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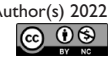

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Notes on Structuralism: Introduction

Sunil Manghani
University of Southampton

Abstract

This commentary introduces a section of the journal titled 'Notes on Structuralism'. It centres around two interviews. The first, from 1987, is with the structural anthropologist Mary Douglas (who speaks on various aspects of her work, including on *Purity and Danger*). The second is an interview with Roland Barthes, who, speaking in 1965, was at the height of his structuralist phase. The interview focuses upon the structural analysis of narrative and prefigures the well-known volume of *Communications* on the subject. The interviews are supplemented with introductions and: a commentary on Barthes' interview by Jonathan Culler, who contextualizes the development of Barthes' thinking around narrative (as it leads to the publication of *S/Z*), The article concludes with reflections on structuralism with regards to contemporary practices of big data, AI and large language models.

Keywords

AI statistical turn, Roland Barthes, Jonathan Culler, Mary Douglas, Claude Lévi-Strauss, narrative, structuralism

This section, 'Notes on Structuralism', centres around two previously unpublished interviews. While both were conducted decades ago (and subsequently mislaid), they are brought together here as an opportunity to reflect upon some of the aims and ambitions of structuralism. Structuralism was a field of inquiry and method that came to prominence in the 1950s and 1960s (Dosse, 1997a, 1997b), particularly in the French context through the work of the anthropologist Claude Lévi-Strauss (1908–2009). He brought to the fore a reading of the structural linguistics of Ferdinand de Saussure and Roman Jakobson (as well as the Russian formalists), which he applied to cultural contexts through his voluminous reading of myth and kinship from around the world. Lévi-Strauss is widely regarded as one of *the* most influential anthropologists, indeed arguably 'the most important figure in the history of anthropology and as the "ecumenical", "paradigmatic anthropologist" . . . of the second half of the 20th century' (Doja, 2006a:

Corresponding author: Sunil Manghani. Email: s.manghani@soton.ac.uk
TCS Online Forum: https://www.theoryculturesociety.org/

80). While he is not the subject of the interviews collated here, his influence is evident, having inspired not only a generation of structuralist anthropologists, but also a wide range of approaches to structural analysis across the humanities.

The first interview of this section is with the British anthropologist Dame Mary Douglas (1921–2007), who is best known for her writings on the role of symbolism in culture (Douglas, 1966, 1970, 1973), as well as her edited volume *Rules and Meanings*, which brought together key readings on the social construction of reality, and her later work concerned with topics of risk, economics and institutions (Douglas, 1986, 1992; Douglas and Ney, 1988; Douglas and Wildavsky, 1983). She is considered a notable proponent of structuralist analysis in anthropology (particularly with respect to comparative religion) and was also a keen reader of sociologists Émile Durkheim and Marcel Mauss (the latter an important influence for Lévi-Strauss). The second interview is with Roland Barthes (1915–80), which was conducted in the early 1960s at the height of his structuralist phase. Barthes is well known as a key figure in the development of the structural analysis and semiology of literature and popular culture, which he explored as contemporary 'mythologies' (Barthes, 2009 [1957]).

It is perhaps not immediately obvious to bring Douglas and Barthes together in this way. In part it has been accidental, though fortuitous, in that the two interviews happened to resurface at a similar time, having both languished in the back of a proverbial drawer. The interview with Mary Douglas was originally conducted in front of an audience in the Department of Religious Studies at Lancaster University in 1987, although the manuscript was not finalised until much later, in 1991. As noted by the interviewers, Mike Featherstone and Bryan Turner, Douglas went on to give many interviews in her lifetime, but these were mainly in the later period of her career. There were few interviews conducted at the time they met with her in the late 1980s. As they explain, however, their own interview was for all intents and purposes shelved. They felt Douglas was 'not completely comfortable being interviewed by two sociologists who pursued questions, for example, about the materiality of the body'. Yet, the main focus of the discussion on Douglas's *Purity and Danger* (1966) proved fertile ground, enabling her to open up on her views regarding (structuralist) classification systems, including that which falls out of classification. As is well-known, Douglas's references to 'dirt' in *Purity and Danger* led to a complex reading of rituals away from mere matters of hygiene and sanitation, and rather toward the symbolic. In her account, dirt comes to represent disorder in symbolic structures, which will pertain *in part* to matters of hygiene, but it is by no means the whole picture. From a structuralist perspective, Douglas demonstrates there are symbolic or cultural grounds upon which systems of meaning are maintained, and this principle (or *level* of meaning), she argues, can be seen across many cultural settings.

