

Material Semiotics of Form Giving: The Case of the Electric Turkish Coffee Pot

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Introduction

As the discipline for shaping the material world and the immaterial processes therein,¹ design more often than not involves decision making regarding the formal properties of material objects. Accordingly, product form has been given attention in the literature on design, often approached as a means of communication between designer and user. Under such an approach, however, existing studies have tended to overlook form-giving as a practice, instead prioritizing its products with an eye toward their reception by the consumer.² The few existing studies that provide accounts of form-giving processes still tend to favor generalization and heuristics over thick description.³

My contention is that design literature needs to overcome the heuristic tendency in current research and offer a more comprehensive understanding of form-giving that incorporates both the immediate professional environment of design and its larger context. For this purpose a “material-semiotic” approach can be useful.

Material semiotics is a family of theoretical approaches deriving from the insights of science and technology studies (STS) and, especially for this paper, from actor–network theory (ANT). John Law refers to it as a way of “telling stories of ‘how’ relations assemble or don’t,” implying that in material semiotics, relational thinking is applied not only to signs but also to material objects. All entities, living or non-living, are shaped within and by relations. The researcher’s task in this framework is, as Bruno Latour puts it, to “follow the actors,” tracing the relations.⁴

In the past decade of design research, we have seen an emergent interest in the material-semiotic theoretical inventories of STS and ANT. Authors have underlined the ways in which people and material objects come together to constitute social worlds.⁵ Others have drawn attention to the “scripts” objects embody, as a way of understanding how objects are designed for certain patterns of use, and are received and domesticated in consumption.⁶ The major shortcoming, however, has been that these have rarely gone beyond theoretical elaboration and illustration. In-depth empirical research that investigates and demonstrates the benefits and limits of the framework for design research is generally

- 1 Victor Margolin, “Introduction,” in *Design Discourse: History, Theory, Criticism*, ed. Victor Margolin (Chicago: The University of Chicago Press, 1989).
- 2 Nathan Crilly, James Moultrie, and P. John Clarkson, “Shaping Things: Intended Consumer Response and the Other Determinants of Product Form,” *Design Studies* 30, no. 3 (2009): 226, 247; Cameron Tonkinwise, “A Taste for Practices: Unrepressing Style in Design Thinking,” *Design Studies* 32, no. 6 (2011): 535; for a review of studies on consumer response, see Nathan Crilly, James Moultrie, and P. John Clarkson, “Seeing Things: Consumer Response to the Visual Domain in Product Design,” *Design Studies* 25, no. 6 (2004): 547–77.
- 3 See, e.g., Michael Tovey, “Styling and Design,” *Design Studies* 18, no. 1 (1997): 5–31; Crilly et al., “Shaping Things,” 228–45.
- 4 John Law, “Actor Network Theory and Material Semiotics,” in *The New Blackwell Companion to Social Theory*, ed. Bryan S. Turner (Oxford: Wiley-Blackwell, 2009), 141; Donna Haraway, “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective,” *Feminist Studies* 14, no. 3 (1988): 595; Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (Oxford: Oxford University Press, 2005), 12.
- 5 Peter-Paul Verbeek, *What Things Do: Philosophical Reflections on Technology, Agency and Design*, trans. Robert P. Crease (Philadelphia, PA: The Pennsylvania University Press, 2005); Albena Yaneva, “Making the Social Hold: Towards an Actor-Network Theory of Design,” *Design and Culture* 1, no. 3 (2009): 273–88.

lacking.⁷ Furthermore, sufficient consideration has not been given to what research on design can, in its turn, contribute to the STS-based perspectives it adopts. Considering that canonical actor–network analyses have consistently failed to comment on the forms of the material objects they investigate or the design practices that shape them,⁸ design research needs to bring design into the picture, particularly via studies of practices peculiar to design—in this case, form-giving.

As such, this paper has two methodological aims: on one hand, to draw attention to form-giving as a multilateral and fluid material-semiotic practice, and on the other, to provide a case study for material semiotics of design that also evidences the central role it can occupy in technology and product development.

The case in point is the electric Turkish coffee pot, a family of electric kitchen appliances that has received serious attention from product design relatively recently.⁹ The data used in the analysis below are provided by field work on 14 different electric Turkish coffee makers (11 of which are electric coffee pots), comprising interviews with 18 professionals involved in the design processes (designers, engineers, executives, and marketers) and document analyses (including visual material produced during the design processes).¹⁰ The data were used to identify and compile the form-giving processes from a material-semiotic point of view. I narrate this process in the following sections, presenting the theoretical approach and concepts where necessary.

A Curvilinear Profile

A quick review of electric Turkish coffee pots in the market reveals a set of shared characteristics. Structurally, they are akin to electric kettles in that they consist of a water container with an integrated heating element, but they have a long straight handle and a spout on the side to distinguish them. Another aspect, which was often noted in the interviews, is the curvilinear profile of the otherwise cylindrical container—a curve that starts at a wide base, narrows to form a waist, and ends with a wide mouth at the top. Among existing products in the market, the curvature of this profile can be seen to range from conspicuous to subtle to non-existent. Yet for the designers I interviewed, this curve represented a major typological principle for coffee pots, electric or otherwise. One designer described it as “a general form [...] that emerges when you put [one coffee pot] upon the other, layer by layer.”

