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ORIGINAL RESEARCH

Language from the Ground Up: A Study of Homesign Communication

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Abstract Philosophers are often beholden to a picture of language as a largely static, well-defined structure which is handed over from generation to generation by an arduous process of learning: language, on this view, is something that we are given, and that we can make use of, but which we play no significant role in creating ourselves. This picture is often maintained in conjunction with the idea that several distinctively human cognitive capacities could only develop via the language acquisition process, as thus understood. This paper argues that the phenomenon of homesign, i.e., spontaneous gesture systems devised by deaf children for the purpose of communicating with their non-signing peers, can shed valuable empirical light on these convictions. Contrary to grounding assumptions of Wittgensteinian, Gricean, and Peircean approaches to language, homesign shows how core properties of language—including semantic properties—*can* be built from the ground up in idiosyncratic ways to serve the communicative needs of individuals.

1 The Curious Case of Mr. Ballard

In ch. IX of *Principles of Psychology*, William James raises the question of whether thought is possible without language. It is tempting to think that once this lofty topic is placed on the table, it could only be dismissed after a lengthy and complex philosophical treatment. Instead, James believes has an ace up his sleeve, namely the recently published testimony of one Mr. Melville Ballard. Mr. Ballard was deaf from infancy and received no sign language instruction until the age of 11. Yet as his testimony indicates, he nonetheless enjoyed a remarkably rich and reflective mental life even during his childhood years. On this basis, James swiftly concludes

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(1890: 266) that thought without language is indeed "perfectly possible,"[1] and moves on to more challenging matters.

While James is to be applauded for recognizing the relevance of empirical evidence to the question, his handling of this evidence is bound to strike us as naïve. For instance, even those of us who are sympathetic to James's conclusion may reasonably worry that Mr. Ballard's testimony involves a substantial degree of confabulation, deploying the linguistic resources he would only acquire in adolescence to structure and make sense of fleeting childhood memories.

This essay will push from a different angle: James speaks as a matter of course about the relation between "thought" and "language," as though these concepts stood in need of no further clarification. By the standards of contemporary philosophical and psychological analysis, however, "thought" is clearly a crude category, glossing over the fact that (human) cognition is a complex patchwork of more or less independent capacities. As is well known, for instance, cognitive impairments might manifest in specific domains (such as visuospatial reasoning), leaving other domains (e.g., episodic memory) quite intact.

But likewise, "language" is also a category in need of further refinement. This becomes apparent when we probe more deeply into James's characterization of Mr. Ballard as *languageless*. Presumably, what James had in mind is simply that the young Mr. Ballard had no access to a conventional public language. But meanwhile, James fails to remark on the fact that Ballard's testimony is replete with locutions such as "my mother once told me …" and "I asked one of my brothers …" Evidently, then, he was able to partake in rather complex forms of communicative interaction. How can this be possible in the absence of language? The answer: young Mr. Ballard was what we now know as a *homesigner*.

"Homesign" is the name given to the spontaneous gesture systems devised by linguistically isolated deaf children for the purpose of communicating with their non-signing peers. The homesign phenomenon has received vanishingly little philosophical attention, despite the fact that it appears to raise a number of deep and significant questions concerning language, thought, and communication. For instance, philosophers appear particularly beholden to a picture of language as a largely static, well-defined structure which is handed over from generation to generation by an arduous process of learning. Language, then, is something that we are given, and that we can make use of, but which we play no significant role in creating ourselves. This picture is often maintained in conjunction with the idea that several distinctively human cognitive capacities can only develop via the language acquisition process, as thus understood.[2] Homesign offers a different perspective: core properties of language *can* be built from the ground up in idiosyncratic ways to serve the communicative needs of individuals. Moreover, the relevant cognitive abilities must evidently develop independently of the acquisition of a public language, since homesigners possess them, even though they have never been exposed to one.

[1] James (1892) revisits the question, adding further testimony in support of the conclusion.

[2] See Burge (2010), Part II, for extensive documentation—and rebuttal—of the philosophical idea that even so fundamental a capacity as perception might depend on acquired language.

The phenomenon of homesign, I will show, offers conceptual and empirical tools that allow us to reframe James's question in a more adequate manner: what is the role of public conventional language in supporting the development of a familiar range of (evidently) distinctive human cognitive capacities? The answer that emerges will be strikingly at odds with what is asserted or implied by most twentieth century philosophers of language: what is necessary for the development of these capacities is not, as these philosophers appear to suppose, the acquisition of a public conventional language per se; rather, it is participation in the sorts of structured social interactions that typically accompany the acquisition of language.