Given Douglas's interest in (bodily) pollution, impurity and dirt, and her methodological approach, it is hardly surprising that Featherstone and Turner were deeply interested. Not long after, they went on to edit *The Body* (Featherstone et al., 1991) and launched the journal *Body and Society* in 1995 (which focused on interests that had grown out of the work of *Theory, Culture & Society*, but which now warranted a dedicated journal). Douglas's concept of pollution and reading of ritual purity proved important contributions to anthropology. Through her work she promoted the need for comparative studies, not least to make better sense of understandings 'closer to home'

in comparison to 'primitive' rituals. Here the influence of Lévi-Strauss can be evinced, since his structuralist reading similarly looked towards invariances and universal ways of thinking. Like Lévi-Strauss (and Durkheim), Douglas argued that humans have a tendency to structure or schematise social objects and situations. Delamont (1989: 20) notes that the 'centrality of classification' in Douglas's work represents 'a source of personal stability', which in turn 'makes sense of many apparently bizarre customs reported from foreign parts. It also makes sense of many features of life in western industrialized societies'. Importantly, over time, systems of meaning evolve which, in turn, usher in greater confidence and experiences that further uphold structures. When something seems not to fit within a given structure, it tends to be excluded or ignored.

While this is only a brief description of Douglas's structural analysis, parallels can be made with the work of Pierre Bourdieu (1984, 1993), whereby 'symbolic capital', for example, is that which we tend not to *perceive* as capital per se, but which is nonetheless bound up in socially constructed schema that mediate the everyday. There are a number of points of connection between Douglas and Bourdieu. Both engaged (as various times) with a sociological study of religion, and both sustained a critical engagement with structuralism and an ethnographic interest in everyday 'practices'. However, in revisiting Douglas's work it is also possible to hear echoes with that of Barthes (2009 [1957]), not least his famous text of 1957, *Mythologies*, which set out an influential method to approach a symbolic (or second-order signification) account of the everyday and popular culture. Both Douglas and Barthes operate with the symbolic as a means to understand ideological and political constructions. Barthes' favoured term, *doxa* (by which he meant our common, normative and seemingly common-sense culture and representations) describes something similar to Douglas's analysis of how culture works to both subsume or exclude meanings and phenomena. Here, it is interesting to note that both Douglas and Barthes offer an approach to structuralism that allows for historical change. Barthes (2009 [1957]: 163), for example, sets out how myth 'lends itself to history', which Samoyault (2017: 253) characterizes as his important contribution (i.e. that he overcame the contrast between anthropology and history). Douglas, meanwhile, argues strongly in her interview against the limits of historical periodization and chronology, without undermining the value of historical *detail*.

However, it is important to stress in bringing the two interviews together the purpose is *not* to force comparisons and build undue alliance between the two thinkers. They each stand in their own stead – they worked in different fields, with different aims, and the register and style of their work are clearly distinct. As Wuthnow et al. (1984: 78) suggest, for Douglas, 'the theoretical underpinnings of her approach to culture remain more in the background. She is less consciously concerned with defending a metatheoretical approach than with deriving "middle level" observations about the ordinary components of culture'. This might be said to contrast with Roland Barthes, and yet there are arguably three notable areas of connection, or at least resonance. First and foremost, and of direct significance for this section, they both openly aligned themselves with structuralist approaches, and both drew explicit influence from the work of Lévi-Strauss (a point each make in the respective interviews).

In Barthes' case, from the letters he exchanged with Lévi-Strauss, it is evident he looked up to the anthropologist, yet it was not an entirely reciprocal relationship (Barthes,

2019: 164–70; Samoyault, 2017: 231–66). Barthes distinguished himself from the binarism associated with Lévi-Strauss's brand of structuralism, and here arises a further point of connection with Mary Douglas. While adopting an approach to the structuring of experience through paired opposites (e.g. purity/dirt), Douglas did not accept that *all* classification systems worked in this way, and instead placed an emphasis upon transitional states.[1] These states, she would argue, represent danger, 'simply because transition is neither one state nor the next, it is undefinable' (Douglas, 1966: 97).