In the electric Turkish coffee pot projects, I found that such typological concerns were common for the designers: They turned to traditional Turkish coffee pots, collected samples and studied them, discovered formal commonalities—including the handle, the spout, and the curve—and reproduced them in their own designs for an electric Turkish coffee pot. The project briefs the

- 6 Jack Ingram, Elizabeth Shove, and Matthew Watson, “Products and Practices: Selected Concepts from Science and Technology Studies and from Social Theories of Consumption and Practice,” *Design Issues* 23, no. 2 (Spring 2007): 3–16; Kjetil Fallan, “Describing Design: Appropriating Script Analysis to Design History,” *Design Issues* 24, no. 4 (Autumn 2008): 61–75.
- 7 A notable exception is Kjetil Fallan’s design historical account of the earthenware, Figgjo 3500, from 1960s Norway. See Kjetil Fallan, “Form, Function, Fiction—Translations of Technology and Design in Product Development,” *History and Technology: An International Journal* 24, no. 1 (2008): 61–87.
- 8 For instance, none of Latour’s many examples of objects, nor his study of the rapid transportation system, ARAMIS, refers to formal aspects. Or, in their influential and detailed study of the microwave oven, Cynthia Cockburn and Susan Ormrod devote no more than two paragraphs to industrial design. Bruno Latour, “Where are the Missing Masses? The Sociology of a Few Mundane Artifacts,” in *Shaping Technology/Building Society: Studies in Sociotechnical Change*, ed. Wiebe E. Bijker and John Law (Cambridge, MA: The MIT Press, 1992), 225–58; Bruno Latour, *Aramis: Or the Love of Technology* (Cambridge, MA: Harvard University Press, 1996); and Cynthia Cockburn and Susan Ormrod, *Gender and Technology in the Making* (London: Sage, 1993).
- 9 Generic electric appliances for cooking Turkish coffee have been commercially available for decades in Turkey, yet the first product that can be considered commercially successful was launched in 2002 by Bayiner, followed by Arzum in 2003 and Arçelik in 2004.



Figure 1
Turkish coffee pots.

designers had received did not state any specific expectation for the final designs to include formal references to traditional coffee pots. What were simply the designers' own interpretations of the project briefs they were given would later objectify into a typology for electric Turkish coffee pots. (See Figure 1, which shows Turkish coffee pots on the windowsill at the design consultancy office, DesignUM, in Istanbul. The first six coffee pots from the left were used in research by the design office, the second one from the right is an electric Turkish coffee pot the office designed for the Felix brand, and the last one is an earlier prototype of the same product.)

One of the interviews illustrated this concern with typologies. The chief designer in one of the projects stated that he was "to blame that the final design turned into a traditional coffee pot" because the original brief asked only for a high-end electric coffee pot. Accordingly, two of the three design alternatives his design team developed for the client featured a curvilinear profile, and the third one represented an alternative approach in case the client was not interested in a traditional-looking design. A second designer in the project described the latter as a "plan B" and characterized it as having a "heavily German style," citing its straight cylindrical form, in contrast to the "Turkish style" of the two more curvaceous design alternatives.

"The curve," used here not only to denote the approximated curvilinear profile of electric Turkish coffee pots, but also as a shorthand for the overall formal approach used by their designers, provides us with a rich case study into form-giving practices in a professional design context. In the following sections, I investigate the curve and the process of its realization closely. Looking into the design processes by which the curve was researched, developed, negotiated, and finally produced, I sketch a theoretical framework for understanding form-giving as a material-semiotic practice.

10 The interviews were conducted in Turkish, and rendered anonymous. All translations of the interview data and other sources are mine. Note that throughout the paper, I use the term "electric Turkish coffee pots" (*elektrikli cezve*) to distinguish non-automatic Turkish coffee makers from those that have automatic functions, such as taking in water and monitoring froth amount. I have written elsewhere about automatic Turkish coffee makers, in an analysis of the attempts to capture the authenticity of Turkish coffee using automation. Harun Kaygan (forthcoming), "Electric Turkish Coffee Makers: Capturing Authenticity for Global Markets," in *Objects in Motion: Globalizing Technology*, ed. Nina Möllers and Bryan Dewalt (Washington, D.C.: Smithsonian Institution Scholarly Press).