Minimally, a more refined approach to language will want to distinguish, in a way that James does not, between dimensions such as phonology, grammar (morphology and syntax), and semantics. The pioneering empirical studies of homesign have largely followed the dominant trend in linguistics in focusing on grammar, with the aim of showing that grammatical structure can arise spontaneously even without prior exposure to a conventional language model. By contrast, philosophy of language, at least since its modern consolidation after Frege, has been predominantly focused on the semantic dimension. Since my overall aim is to put homesign on the philosophical agenda, my argument in the following will largely adopt this latter focus. After describing the phenomenon in more detail in Sect. 2, I turn, accordingly, to seeing how homesign can be used to challenge central assumptions underlying, respectively, the Wittgensteinian tradition (Sect. 3), the Gricean tradition (Sect. 4), and finally the recently revived Peircean tradition (Sect. 5): briefly, homesign challenges the Wittgensteinian idea that the bare ability to mean something by some word ***w*** requires access to a pre-established norm governing the use of that word; it challenges the Gricean idea that we might draw the distinction between semantics and pragmatics (at least to a first approximation) in terms of those aspects of communication which are governed by convention and those which are not; finally, it challenges the Peircean idea that the distinctively human capacity for symbolic representation could only develop via the acquisition of a public language. Nonetheless, homesign *is* importantly different from regular public languages. In Sect. 6, I offer an account of the dynamics of homesign communication which stresses *situational* rather than *cognitive* constraints. Many of the evident limitations and peculiarities of homesign can be traced back to the fact that it, unlike a regular public language, constitutes a largely *non-bidirectional* communicative system: interlocutors' ability to comprehend what the children are communicating far outstrips their ability to reciprocate in kind. Finally, Sect. 7 reflects on the significance of structured social interactions in supporting cognitive and linguistic development: homesign shows that it is a mistake—though a widespread mistake—to assume that entry-tickets into such structured social interactions can only be gained via the acquisition of a public conventional language.

2 Introducing Homesign

Approximately 90 % of deaf children are born to hearing parents. In some such cases, parents or caregivers are unable or unwilling to acquire sign language, as a result of which the child might grow up with no exposure to a conventional public

language. As is illustrated by the case of Mr. Ballard, however, these children can partially compensate for this otherwise devastating deprivation by devising idiosyncratic gesture systems of their own.

Although the existence of the homesign phenomenon has been noted for some time, it was not extensively studied until the 1970s.[3] The decisive breakthrough came with the demonstration, mostly due to Susan Goldin-Meadow and associates, that these sign systems display significant degrees of internal complexity. While all normally developing children deploy various forms of expressive gestures, as do adults to supplement spoken conversation, homesign is importantly different in that it exhibits syntactic and morphological structure. That is, a string of homesign gestures is not simply a sequence of unrelated segments, but is structured in much the same way as are the spoken utterances of children with normal linguistic development. For instance, there is evidence of consistent functional word ordering: in contrast to the *act–patient–recipient* ordering familiar from English ("put the hat on your head"), homesigners robustly prefer the ordering *patient–act–recipient* ("the hat put on your head").[4] Further, each segmented sign is not an unanalyzable primitive, but can be modified according to its role in the sentential or phrasal construction, in ways analogous to how words in conventional languages are modified to mark them as adjectives, plurals, and so on. For instance, in a three-argument predicate such as a ditransitive construction, a gesture which is ordinarily executed in "neutral" (chest-height) sign space can be displaced in the direction of a particular object in order to mark it as occupying the patient role in the construction.[5] Importantly, homesign has also been shown to display recursion and hierarchical structure.[6] These discoveries make clear that homesign is not merely an instance of generic expressive or communicative behavior of the sort that we observe in a wide range of animal species,[7] but recognizably exhibits important hallmarks of human language.[8]

[3] If this seems surprising, we should bear in mind that it was not until the publication of Stokoe (1960) that even ASL and similar conventionalized sign systems would come to be recognized as full-blown natural languages. See Goldin-Meadow and Brentari (2015) for an account of this development. For accounts of the cultural history of the deaf communities, up to and including the recognition of sign as language, see Sacks (1989) and Ree (1999).

[4] See Goldin-Meadow (2003).

[5] Goldin-Meadow (2003: 111–112).

[6] Goldin-Meadow (1982, 2002) and Hunsicker and Goldin-Meadow (2013).

[7] See Bar-On (2013a, b) for a recent development of such a notion of expressive communication.