Wuthnow et al. (1984: 101) explain Douglas's framework with the example of dawn and dusk, which 'can be treated as in-between times, between the social worlds of day and night'. They continue, as follows:

> The experience of awe or ecstasy that is generated is a mild form of anomie, a loss of self that is not as traumatic as falling through larger cracks in social reality. At dawn and dusk people experience the break or crack between the socially constructed cosmologies of day and night, which are by definition discontinuous spheres. (Wuthnow et al., 1984: 101)

In her own words, and in reference to the work of van Gennep (1960), Douglas (1966) offers the metaphor of a corridor between rooms, suggesting society is 'as a house with rooms and corridors in which passage from one to another is dangerous' (p. 97). There is a physicality or materiality to this account, which is a feature of Douglas's anthropological perspective and acute interest in the everyday. Her account is not merely theoretical, but real: 'Not only is transition itself dangerous,' she writes, 'but also the rituals of segregation are the most dangerous phase of the rites' (Douglas, 1966: 97).

The transitional state and its intense significance within the cultural fabric of our lives is equally a preoccupation for Roland Barthes. It is evident in *Mythologies*, in his post-structuralist account of the *pleasure* of the text (Barthes, 1974, 1975), and of course as the subject of his penultimate course of lectures, *The Neutral* (Barthes, 2005). Barthes (2005: 7) refers to the Neutral as an 'in-between' state, which determinedly remains 'structural'. In keeping with the above reference to the *doxa*, one specific example he gives is of the notion of 'weariness', which is a state we can easily conjure, yet society has no way of codifying. He points out you can take time off work for mourning, yet not for weariness; mourning is accountable, society 'has always coded the duration of mourning' (Barthes, 2005: 17). Mary Douglas develops a similar point in her interview when considering the ways we codify pain. 'Apparently, our bodies are aching all the time,' she remarks, yet we control pain by only thinking about the certain pains that are labelled societally acceptable.

While Barthes does not necessarily refer to in-between states as 'dangerous' (to borrow Douglas's term), he refers to notions of intensity and refusal. The Neutral, he writes, 'doesn't refer to "impressions" of grayness, of "neutrality", of indifference. The Neutral . . . can refer to intense, strong, unprecedented states. "To outplay the paradigm" is an ardent, burning activity' (2005: 7). Similar to the in-between spaces of corridors, as the *connectors* or even the formations of significations, there emerges an ethics of the Neutral (Manghani, 2020a, 2020b), which Barthes refers to as a *transposing* of the structural:

> Transposed to the 'ethical' level: injunctions addressed by the world to 'choose', to produce meaning, to enter conflicts, to 'take responsibility,' etc. → temptation to suspend, to thwart, to elude the paradigm, its menacing pressure, its arrogance → to exempt meaning → this polymorphous field of paradigm, of conflict avoidance = the Neutral. (Barthes, 2005: 7)

Both Douglas and Barthes draw our attention to critical sites of practice *through* their structuralist readings of everyday culture. Relations of power vis-à-vis the structures of the everyday, of the quotidian, make for an important point of connection. Douglas's work refers to 'a world of ordinary symbols, rituals, objects and activities, all of which dramatize the construction of social life' (Wuthnow et al., 1984: 77). It is her 'concern for the concrete, the mundane' that arguably 'requires a somewhat different approach to understand and appreciate. It is pitched at a relatively low level of abstraction, depends heavily on induction, and is defended on the basis of revealing examples rather than philosophical argument' (p. 78).

Conversely, Barthes is more typically referred to as a theorist, implying a higher level of abstraction. Yet, as Culler (2015) reminds us, his way into language is always attuned to the everyday. His interest in the haiku, for example, and the 'novelistic', as an 'imagined project of notation without plot, theme or character', is nonetheless of the everyday (as fleeting mediation of the real), and similarly his highly popular yet fragmentary text, *A Lover's Discourse* (Barthes, 1990), reveals to us 'everyday affect and its figures'. In deconstructing the lover's discourse, 'attention to every detail in a narrative generates an account of how notations that do not contribute to plot, character or theme still have a semiotic function, signifying "we are the real." That is, we are the everyday' (Culler, 2015). The point is made more tangibly with Culler's anecdote when meeting with Barthes:

> When I was a graduate student at Oxford, Barthes came to give a lecture and since I had met him I was deputed to show him around. Well, I had carefully planned a visit through the most historic and architecturally interesting colleges and the most beautiful college gardens, but it swiftly became apparent that he was bored, so I asked him if there was anything in particular that he would like to see, and he said he had heard that the English had very strange electrical plugs, very different from those in France (which was certainly true) and was there somewhere we could go to see them. So I took him to Woolworths and we spent a happy three-quarters of an-hour looking at *de menus objets de la vie quotidienne anglaise* – exotic objects of everyday English life. Barthes' conception of the real is a nice antidote to the Lacanian conception of the real as traumatic kernel, and he did a great deal, if rather surreptitiously . . . to make the everyday an object of academic study. (Culler, 2015)

The interview with Roland Barthes in this section is on his structural analysis of narrative. On the surface, it would seem to represent Barthes as 'high theorist', rather than for his interest in everyday materiality, yet his repeated reference to an 'anthropologic logic' and overall proposal to focus on narrative at the 'anthropological level' can be kept in mind. Referred to as an improvised conversation, the dialogue was held with Paolo Fabbri in Florence in December 1965 with a discerning audience, including the likes of Algirdas Julien Greimas, Claude Bremond, Umberto Eco, Jules Gritti, Violette Morin,

Christian Metz and Tzvetan Todorov – all of whom contributed to issue 8 of *Communications* (École pratique des hautes études, Centre d'études des communications de masse), published in January 1966. Barthes' contribution to this issue of the journal was his highly regarded essay 'Introduction à l'analyse structural des récits' (the English translation is available in Barthes, 1977: 79–124). Given the timeline, he had obviously already prepared the article prior to the interview, but he extemporises with great clarity and concision. Indeed, the interview is excellent for anyone looking for an immediate introduction to the themes and ideas of the otherwise lengthy published essay.

The mid-1960s marks the apotheosis of Barthes' structuralist phase. *The Fashion System* (Barthes, 2010), which has been described as a laborious study, or even cruelly as '*the* most boring book ever written about fashion' (Moeran, 2004: 36), had been completed by 1963 (although not published until 1967). Barthes sets out different structures from within the 'general system' of fashion, which includes the 'plastic', referring to the photographed forms, lines, surfaces and colours of clothes (their relations being spatial), and the linguistic, made up of the relations between words and phrases of fashion discourse. These structures, he attempted to show, were *distinctive to fashion*, arguing, for example, that:

> . . . the structure of written clothing cannot be identified with the structure of a sentence; for if clothing coincided with discourse, changing a term in the discourse would suffice to alter, at the same time, the identity of the described clothing; but this is not the case. . . . Written clothing is carried by language, but also resists it, and is created by this interplay. So we are dealing with two original structures, albeit from more general systems, in the one case language, in the other the image. (Barthes, 2010: 4)

Following on from this study, in 'Introduction to the Structural Analysis of Narratives' (Barthes, 1977: 79–124), Barthes takes on the more ambitious subject matter of the 'narratives of the world', which in the opening line he declares as 'numberless'. Nonetheless, the *method* remains the same: to identify distinct 'levels of meaning' (cf. Benveniste, 1971), which, analogous to the specific levels of units of meaning identified by structural linguistics (i.e. phonetic, phonological, grammatical, contextual), aims to determine invariance across all narratives. Barthes sets out functions, actions, and narration as three main levels or structures, with each, importantly, understood as revealing relational properties. In both the published essay and when explaining his method in the interview, Barthes is explicit about the influence of Lévi-Strauss (1963), whose prior analysis of the structure of myth, Barthes notes, 'already indicated that the constituent units of mythical discourse (mythemes) acquire meaning only because they are grouped in bundles and because these bundles themselves combine together' (Barthes, 1977: 86).