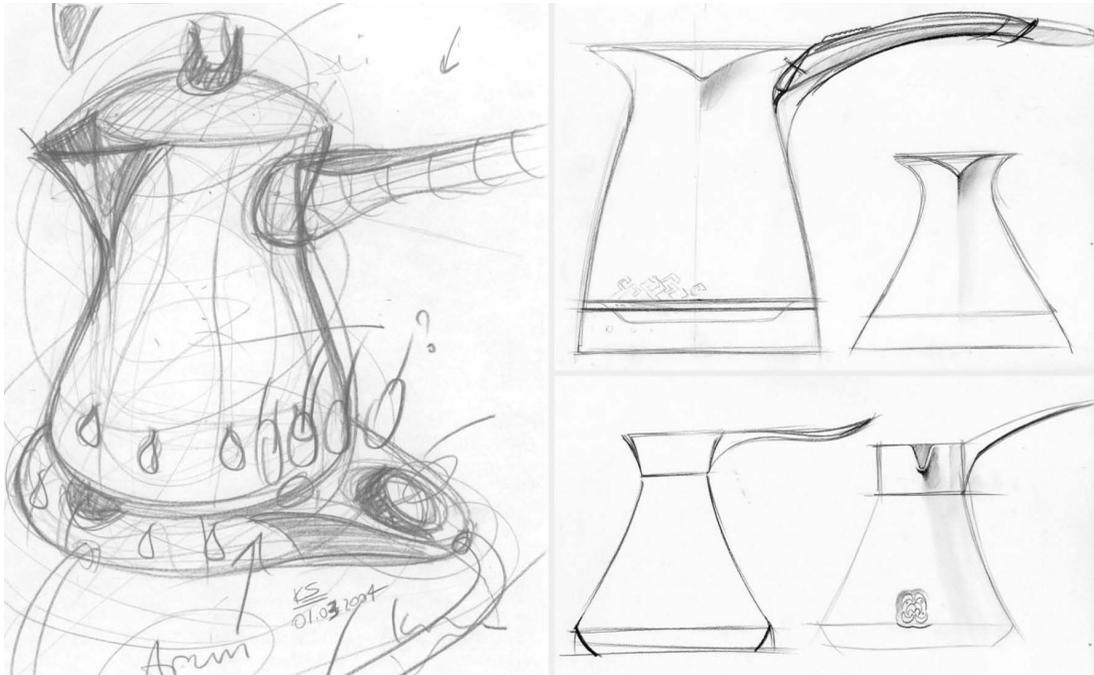


Figure 2a (left)
Sketch for Arzum “Cezve” by Kunter Şekercioğlu (Kilit Taşı Design).

Figure 2b (right)
Four sketches by Ümit Altun (DesignUM).

Situating the Curve (Curve as Symbol)

The second designer’s comparison of the design alternatives offers a starting point for understanding the curve—and the designers’ insistence on it. Naming two alternatives as “Turkish” and the other as “German style,” the designer can be taken to imply that the more curved forms of the former “connote” a certain traditional and Turkish quality—that is, its “turkishness.”¹¹ Resorting to national categories as shorthands for describing style is commonplace in design discourse: German design as rational, Italian design as playful, Japanese design as austere.¹² I encountered references to the nationality of the product not only in my discussions on form-giving with the designers, but also regarding the overall conceptualization of the projects by the companies. The electric Turkish coffee pot, both as an ongoing design project and as a finished product, was repeatedly compared with kettles and pod coffee makers as transnational, generic electric appliances, and with espresso machines as comparably national (i.e., Italian) coffee maker projects.¹³ Against these alternatives, electric Turkish coffee pots were accentuated as Turkish traditional products, and the designers’ form-giving practices reflected this focus. The reproduction of the narrow-waisted profile of the traditional Turkish coffee pot in electric pots was one of the strategies the designers adopted to communicate this interpretation in product form. The curve thus became a sign of turkishness and tradition. (Figures 2a and 2b provide sample sketches.)

11 Here, I follow Barthes’s analysis of “italianity” in a pasta ad. Roland Barthes, “Rhetoric of the Image,” in *Image, Music, Text*, ed. and trans. Stephen Heath (New York: Hill and Wang, 1977), 32–51.

12 Penny Sparke, *Consultant Design: The History and Practice of the Designer in Industry* (London: Pembroke, 1981), 48; Viviana Narotzky, “Selling the Nation: Identity and Design in 1980s Catalonia,” *Design Issues* 25, no. 3 (Summer 2009): 62; for the case of Turkey, see Harun Kaygan, “Tasarımda Milli Kimliğin Varoluş Koşulları” [The Conditions of Existence of National Identity in Design], in 3. *Türkiye Tasarım Tarihi Topuluğu Konferansı: Kim(lik)lerin Tasarımı Bildiri Kitabı* [Turkish Design History Society Conference Proceedings: Designing Identities], ed. G. Baydar, F.D. Himam, G. Canol and T. Balçioğlu (Izmir: Izmir Economy University, 2008).

