems to me, to characterize architecture as abstract, since a house is no more abstract than a chair or a biscuit; but it makes a great deal of sense to call process of its conception abstracted." Robin Evans, *Architectural Projection, In Architecture and its Image: Four Centuries of Architectural Representation: Works from the Collection of the Canadian Centre for Architecture*; Blau, E., Kaufman, E., Evans, R., Eds.; Canadian Centre for Architecture, Montreal, QC, Canada, 1989; p. 21
12. "The best that can be said is that buildings serve to bring the pure idea to mind." Robin Evans, *The Projective Cast: Architecture and Its Three Geometries*; MIT Press, Cambridge, MA, USA, 1995; p. 354
13. "@andysc's home automation system," @andy\_house, Andy Stanford-Clark, [https://twitter.com/andy\\_house](https://twitter.com/andy_house) accessed October 5th, 2016
14. Le Corbusier, *Towards a New Architecture*; Frederick Etchells, translator; Dover Publications, New York, NY, USA, 1986; p. 181
15. Reyner Banham, with illustrations by Françoise Dallegret, "A Home is Not a House", *Art in America*, Volume 2, 1965; pp. 70-79
16. "I use report as a generic term. It might be an article, a file, a website, a poster, a PowerPoint presentation, a performance, an oral exam, a documentary film, as artistic installation." Bruno Latour, "We write texts, we don't look through some window pane" in *Reassembling the Social, an Introduction to Actor-Network-Theory*; Oxford University Press, Oxford, UK, 2005; pp. 122-128
17. Variations on this line are often misquoted as "I want to be an arch" and "Even a brick wants to be something." A major source for these misquotations seems to be the 1993 Woody Harrelson movie, *Indecent Proposal*, in which Harrelson plays a Professor of Architecture. Louis Kahn, "Lecture at Pratt Institute", in *Louis Kahn, Essential Texts*; Robert Twombly, Editor, W.W. Norton Company, New York, NY, USA, 2003; p. 271
18. See Fred Scharmen, "Home Tweet Home," in *Log 36: Robolog*, Winter 2016, pp. 135 - 137
19. "a connected space in Lowell, MA", loftsonate, online at <https://twitter.com/loftsonate>, access October 4, 2015
20. Charlene McBride, private correspondence via email, October 4, 2015.
21. J. G. Ballard, "The Thousand Dreams of Stellavista", in Vermillion Sands, Berkley Publishing Company, New York, NY, 1971
22. Charlene McBride, private correspondence via email, October 4, 2015.
23. See VSBA, *Signs of Life: Symbols in the American City, Exhibition*, available online as a PDF from Venturi, Scott Brown and Associates, Inc., at <http://venturiscottbrown.org/pdfs/SmithsonianInstitutionSignsofLife01.pdf>, access October 4, 2015
24. See Scharmen, "Home Tweet Home"
25. Colin Rowe and Robert Slutzky, "Transparency: Literal and Phenomenal", in *The Mathematics of the Ideal Villa and Other Essays*; MIT Press, Cambridge, MA, 1987
26. Greg Lynn, "A New Style of Life" in *Assemblage 41*, MIT Press, Cambridge, MA, 2000
27. This quote and the following sequence are from a private correspondence between Coates and myself via twitter, that took place January 15, 2015.
28. See Scharmen, "Home Tweet Home"
29. See Ingrid Burrington, "Why Amazon's Data Centers are Hidden in Spy Country" in *The Atlantic*; online at <http://www.theatlantic.com/technology/archive/2016/01/amazon-web-services-data-center/423147/>, accessed October 1, 2016
30. "Moreover, the very terms by which we give an account, by which we make ourselves intelligible to others, are not of our making." Judith Butler, *Giving an Account of Oneself*; Fordham University Press, New York, NY, USA, 2005; p. 21
31. This passage from Coates is from a set of direct messages exchanged on Twitter, September 16, 2016