As Jonathan Culler outlines with his contribution to this section, in 'Analyzing Narrative', the interview with Barthes is notable for its divergences from the essay that was eventually published in *Communications*, and also in relation to his 'most detailed analysis of narrative, *S/Z*, in 1970'. The latter text can be said to mark the shift to Barthes' post-structuralism (also with *The Pleasure of the Text*, originally published in 1973; Barthes, 1975), and which is distilled in two of his most well-known essays 'The Death of the Author' (1968) and 'From Work to Text' (1971) (Barthes, 1977: 142–8; 155–69 respectively). The genre of the interview or dialogue text was always problematic for

Barthes, and in almost all cases, being interviewed never meant for him to be 'thinking in dialogue', 'if by this we understand a genuine interaction where the subject, live and in real time, puts his initial assumptions at risk' (Lavers, 2003: 48). Following this observation it is perhaps reasonable to consider Fabbri's interview with Barthes as a 'text' in its own right. In other words, while the dialogue is undoubtedly free-flowing (and one might say revealing for that), Barthes can still be 'heard' to be presenting in a very specific manner. As such, as Sassatelli and Manghani point out in the preface to the interview, what is noticeably different from the published essay is Barthes' repeated allusion to the *anthropological* aim of analysis. Given the occasion of the talk, with the august group of scholars in attendance, he appears to adopt this term as means to uphold a collective, scientific field of enquiry. As Culler puts it, in this interview 'Barthes explicitly presents himself as working to advance a collective analytical project and speaks with anticipation of progress he hopes will follow'. The idea of a collective project, the fact it is based in empirical work, and which is concerned with the 'logic of human actions', is a particular feature of the interview, which begins to fall away, partially with the essay, and certainly in his subsequent writings.

Culler notes that 'in later years Barthes came to be admired especially for his refusal to be tied down to a system or a theory and his readiness to undertake instead diverse adventures of thought'. In part, then, it is not surprising that we see shifts occurring across these texts, yet, that said, the shift from the interview to the printed essay takes place over just a matter of months. In the published essay, Culler remarks, the references to Saussure are brief, while during the interview Barthes 'follows more explicitly the steps of Saussure'. In particular Barthes refers to the 'commutation test' common in linguistics for identifying distinct units of meaning (which involves methodically testing replacements of phonemes or words to see if they significantly alter meaning). The problem at the level of narrative is that large components (including, for example, whole chapters in a novel) can often be replaced or removed without altering the fundamental basis of the story. It is likely for this reason, Culler argues, that Barthes moves more swiftly in the published essay from his reference to Saussure to discussing '*functionality* as the criterion for the identification of narrative units', and which he also establishes as operating at different levels.

Both interview and essay focus on functionality, which allows Barthes to separate the most basic units of a story (its *nuclei* or 'cardinal functions') from expansions (in the interview) or catalysers (in the essay), which in turn lead to distinctions between form, distributional and integrational elements (the latter includes, for example, 'informants' and 'identifiers', which provide information about the status of characters or locations and time etc.). These 'units' of meaning become the building blocks upon which an analysis can be conducted. While both the interview and essay are similar in their argumentation in this respect, Culler notes an elision occurs by the time of the publication. The various classes of units in the essay are grouped together 'under the heading of *indices*'. The printed essay sets out a clear case for identifying the nuclei of a story, as different to its various expansions, yet what is left unclear is how to bridge between the microanalysis of the latter and the upper-level structures of the plot as a whole. The interview, as Culler suggests, does provide 'some guidance to these very general structures', yet in doing so 'makes more apparent the great gap between the discussion of local

nuclei and expansions and the characterization of the overall plot of the narrative'. Furthermore, by the time of the publication of *S/Z*, Barthes abandons any such attempt, and indeed he de-emphasises plot (it becomes just one of five codes) in favour of what Culler refers to as 'a general cultural model that enables readers to recognise elements'.

It is reasonable to suggest that Barthes' interview text reminds us of (and even further illuminates) the problems prone from a strictly structuralist account. Historically, as Culler notes, the shift that occurs in *S/Z* resonates with the more general shift that took place in narratology, whereby today the analysis of plot has very little role. Instead, more interest has been placed on narration (i.e. on point of view etc.) – yet, interestingly, this is neglected in *S/Z*. A gap emerges through these texts, which is in part historical, and in part conceptual, and which prompts Culler to wonder what might have happened had Barthes continued to explore some of the specific *levels* of analysis noted in the interview.