13 See Kaygan, “Electric Turkish Coffee Makers.”

For the designers, the signification was further consolidated by another semantic association: the association of the curve with the “tulip” shape. The tulip flower is considered evocative of the Ottoman era and is used, for instance, in the logo of Turkey’s Ministry of Culture and Tourism. Moreover, the term “tulip-shaped” is used in English to describe the traditional tea glasses in Turkey, which represent another nationally charged object.¹⁴ The glass was reinterpreted by a number of product designers in the early 2000s, one of whom even claimed that “maybe no form is as ‘Turkish’ as the tulip-shaped tea glass” and that it is “traditional and unchangeable,” as well as “oriental.”¹⁵

In my field work on electric coffee pots, explicit references were made to tulips in two instances, both worded in English. One of them was in the interview with the designer already cited, who recalled that in one of the three designs the team developed, the designers “wanted to use Turkish forms—I mean the *tulip*, I mean the tea glass” (italics originally spoken in English). In the second instance, the word “tulip” was scribbled on an electric coffee pot sketch in a way that suggested a name for the sketched product. The designer explained that it was a reference to the source of inspiration for a conspicuously floral sketch in which they “tried going more traditional.” The difficulties of verbally describing three-dimensional forms notwithstanding, both examples clearly demonstrate that for the designers, tulips are associated with turkishness and traditions, strengthening the connotation of the curve.

In the final analysis, the curve signifies Turkish traditions via semantic links with three concepts: traditional Turkish coffee pots, tulips, and tulip-shaped tea glasses. In some electric coffee pots, additional formal elements were used to complement this connotation. For example, formal references were made to the mosque by designing the cap in a way that alluded to the spherical form of the dome, and the *alem*—the brass crescent that adorns its top. Ornamentation was used similarly. In one case, where the designers worked on a floral motif inspired by books on Ottoman and Seljuk architecture, the designer narrated how they countered the client’s objections:

I said, in another product, say, a food processor, of course there wouldn’t be such a thing. But this one is called a “Turkish coffee pot.” Here I’d like to use [a motif] – though of course without exaggerating it.

The anxiety that references to tradition can be overdone was a typical concern I encountered in my field work. Another example of such anxiety is provided by the designer, Kunter Şekercioğlu. In an interview he gave elsewhere, he argued that the principal difficulty was to devise a form for the container that was “both contemporary and new, both historical and modern,” so that “people

14 For a study of the glass as a local tradition, see Şebnem Timur Ögüt, “Material Culture of Tea in Turkey: Transformations of Design Through Tradition, Modernity and Identity,” *The Design Journal* 12, no. 3 (2009): 339–63. The significance of the tulip-shaped tea glass as a national tradition became manifest in December 2014, when Turkish social media users raised strong objections to a U.S.-based whiskey producer’s claim of having developed “the perfect whiskey glass”—its description for a product that resembles the tulip-shaped tea glass. The producer responded to the reactions by adding the phrase, “a Turkish design,” to the product description on its website. Cardinal Spirits, “The Perfect Whiskey Glass,” cardinalspirits.com/market/whiskey-glasses (accessed June 1, 2015).

15 Erdem Akan, “Tasarımın İzini Süren Dergi,” [The Magazine that Tracks Design] *Art+Decor* 140 (November 2004), 64.

won't say that we just put the same old coffee pot on a pedestal."¹⁶ In both cases described, the connotation that the product is traditional has to be moderated so that it is still perceived as a contemporary, even progressive product.

Understanding the Curve (Curve as Affordance)

All in all, the curve can be read as a sign of Turkish traditions, bestowing a traditional character on the product, with its reference to both coffee pots and tulips—but in moderation, to distinguish electric coffee pots from their traditional analogues. Although such a semiological approach to the curve is useful in producing an itinerary of the most relevant formal references, it hardly provides a complete account of form giving; neither is it sufficient for comprehending the full significance of the curve for the design process. One designer explained why he turned to traditional coffee pots for inspiration:

It was out of respect! This product is 600 years old. And it has ended up with such forms as a result of several centuries of experience. We cook [the coffee] on the brazier, we cook it slowly. It needs to be frothy. They've discovered that, in order for [the coffee] to be frothy, and to preserve the heat, [the pot] requires a narrowing neck. So it's not only because it's a visual element. [...] It's out of respect for the coffee pot typology, which is both functional and visual-perceptual, hardened, and set in the cultural DNA. I'm required to share that.

The designer's exposition is in line with the general perception of the electric Turkish coffee pot projects as national projects, as described in the previous section—especially because it implies a claim to the cultural ownership of the coffee-making practice. What is more important for our understanding of form giving is the argument that the coffee pot—and with it the curve—has a history of its own through the course of which it has emerged as bound up with the practice of coffee making. The curve has evolved with and as a response to the requirements of the coffee-making process; therefore, it is not a mere formal element, a curve signifying turkishness, but a functional element the efficacy of which is justified by its history.