[8] Thus, it should come as no surprise that one persistent source of interest in homesign concerns its status as evidence for innate grammatical abilities (see, e.g., Chomsky 1988: 39; Jackendoff 1995: 129–130). After all, these children have never been functionally exposed to any language, so it would seem that whatever grammatical abilities they evince must be innate. This conclusion is controversial, however: for useful contrasting perspectives, see Botha (2007), Tomasello (2008) and Amstrong and Wilcox (2011). Goldin-Meadow (2003: ch. 18) sensibly takes a more cautious approach to the question, substituting a notion of innateness in terms of genetic transmission for one of innateness in terms of *developmental resilience*: resilient properties of language are simply those that manifest under adverse and favorable developmental conditions alike. Thus, rudimentary grammatical abilities are certainly innate, but not necessarily in any way that would satisfy more expansive genetic accounts of language, such as one might associate with Chomsky (1986) or Pinker (1994).

3 Homesign and the Wittgensteinian Tradition: Meaning and Governance by Norms

From a philosophical point of view, however, an equally pressing question concerns the semantic dimension of homesign. And so we can ask, quite independently of evidence for recursion and morphosyntactic structure, whether homesign gestures have *meanings*—whether they carry semantic content—in anything like the way that English words do.

Right off the bat, one might certainly wonder why anyone should be prepared to *doubt* that individual homesign gestures can be meaningful in the relevant way. Certainly, those who have studied the phenomenon in detail appear to have no hesitation in ascribing meanings to them. Yet anyone with a passing knowledge of the course of twentieth century philosophy of language will quickly recognize that a semantic account of homesign must be prepared to combat deeply entrenched views about what kind of phenomenon lexical semantics is and what sorts of cognitive capacities manifest themselves in the meaningful use of words.

The most prominent of such views is perhaps the idea, typically traced back to the later Wittgenstein,[9] that an individual could not succeed in meaning anything by any word ***w*** unless there existed a public norm which determined the correct use of that word in his or her language community. The crucial point here is that such norms provide standards with reference to which utterances can be described as correct or incorrect. Without appeal to such norms, no sense can be made of the idea of an utterance having any determinate content at all. Dummett (1978: 424–425) makes the point as follows:

> an idiolect is not a language; there is no describing any individual's employment of his words without account being taken of his willingness to subordinate his use to that generally agreed as correct.

Similarly, Wright (1981: 220) argues that "[n]one of us unilaterally can make sense of the idea of correct employment of language save by reference to the authority of securable communal assent on the matter." Finally, Wiggins (1997: 522) holds that an utterance cannot count as saying anything at all unless "one's performance [qualifies] by a certain public standard as a saying thus or so, the standard being the standard that is determined by the language in question."[10]

Homesign poses a direct, empirically motivated challenge to these familiar and widely endorsed claims. Homesign gestures appear, at least on the face of it, to be meaningful. Yet these gestures are the child's own spontaneous creations, devised in the process of attempting, though often failing, to communicate. There are no

[9] Wittgenstein (1953).

[10] See Kripke (1982) and McDowell (1984) for further variations on the theme. We might also note that while this line of reasoning clearly draws inspiration from what is often referred to as Wittgenstein's private language argument, most subsequent developments of the theme are not directed against private languages per se (a language which only the speaker could understand), but rather against what is sometimes termed a "solitary language," i.e., a language which only one person ever spoke in fact. (On this, see, e.g., Goldfarb 1985: 480). Homesign would clearly not constitute a private language, but it might well constitute a solitary language.

antecedent public standards for determining the correct use of a particular gesture, no "securable communal assent on the matter," no usage "generally agreed as correct." As a first stab, then—and subject to refinement as we go along—we might summarize the case for a semantic account of homesign as follows:

First, it can scarcely be doubted that homesign belongs in the broad ambit of *human communicative phenomena*. While the degree and reliability of communication will vary with the patience and ingenuity of the interlocutors, these children would hardly persist in gesturing if they received no positive indication of interlocutor comprehension.

Second, whether or not homesign systems qualify as "languages" in a more exacting sense, the evidence of grammatical structure also strongly suggests that they should be classified as *linguistic phenomena*, or as manifestations of a distinctively linguistic capacity. After all, grammatical structure is widely presumed to be a unique hallmark of human language.