At this point, a more contemporary spin might be applied. Firstly, it is worth linking back to the earlier reference of *The Fashion System*, in which the principle of commutation is very much emphasised (with the 'structure' of clothing, the cross-matching of signs and forms, allowing for highly varied and complex constructions, yet which nonetheless remain all part of a system). In the interview, in thinking about the apparently numberless stories of the world, Barthes is still holding onto the idea of commutation as a means of analysis, but which seems to get thwarted by the sheer scale of the calculation. Yet, the references to 'numberless narratives', 'millions of narratives' and the 'infinite number of narratives' in the published essay, while echoed in the interview, are somewhat caveated, just slightly: 'we encounter a problem,' he suggests, 'in trying to impose some type of scientific order on a body of material which appears, *at first sight*, to be impossible to master'; and similarly he says '*we believe* that, faced with an infinite number of narratives, we can start from a working hypothesis much like that of linguistics' (emphasis added). In speech, in the form of the interview (and again considering the audience he is speaking to), Barthes appears to retain a little greater optimism for the collective (pragmatic) project underway:

> As things stand at present, what we can develop is only a *theory*, in the entirely unambitious, unpretentious sense that Americans use the word. In French – and in Italian too, I suppose – the word 'theory' is a majestic one, and a great deal of presumption would be required to claim to build that sort of theory. In the American sense, though, a theory of narrative just means that we're trying to figure out a hypothetical descriptive model. And this really is a necessary task, because, faced with this infinite number of narratives, if we're going to start seeing clearly, and find our way through, we need a hypothetical descriptive model.

However, rather than a 'descriptive' model, today we can see with the advances in AI and machine learning a powerful statistical or probabilistic model has emerged. The ability of machines to quickly parse through massive datasets of natural language usage (including 'millions' of stories) is quite staggering. The latest natural language processing models, for example, are trained on data in excess of 45 terabytes of text, which would take 500,000 lifetimes for a human to read. When put into perspective of the lone researcher, such as with Barthes working through just a few James Bond novels (while

nonetheless prospecting for a whole *theory* of narrative), or even with Lévi-Strauss reading thousands of myths, we can begin to imagine how high-performance computing provides far greater potential for structural analysis than perhaps was ever properly envisaged.

While commutation is now mere child's play in comparison to the multi-dimensional mathematics that underpin the deep learning of virtual neural networks, there is arguably an underlying principle at stake whereby the arbitrary nature of the sign (of structural linguistics) is as much a requirement for semiology as it is for the methods of predictive text and computer vision. There is a requirement for the types of categories, classifications and binary (or indeed transitional) logics, as we encounter with the work of both Douglas and Barthes, in all of today's sophisticated handling of big data and recognition of patterns.

The interview with Mary Douglas and the one with Roland Barthes give very clear, frank accounts of their respective projects, as well as highlighting connections to the broader intellectual contexts. In addition to their historical value, the texts are brought together as a means to prompt critical, contemporary reflections on the import of structuralism. The post-structuralist debates that emerged from the end of the 1960s, particularly with deconstructionism, have generally been understood to have over-written (and laid to rest) the prospects of structuralism. Jacques Derrida's paper at the international symposium, 'The Languages of Criticism and the Sciences of Man' (1966; see Macksey and Donato, 2007), under the title 'Structure, Sign, and Play in the Discourse of the Human Sciences' (Derrida, 2001: 351–70), and his later chapter 'The Violence of the Letter: From Lévi-Strauss to Rousseau' (in *Of Grammatology* (1976: 101–40)), are considered pivotal. Yet, it is worth noting the latter is a critique of Lévi-Strauss's *Tristes Tropiques* (1973), which was always an outlier from his more scholarly, structuralist texts, and arguably led to a long-standing misrepresentation of Lévi-Strauss's epistemological project (Doja, 2006b, 2006c, 2007). A case can be made to return to Lévi-Strauss's 'critique of history and colonialism, for his writings helped to make possible modernist ideas of deconstruction, reflexivity, and the transient nature of culture and identity' (Doja, 2007: 18); and that furthermore, despite the alleged metaphysical humanism, there is greater philosophical relevance underlying the structuralist arguments. In short, 'Lévi-Strauss' contribution to the deconstructionist paradigm itself, notably in relation to the wider projects engaged in *The Savage Mind* and *Totemism*, is ignored and largely overshadowed by explicitly literary and philosophical debates' (Doja, 2007: 19).