This perspective is what led the designers to do extensive research—literature reviews, field trips, and interviews—to comprehend the practice of Turkish coffee making in its historical context, including the specific ways in which the characteristics of traditional coffee pots tie in with that practice. For instance, in the previous quotation, the narrowing neck is argued to be a requirement for good froth development. In other interviews, designers similarly explained to me that (1) the large base found in

16 Quoted in Özgür Kayhan, "Yeni Ürün Geliştirme Sürecinde Tasarım İş Tanımı: Türkiye'deki Uygulamaların İrdelenmesi," [Design Brief in New Product Development Process: An Analysis of Practices in Turkey] (MSc Thesis, Istanbul: Istanbul Technical University), 162.

traditional coffee pots makes collecting heat more efficient, especially because they are traditionally used on embers; (2) the wider mouth provides better control of the froth once it starts to rise; and (3) the beak makes pouring the coffee without killing the froth possible. Understood as such, the curve is not even a functional element by itself; rather, it is a composition of smaller formal elements, each of which is defined via its correspondence with a particular practical application. In effect, what the designers describe is how the coffee pot embodies the traditions as a series of “affordances,” through which it “affords” the traditional way in which Turkish coffee is prepared.¹⁷

The term “affordance” was coined by psychologist James J. Gibson, who argued that animals, human or otherwise, perceive what their environment offers them as action potentials, such as when a cave affords hiding. Each such complementarity between an animal (user) and its environment (product) is called an “affordance.” Related to but irreducible to the physical properties of products, such as weight or dimensions, affordances are always defined in user- and context-specific terms so that they are purely relational: A coffee pot affords coffee-making only to a user who has both the necessary ingredients and the know-how. Studies have underlined the significance of the term for theorizing the opportunities provided and the limits imposed by the material environment—especially for design practice, which by definition involves the deliberate management of what a product affords to its users.¹⁸

What the designers observed and isolated in their research and analysis are affordances in this sense. However, in this case, the affordances of the curve correspond not to value-neutral action potentials, but to the practical requirements of a nationally charged, traditional practice, the veneration (“it’s out of respect”) and preservation (“I’m required to share that”) of which are presented as the designers’ responsibilities.

Note that the designers’ reading of affordances is radically different from their use of connotations. In looking for affordances, they attributed causality and intention to the forms they analyzed, thus discovering what these forms are “meant to” afford. This example illustrates what anthropologist Alfred Gell called “abduction of agency” in his study of art objects. Abduction, put simply, is an inference whereby a tentative explanation in the form of a general rule, is entertained in response to a curious observation: When we see smoke, we “abduce” that there is a fire. In art, Gell argues that what the object indexes—what it makes us abduce—is agency, typically the agency of its makers.¹⁹ Similarly, in their analysis of the traditional coffee pots, the designers were discovering an agency—the agency of cultural evolution—behind the curve. The designer quoted previously continues:

17 Analogues to this practice of reading the affordances of objects and reassembling them into new designs have been formulated as design methods; see, e.g., John Chris Jones, “Method 5.6: Functional Innovation,” in *Design Methods: Seeds of Human Futures*, 2nd ed. (London: John Wiley & Sons, 1992), 331–40.

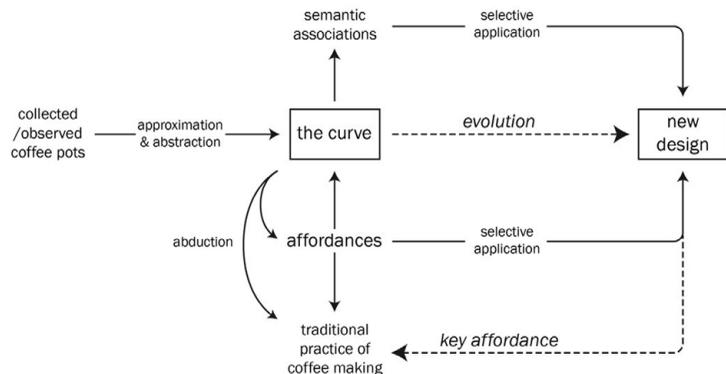
18 James J. Gibson, *The Ecological Approach to Visual Perception* (New York: Psychology Press, 1986); Alan Costall, “Socializing Affordances,” *Theory and Psychology* 5, no. 4 (1995), 466–67; Tom Fisher, “What We Touch, Touches Us: Materials, Affects, and Affordances,” *Design Issues* 20, no. 4 (Autumn 2004): 20–31; Fallan, “De-scribing Design,” 64; cf. Donald Norman, *The Psychology of Everyday Things* (New York: Basic Books, 1988), 81–86.

19 Alfred Gell, *Art and Agency: An Anthropological Theory* (Oxford: Clarendon Press, 1998), 14–16.

[The coffee pot] lives on with the new technology, adapting to today's conditions. Once there was no stainless steel, only copper. There was no rivet and they attached the wooden handle in a different way. And so on, step by step.... [...] What would happen if it [coffee pot] were renewed by today's technology, the way it's requested from me, and it became cordless, electric, or whatever? [...] It was this sort of a search.

Adapted to new technologies, the affordances ensure the perpetuation of the original traditional practice by making the designs align with the evolution of coffee-making so far. Whether the new form affords cooking and serving coffee in the traditional way thus assumes a degree of primacy in design research and in the subsequent form-giving practices. Reproducing the curve in the final design is to guarantee that the affordances, and through them the traditions, persist.

Figure 3
Form giving as material-semiotic process.