Accordingly, *qua* rudimentary system of linguistic communication, it would seem that granting semantic properties to individual homesign gestures is simply a matter of inference to the best explanation. There is just no better way to explain the communicative function of homesign than by conceding that individual homesign gestures are possessed of meaning, however much that meaning fails to fall under any sort of pre-existing public norm. Thus, the mere existence of homesign should at least serve to place the burden of proof firmly on the side of those who hold that the ability to mean something by a word requires conformity with (or at any rate, access to) previously established linguistic norms.

4 Homesign and the Gricean Tradition: The Semantics and Pragmatics of Communication

If this brief argument-sketch suffices to sideline central assumptions within the Wittgensteinian tradition, it is nevertheless open to objection from another front, as can be seen if we turn to a more Grice-inspired approach to meaning and communication.[11] In particular, it might be argued that the inference from homesign gestures' *use in communication* to their *possessing semantic content* will appear compelling only if we are operating with a naïve and impoverished conception of the pragmatic domain (as contrasted with the semantic domain), and of the role of pragmatics in linguistic communication.

Relevance Theory,[12] one important strand within the broadly Gricean tradition, is well suited to articulating this point. Briefly, Relevance Theorists hold that normal communication runs along two parallel and complementary tracks: one track is based on linguistic encoding and decoding (think of this as the convention-governed "semantic" track) while the other is based on "ostension and inference" (think of

[11] Grice (1967, 1969, 1975).

[12] Sperber and Wilson (1986) and Carston (2002). I should add that what I am reconstructing here is a possible appropriation of Relevance Theory to the problem at hand. I am not supposing that prominent Relevance Theorists would necessarily approve of the appropriation, or, for that matter, be inclined to resist a semantic account of homesign.

this as the "pragmatic" track). Among Relevance Theory's most exciting and controversial tenets is the claim that philosophers and linguists have tended to severely overestimate the significance of semantics in the overall picture of human communication: in reality, the semantic component rarely does more than to facilitate the ostensive-inferential communication, which is where most of the action really occurs. For instance:

> The coded communication process is not autonomous: it is subservient to the inferential process. The inferential process is autonomous: it functions essentially the same way whether or not combined with coded communication (though in the absence of coded communication, performances are generally poorer). The coded communication is of course linguistic: acoustic (or graphic) signals are used to communicate semantic representations. The semantic representations recovered by decoding are useful only as a source of hypotheses and evidence for the second communication process, the inferential one. (Sperber and Wilson 1986: 176)[13]

These ideas suggest the following objection: why should we not say simply that homesign is a form of human communication where the coded (semantic) part is nil, and where *all* the work is done along the ostensive-inferential track?

At first blush, it is hard to deny that the Relevance Theoretic notion of ostensive-inferential communication seems made to measure for the homesign scenario. Quite literally, these children are ostending while their interlocutors are inferring. Moreover, there can be little doubt that their interlocutors, when they understand at all, do so by drawing on abilities that we would, in ordinary cases, classify as part of their pragmatic competence, not their semantic competence. Finally, and as we shall see in more detail in Sect. 6, the children appear to be shaping their communicative strategies on pragmatic grounds, with a view to what can be relatively easily understood by their interlocutors.

Thus, there appears to be pragmatics going on at both ends of the homesign communicative process, in production and in comprehension. Accordingly, it seems that a strong argument could be made that any data one might cite in favor of a homesign *semantics* could equally well be claimed as evidence for a homesign *pragmatics*. What homesign would show, then, is not that there can be semantics in the absence of a public conventional language, but that pragmatics can play a much more dominant role in communication than philosophers are normally brought to recognize. In particular, homesign offers a vivid illustration of the central Relevance Theoretic claim that ostensive-inferential processes are autonomous and can serve the ends of communication even in the absence of a conventional code.

But note that Relevance Theory is specifically tailored to analyzing pathways of communication in the context of established conventional linguistic practices (e.g., English, Elfdalian). And conceivably, the distinction between coded and ostensive-inferential communication lines up tolerably well, for the purpose of analysis, with a distinction between semantics and pragmatics in such contexts. What is missing, however, is a reason to assume that these distinctions align in a similar fashion also

[13] See also Carston (2002: 46–47).

outside such contexts, so that, in the absence of semantic conventions, pragmatics is all there is. Why not say instead that homesigners can "encode" semantic representations even in ostensive gestures whose uptake requires inferential activity on the part of the interlocutor? Indeed, it seems we would be well advised to retain a distinction between semantics and pragmatics also in the case of homesign: for instance, it would be rash to rule out by stipulation the possible use of irony or hyperbole in homesign (say, through the exaggerated emphasis of certain visual features in an iconic gesture). As standard analyses have it, these would be pragmatic aspects of communicated content that are tagged on to the semantic aspects of the same. If so, we ought to make room for the idea that homesign gestures can have meanings, even if they are not conventional meanings.