In considering the relations between Lévi-Strauss and Derrida, Johnson (1993, 2003) draws out a key point of connection (regarding cybernetics and biology), showing how we can continue to read the sign and 'code' today. As he remarks:

> . . . the minor epistemic shift occurring within the linguistic or structural paradigm, the shift during the 1960s from 'language' to 'writing', would be equally unintelligible if it were abstracted from the context of the post-war advances in the related fields of biology and cybernetic theory, a determining context to which Derrida himself refers. During the same period, contemporary to the rise of structuralism, some of the new insights provided by these disciplines were being given more general expression in the field of systems theory. (Johnson, 1993: 143)

Similarly, Johnson (2003) shows how in Lévi-Strauss's formative years informational models provide him with key concepts (e.g. message, code, noise, redundancy, entropy), and Lévi-Strauss himself is clear about this interest in biological structures. In his opening Massey Lecture of 1977, he makes explicit reference to genetic code and neurophysiology as a means to understand the relation of experience and mind, suggesting we 'have a solution in the *structure* of the nervous system, not in the structure of the mind or in experience, but somewhere between mind and experience in the way our nervous system is built and in the way it mediates between mind and experience' (Lévi-Strauss, 2001: 5, emphasis added). Perhaps at the time of making such remarks they might have seemed a little wild or bizarre, yet given what we know today of the advances in neuroscience, not only an understanding of the nervous system as an entity but the *totality of its connections*, or what is referred to as the 'connectome' (Seung, 2012), the philosophical, epistemological project of Lévi-Strauss and by extension structuralism more broadly bears further reflection. And not least as developments in neuroscience have developed directly through new techniques from machine learning and social computing to extract an understanding and reading of brain structure. There are reports, for example, of increasing correspondence between AI-powered large language models and human data. As Piantadosi and Hill (2022: 3) note, 'fMRI studies show that the semantic models that best account for the representational geometry and processing activity of human brains are precisely the neural networks of [large language networks] which are trained on the largest amounts of data'.

It is also worth saying, despite the importance of the post-structuralist critique of structuralism, there has been renewed (and interdisciplinary) interest in Lévi-Strauss, taking off around about the time he entered his nineties (Wiseman, 2009). His algebraic formulations found in his early work, notably the so-called 'canonical formula' presented in 'The Structural Study of Myth' (Lévi-Strauss, 1963), has led to recent studies in structural and morphodynamic epistemology (Doja et al., 2021; Maranda, 2001; Petitot, 2001, 2009; Santucci et al., 2020; Scubla, 2011). So far, this work has tended to interrogate the mathematics in its pure sense. Petitot (2001: 271), for example, refers to Lévi-Strauss's canonical expression as an 'intelligent formula', whereby it 'encodes in a compact algebraic form expressing general structuralist principles of conflict and stabilization an unpredictable universe of empirical diversity and complexity'. However, having worked through the mathematics and understood how such 'anthropologic algebra' might lead out to spatial determinants, matrices and vectors, the move towards AI and autonomous pattern recognition is really only a short step away. Following the 'statistical turn' in AI, in the 1990s, leading to powerful probabilistic modelling, enabling the more sophisticated natural language modelling, predication and text generation that we now use today (Crawford, 2021; Li, 2017), the last two decades have witnessed the emergence of a more confident data culture science. The recent rapid expansion of AI, machine learning and big data means that new, ever more powerful language and imaging models are being talked about in scientific circles and often in the popular press. These models raise key questions around how we determine 'units of analysis' (as evoked, albeit in more basic ways, in both interviews), how we structure our relational reading of data (cf. myth), and how we can even conceptualise thinking (or computation) as 'structuring'.