Constructing the Curve (Curve as Mediator)

To summarize, while developing a form-giving response to the design briefs they were assigned, the designers not only gathered inventories of symbolic references, but also abduced a series of practical requirements embodied by the traditional coffee pot form. These requirements seem more crucial to the extent that they enabled the designers—discursively as well as practically via form giving—to align their designs, and themselves, with the evolution of coffee pots. Ultimately, these inventories and requirements were selectively assembled as final designs (see the process as a diagram in Figure 3).

My analysis so far depicts a view of form-giving as a material-semiotic practice of assembling heterogeneous connections around the product form. One last set of relationships missing from the current picture are those among the actors involved in the design process. The data I have presented already refer to

such negotiations where designs were subject to objection, persuasion, and compromise. These relationships need to be better integrated into the analysis.

Much work in STS has aimed to highlight the significance of negotiation within technology development processes. Researchers begin with the premise that neither technological changes nor changes in the social world have teleological characters, but both are matters of conflicting interests between diverse parties. The fate of a technology is decided through the interrelations of these actors (e.g., corporations, professionals, social groups, as well as non-humans, such as animals and technical parts), through the course of which not only the technology in question but also the actors themselves take shape.²⁰

Early actor–network studies offer an elaborate vocabulary that describes such processes. Projects, described as “actor-worlds,” start with “problematization,” in which actors interpret the project in their own terms by assigning to every other actor distinct characters (e.g., needs, objectives, competences) and roles. In the later steps of “interessement” and “enrolment,” actors then strive to make their problematizations more real and stable. For this purpose, they use a wide range of approaches, from coercion to seduction, to make the other actors comply with their predefined characters (via interessement) and roles (via enrolment)—or in ANT terms, to “translate” the other actors into new entities that fit in with the project.²¹ Using actor–network terminology, the designers’ arguments I have highlighted show how the curve emerges as a distinct entity—with its own history, related semantic associations, and affordances—as part of their problematization of the project. Furthermore, the curve assumed a significant role as an “obligatory point of passage” for all actors, and for the project at large.²² The analysis so far provides clues as to how it played that role with respect to two actors: designers and coffee. Only by reproducing the curve in the final design and thus making sure that traditions persist can the designers become bearers of traditions; and only by being cooked in a curved coffee pot can the coffee particles transform into sufficiently frothy Turkish coffee. To see the ways in which other actors in the project were similarly translated through their relationship with the curve, we are required to focus on the various struggles and compromises around the electric coffee pots, and especially the curve.

According to the interviews, the most significant drawback of reproducing the curve was in its manufacturing. Mass producing a metal container that narrows in the middle requires complex metal spinning processes, resulting in high costs and inconsistent quality, and even forcing one client to replace its manufacturing subcontractors twice. So unless the designers could convince the executives and engineers of the merits of the curve, they had to

20 Wiebe E. Bijker and John Law, *Shaping Technology/Building Society*, 1–14. For applications of this argument, see the case study of an electric car in Michel Callon, “The Sociology of an Actor-Network: The Case of the Electric Vehicle,” in *Mapping the Dynamics of Science and Technology*, ed. Michel Callon (London: MacMillan, 1986), 19–34; and a transit system in Bruno Latour, *Aramis*.

21 A fourth step is “mobilization,” which I do not include in the scope of this paper, since the question of representation is not significantly relevant to this case study. Michel Callon, “Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fisherman of the St. Brieuc Bay,” in *Power, Action and Belief: A New Sociology of Knowledge?*, ed. John Law (London: Routledge & Kegan Paul, 1986), 196–223; Latour, *Reassembling the Social*, 106–08.

22 Callon, “Some Elements,” 198–200; see also John Law and Michel Callon, “The Life and Death of an Aircraft: A Network Analysis of Technical Change,” in *Shaping Technology/Building Society*, 31–34.

compromise and moderate their designs. Having worked in a project that was finalized with a very reduced curve, one designer argued that the designs with more pronounced curves were offered by brands that could sell their products for higher prices. During another project in which the designers were able to persuade their client, they did so by arguing that a product that is difficult to manufacture is equally difficult to copy. Highlighting the illegal copying of products as a problem for companies investing in design, the curve was offered by the designers as a guarantee against copyright infringement.

These stories exemplify how the curve obtains different meanings for different actors, so that it is no longer in line with the perspective of the designers who brought it to the table in the first place. The curve is not merely the means by which designers realize their visions for the product; it mediates those visions, transforming and translating them, as well as the actors who come into contact with it.²³ The designer's standpoint advocating for the historical permanence of the curve is now irrelevant. What the curve provides for the clients instead is competitive advantage and prestige. In the same way that the curve turns designers into bearers of national traditions, it turns client firms into brands that offer more expensive, "designed" products that inspire illegal copies.