I believe this line of questioning points to a real tension within the Gricean tradition. On the one hand, Grice himself warned specifically against the view that "meaning is essentially connected with the idea of convention" (1982: 298), holding instead that conventions must ultimately be analyzed in terms of the more fundamental notion of speaker meaning (e.g., 1969: 100–101). As will emerge below, I think homesign provides strong empirical evidence for the viability of this "reductivist" (regrettably so-called) line of thought.[14]

Nonetheless, it seems that this explanatory program has been roundly rejected even among philosophers whose approach has been shaped, in one way or another, by Grice's thinking. Michael Devitt (2013: 87), for instance, proposes to distinguish semantics and pragmatics in terms of "the representational properties of an utterance that arise simply from the speaker's exploitation of a [conventional] linguistic system" versus "any other properties that may constitute the speaker's 'message'." According to Devitt, these claims form part of "a traditional view, stemming from Grice" (ibid.). Similarly, Scott Soames (2008: 461) holds that "linguistic meaning is a kind of least common denominator. It is information conventionally associated with expressions that must be mastered by a rational agent […] in order to communicate with other members of the linguistic community." This point, he helpfully adds, "is not heuristic, but constitutive. This is what meaning is" (ibid.). For a plainer statement yet, we may turn to John Perry (1997: 587): "[m]eaning is what is fixed by the conventions for the use of expressions that we learn when we learn a language."

Taken at face value, however, these claims would rule out by fiat a semantic analysis of homesign gestures: homesign gestures fall under Gricean conventions no more than they fall under Wittgensteinian norms. Admittedly, while there is broad agreement in the literature that we may draw the semantics-pragmatics boundary in terms of the distinction between conventional and non-conventional aspects of communication, there is little agreement about how to analyze the notion of convention itself. Or rather, there is broad agreement that the pioneering account offered by Lewis (1969) is too strong,[15] but little agreement as to how to weaken the notion in ways that might still do the relevant work for us. But even on the weakest

[14] Even so, it is not a trivial matter how homesigners can come to be in the cognitive position to form the appropriately reflexive communicative intentions underlying speaker meaning in the first place. I will return to this issue in my final section.

[15] E.g., Schiffer (1972), Lewis (1975) and Burge (1975).

notions currently on the market, homesign will come out as non-conventional. For instance, the naturalized account of convention offered by Ruth Millikan requires a "weight of precedent" (Millikan 1998: 166–168) which might be altogether absent in the case of homesign. And even the extremely diluted notion suggested by Lepore and Ludwig (2005: 282), according to which there might be a convention whenever speaker and hearer agree on what the speaker's utterance was intended to communicate, will be too strong: a homesigner can go a long time without finding a person who fully comprehends what she is attempting to convey with a particular gesture.[16] But even in these cases, we would hardly want to rule out that their gestures had meanings waiting to be grasped, and that what the interlocutor did grasp, eventually, was those very meanings. If so, we cannot simply stipulate, with Perry and others, that "meaning is what is fixed by the conventions for the use of expressions that we learn when we learn a language."

It is true, of course, that as communication gathers pace, these gestures may be apt to undergo a *process of conventionalization*.[17] This might even point toward a crucial feature of human communication. But can this process be described in such a way as to make sense of the claim that, until the conventions take hold, individual gestures have no meanings?

Luckily, this is a matter on which we are now in a position to shed some empirical light. Consider, accordingly, the emergence of the Nicaraguan Sign Language ("Idioma de Signos Nicaragüense," henceforth "ISN"): until the late 1970s, Nicaragua had no public schools for the education of the deaf. As a result, most deaf children born to hearing parents would not be exposed to any conventional sign language. Accordingly, their communicative repertoires would be restricted to homesign. However, starting in 1977, and gaining more ground following the Sandinista revolution in 1979, deaf children in Nicaragua were brought together in a first effort to school them. The instructional language in the school was standard Spanish, taught by means of lip reading supplemented with finger spelling. As it turned out, these children remained largely impervious to these efforts at teaching them Spanish. However, and to everyone's great surprise, they quickly developed a language of their own, namely the ISN. Over a very short span of time, the first cohort of school children would develop a rudimentary language. The next year's cohort would then build on the previous year's linguistic innovations, and every new cohort in turn would churn out steadily more complex language, until after about 10–15 years, no one can doubt anymore that what we have is a full-blown natural language, albeit one developed by children with severely impaired linguistic abilities caused by congenital or early childhood deafness. As has been pointed out, the ISN might constitute the first case where linguists have actually been present to witness the birth of an entirely new language.[18]

[16] For details, see Carrigan and Coppola (2012).