So, what of 'today'? Is it pertinent to talk of structuralism, albeit as a reconstructed enquiry? In 1971, Barthes (1977: 165–9) published his article 'Mythology Today', in which he reflected back upon his earlier contributions in semiology. It is a reflexive account of the linguistic turn; of the rise of the 'sign' as a defining concept. In this brief essay, he notes how a *myth* of his own mythology (or semiology) had emerged: 'it too has become in some sort mythical: any student can and does denounce . . . such and such a form . . . In other words, a mythological doxa has been created' (p. 166). In the context of this section, it might be said there has long been a sort of structuralist doxa, persisting since the 1970s. For Barthes, the point was that it was no longer enough to turn one's approach upon its head, but rather to 'change the object itself, to produce a new object' (p. 169). This can be read as a need to open out the context or the 'discourse' of the sign, in order to understand its passage and 'living form' (Burgin and Manghani, 2016: 82–4). Around the time of writing 'Mythology Today', Barthes also penned the aforementioned essays, 'Death of the Author' and 'From Work to Text'. In the latter, he offers an analogy of a shift from a 'Newtonian physics' of the sign to an Einsteinian, relational one. However, rather than see this purely as the clarion call of post-structuralism, as if sweeping aside the claims of structuralism, it was surely always more the spreading of structuralism's wings with the falling of dusk. What was not available then, however, is the kind of computational power and techniques that we are now beginning to use, and use in ubiquitous ways. At present, of course, there is a concentration of power around these technologies, with most of us only able to *consume* their 'benefits', such as when we log into apps, unlock our phones with our faces, and reach for words before we've even typed them. Foucault's (1970) *The Order of Things* can aid here with a longer view, whereby Saussurean semiology can be shown to have re-discovered the break from the 'resemblance' of the Renaissance to the rational, linguistic, cataloguing of the Classical era. Of course, as is documented, Foucault's relationship to structuralism (vis-à-vis hermeneutics) is complex and nuanced (Dreyfus and Rabinow, 1983), but, nonetheless, his remark that '[s]tructuralism is not a new method' but 'is the awakened and troubled consciousness of modern thought' is most apt in this context. The rise of new technologies, such as AI, machine learning and computer vision, and their underpinning mathematics, are not only new inventions, but represent a culmination of a long history of categorising, classifying, and calculating. Or, rather, our explorations (and many false starts) in AI (Wooldridge, 2020) continually lead us to question just how we think, which arguably brings us back to the project of structuralism as not merely the *analysis* of culture, but of the *explorations* of the structures of thought. Echoing Foucault, Lévi-Strauss writes:

> Structuralism, or whatever goes under that name, has been considered as something completely new and at the time revolutionary; this, I think, is doubly false. In the first place, even in the field of the humanities, it is not new at all; we can follow very well this trend of thought from the Renaissance to the nineteenth century and to the present time. But it is also wrong for another reason: what we call structuralism in the field of linguistics, or anthropology, or the like, is nothing other than a pale and faint imitation of what the 'hard sciences' . . . have been doing all the time. (Lévi-Strauss, 2001: 6–7)

Importantly, in looking back at the work of structural analysis (as we hear echoed in both Douglas and Barthes' respective discussions) there was always a *critical* project. Structuralism was not merely a method of description and modelling (as we see in the still fairly blunt contemporary uses of Big Data), but it offered a more searching enquiry of human culture and politics. Hence, an underlying question surfaces as to whether there is something of the previous structuralist project that remains operable yet different to contemporary systems and structures, and so might return with renewed critical value when thinking through our contemporary data-led lives.

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ORCID iD

Sunil Manghani https://orcid.org/0000-0001-6406-7456

Note

1. Reference to a binarism here is overstated to account for a general view, rather than as a direct reading of Lévi-Strauss. Indeed, it is worth noting that Lévi-Strauss's conception of myth (and by extension structuralism) 'came to owe almost nothing to the phonological model of language' and is arguably misrepresented as overly binary. His mathematical (and musical) interest in dynamic homology between meaningful elements 'allows apprehending the dynamism of structure through its transformations', which is not conceivable at the phonological level (Doja, 2006a: 86–7).

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Sunil Manghani is Professor of Theory, Practice & Critique at Winchester School of Art, University of Southampton (UK). He is the editor of *Journal of Visual Art Practice* and managing editor of *Theory, Culture & Society*, and is a fellow of the Alan Turing Institute. His books include *Image Studies* (2013), *Seeing Degree Zero* (2019), *India's Biennale Effect* (2016) and *Farewell to Visual Studies* (2015). He curated *Barthes/Burgin* at the John Hansard Gallery (2016), along with *Building an Art Biennale* (2018) and *Itinerant Objects* (2019) at Tate Exchange, Tate Modern.

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