In other cases, the advantage of the curve was found in product differentiation. Designers repeatedly set their designs against kettles and other coffee makers—one gave the example of Philips Senseo, another mentioned espresso makers—so that they stand out for the consumer as "Turkish coffee" makers. Similarly, another designer wanted his design to be perceived by the consumers in the first instance as a regular yet attractive coffee pot. Only when the consumers notice the electric cord would they understand that it is actually electric: "So that they never see it as 'I can make Nescafé in this, I can heat baby food, I can boil water,' and so on." Don Slater calls this material-semiotic process by which new markets are "cut out of" the existing market structure, "decoupage."²⁴ Even though the electric coffee pot is structurally similar to kettles and categorically comparable to coffee makers, the curve—with its semantic and material connections—is used to create and maintain the coffee pot as a separate market, a separate product with a specific function. Only the electric coffee pot is for making Turkish coffee; nothing else is.

Once again, contestations are unavoidable. Regulations insist that, because the electric coffee pot is categorically a product that boils water, it has to have a lid. This regulation stands, regardless of the fact that Turkish coffee is normally made in an open pot, so that the froth can be watched as it rises. The project teams were displeased, on the grounds that providing a lid would misdirect the user and so impair the decoupage; yet they had to design accordingly.

23 Latour, *Reassembling the Social*, 71.

24 Don Slater, "Markets, Materiality and the 'New Economy,'" in *Market Relations and the Competitive Processes*, ed. Stan Metcalfe and Alan Warde (Manchester: Manchester University Press, 2002), 101. As Slater notes elsewhere, "marketing strategy is not—in the first instance—a matter of competition within market structures; rather, it is a matter of competition over the structure of markets." Don Slater, "Capturing Markets from the Economists," in *Cultural Economy: Cultural Analysis and Commercial Life*, ed. Paul du Gay and Michael Pryke (London: Sage, 2002), 68.

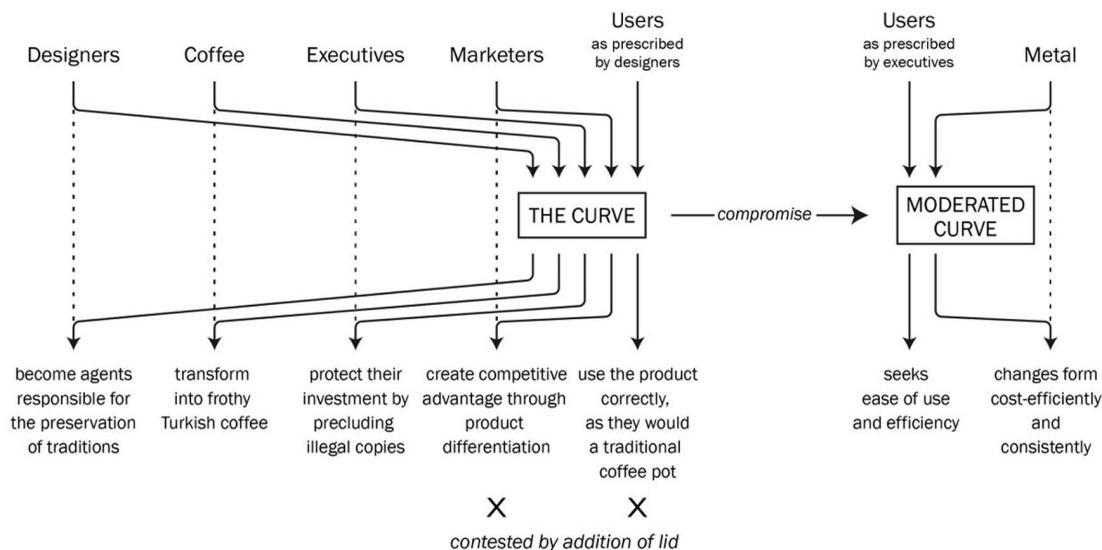


Figure 4
The curve as an obligatory point of passage.*

Finally, as our discussions imply, actors typically hold different ideas about who the users are and how they are to perceive the product and use it correctly. These ideas are translated into the final design through what Madeleine Akrich has termed a “script.”²⁵ An object’s script is similar to a film script in that it refers to the users, and to the ways and contexts in which they will use the product. An extensive literature exists on how design practices shape their users via scripts, as well as how these scripts are creatively contested by the users.²⁶ Here, I restrict my analysis to indicating that imagined users are part of the problematizations and ensuing negotiations that give final form to designs.

As script, the curve tries to confine users to coffee making and preclude other boiling functions, through a variety of prescriptions; meanwhile, regulations have a competing conception of the user as requiring protection from splashing hot water. I encountered an alternate view when one executive asked, “Why should they give you money if they can do it [the same way] on the stove? Or if they spend the same time making the coffee?” Picturing the user as seeking ease of use and efficiency had consequences on form-giving, especially on the curve. One of these consequences was that the symbolic references to traditions had to be moderated, as exemplified in the previous sections of the analysis: Users are described as wanting not merely another traditional coffee pot, but a modern electric appliance that eases their chores in the kitchen. A second consequence was that the container size had to be optimized for electric coffee pots to cook more coffee, and more quickly, compared to a regular coffee pot on the stove. As a result, the designs became significantly larger—even negatively affecting the aesthetics of the curve, according to the designers of one project.

*Adapted from a similar diagram by Michel Callon, “Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fisherman of the St. Brieuc Bay,” in *Power, Action and Belief: A New Sociology of Knowledge?* ed. John Law (London: Routledge & Kegan Paul, 1986), 207.

25 Madeline Akrich, “The De-scription of Technical Objects,” in *Shaping Technology/Building Society*, 205–24.

26 For reviews, see Nelly Oudshoorn and Trevor Pinch, “Introduction,” *How Users Matter: the Co-Construction of Users and Technology*, ed. Nelly Oudshoorn and Trevor Pinch (Cambridge, MA: The MIT Press, 2003), 7–11; and Kjetil Fallan, *Design History: Understanding Theory and Method* (Oxford: Berg, 2010), 78–89.

The curve was thus posited as an obligatory point of passage for each actor: responsibility for designers, requirement for coffee, investment for executives, recognizability for marketers, ease of use for users. Each of the actors was shaped via the curve, given a character and objective with regard to the electric coffee pot projects (see Figure 4). In turn, these translations were what shaped the curve. Beyond the designers' original formulation of the curve as national culture, for the various actors and in different negotiations, it appeared as a sketch, a curved metal piece, a copyrighted design, a market, an object of use—a diversity of materialities.²⁷

In conclusion, the curve as initially conceived and argued for by the designers was hardly thwarted. Designers did manage to produce a stable network made up of heterogeneous entities (signs of turkishness, affordances of tradition, a range of actors, imagined users, spun metal sheets, etc.) so that the curve became a typological principle today for electric Turkish coffee pots. On the other hand, we might just as feasibly argue that the curve actually preceded the designers' interpretations, and not the other way around. Then the curve is not a final product, a culmination of the designers' efforts, but an idea and a guiding principle of design that has mediated the design process from beginning to end and, in the meantime, has assumed a large variety of forms—from idea to sketch to bent metal to market to product—and has shaped the other entities that collected around it. In making this claim, I do not suggest that traditions such as curved containers are a force of history.²⁸ On the contrary, the association of the curve with traditions is built and sustained within only a part of the design process. My claim is that, from a relational point of view, the curve itself is more central than the designers who seemingly give shape and purpose to it. Material-semiotic analysis has to “follow the form” closely if it is to reveal the complexity of the form-giving processes that would otherwise be reduced to such truisms as tradition or evolution.

For a Material Semiotics of Form Giving

What, then, are the general conclusions that can be drawn regarding what form is and what constitutes form-giving as a material-semiotic practice? In conclusion, I clarify what form is not, and therefore how the approach proposed and demonstrated in this paper differs from existing approaches to the analysis of design and form giving.

First, designed forms cannot be reduced to signs. Although the analyses of the curve's semantic and material qualities have been separated here for the sake of argumentation, they are hardly separable from the point of view of the actors—especially the designers, who build symbolic associations and material relations

27 John Law and Annemarie Mol, “Notes on Materiality and Sociality,” *The Sociological Review* 43, no. 2 (1995): 274–94.

28 Eric Hobsbawm, “Introduction: Inventing Traditions,” in *The Invention of Tradition*, ed. Eric Hobsbawm and Terence Ranger (Cambridge: Cambridge University Press, 1983), 1–14.

indiscriminately both in their studio practice and in the meetings and correspondences punctuating their process. In other words, form-giving practice works not within two distinct networks of relationships—one semantic and one material—but in one material-semiotic network. Form does function as a sign, but only in certain parts of a designer's practice—for example, when it is studied on a moodboard. Tools of semiology and product semantics are valuable, but using them should not lead to disregarding the questions of material effects or subsuming them under semiosis.

Second, form is not a mere tool that designers use to convince others, but is something that also shapes the designers themselves: who they are, what they want to do, their design approaches and tools. Heuristic views of form-giving, which see it as a series of strategies to exploit opportunities within external constraints, cannot grasp the multiple and changing character of designed forms within design processes, and how the actors, including the designers themselves, adopt multiple and changing positions throughout the process. Design indeed has a rhetorical sense, insofar as designers' enunciations and form-giving practices aim for persuasiveness toward clients and users.²⁹ However, rhetoric is to be understood as part of the larger set of dynamics that make up a design project.

Most importantly, form is not one thing across form-giving. Designed forms can appear in multiple materialities—as doodles on sketchbooks or products on shelves—and can be more or less durable through time or, conversely, more or less open to contestation and change. Within these modalities, they can also function in multiple ways: They can function as signs, for example, of turkishness or as part of a brand identity. They can function as affordances, providing practical possibilities for users—for example, by affording correct use. They can prescribe certain behaviors and preclude others when considered and shaped as scripts for future users. They can contribute to decoupage, delimiting product function, meaning, and value within market structures. Or they can become data when used in analysis, either within the design process or in research, such as this analysis. The full array of the transformations and effects of designed forms within design and product development projects can only be accounted for through the rich ethnographic detail offered by in-depth analyses of form-giving. Once again, we can only “follow the form.”

29 Richard Buchanan, “Declaration by Design: Rhetoric, Argument, and Demonstration in Design Practice,” *Design Issues* 2, no. 1 (Spring 1985): 4–22.

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