[17] Though see Carrigan and Coppola (2012) for an account of the limitations on this process.

[18] For overviews of this development, see Senghas (1995), Kegl et al. (1999), Morford and Kegl (2000) and Brentari and Coppola (2012). Although the ISN may be unique in how rapidly it emerged, it is not alone among spontaneously developed sign languages: a recently discovered case is the Al-Sayyid Bedouin Sign Language in Israel's Negev Desert (see, e.g., Sandler et al. 2005; Senghas 2005, Fox 2007). Indeed, it is overwhelmingly likely that these processes will be set in motion whenever deaf people are allowed to congregate on their own terms for an appreciable amount of time.

A key point for our present purposes is that many homesign gestures are still recognizable in the lexicon of ISN. That is, while the vocabulary of ISN would expand considerably from year to year, as a result of more children being brought into the mix, the children did not simply devise a new lexicon from scratch as they instituted the new language (nor, probably, would it have been possible for them to do so). Instead, they naturally and unreflectively carried over the gesture forms that were already present in the language pool, many of which can ultimately be traced back to the homesign repertoire of a single child.

It can scarcely be doubted that today, at least, these gestures carry meanings just like English words do. And in analyzing the transition from homesign to ISN, it is natural to focus on the process of conventionalization: these gestures are now part of the lexicon of a conventional public language. But what, then, is the contribution of conventionalization to meaning? In particular, should we take the Gricean mainstream at face value and hold that, outside the context of a conventional practice, there can be no meaning? To my mind, this would attribute to the process of conventionalization an altogether mysterious power. There is, I believe, no cogent account of what conventionalization could contribute to meaning which would support the view that homesign gestures have no meaning prior to their conventionalization. At best, conventionalization involves settling on a code to govern our mutual linguistic transactions *henceforth*; it implies nothing about whether the same signs had meaning *hitherto*. On the contrary, the intuitive conclusion would be that they had meanings, only not conventional meanings.

The effects of conventionalization are clearly visible, for instance, on the articulatory dimension of gestural activity. Specifically, conventionalization involves streamlining the gestures in various ways by compressing the sign space. Certain symmetrical (two-handed) gestures will be converted to one-handed gestures, freeing the other hand for other tasks. Gestures might be moved from center to side if their execution would occlude parts of the face (such as the eyes) which have important supportive roles to play in more developed sign systems.[19] But none of these processes have any obvious bearing on the semantic dimension of homesign. Instead, conventionalization appears to take meanings as inputs; what it accomplishes, up to a limit, is greater economy and assuredness of communicative means, not meaning as such.

The sensible thing to say, then, is that what gets conventionalized in these processes is the meaning that the gestures already had, meanings that stem ultimately from the communicative intentions of individuals. In fact, I can think of no better source of support for the original Gricean idea that conventional meaning must ultimately be analyzed in terms of speaker meaning. As one recent commentator puts it (Kemmerling 2013: 96), what is crucial for Grice is that linguistic conventions "do not create meaning out of sheer meaninglessness" but rather "standardize an independently available sort of meaning," i.e., speaker meaning.

[19] I here draw on Tomaszewski (2006), a case study of an emerging peer-group pidgin among Polish homesigners. See also Emmorey (2002: 321–322) and Richie et al. (2014) for studies more specific to the Nicaraguan case.

This is not to deny that, in another sense, linguistic conventions do bring something new to the table, namely a shared set of lexical primitives and largely coordinated expectations regarding their meanings. This changes the psychology of communication in important ways, maybe to the point where we can now contrast, as many are wont to do, the "semantics" of conventional meaning with the "pragmatics" of speaker meaning.[20] But it does not follow that, outside of such a context, speaker meaning is all pragmatics and no semantics.

5 Homesign and the Peircean Tradition: Arbitrariness and Symbolicity

Perhaps, though, it would be prudent to state the conclusion of the previous section in conditional terms: *if* there is linguistic meaning in homesign, then that meaning is non-conventional. The qualification is important, for there is a different strand of argument—of earlier origins, but revived in recent years—which brings focus to bear on specific formal characteristics of the gestures themselves, quite apart from their role in communication. For an important hint, we may return briefly to William James and Mr. Ballard: for Ballard explicitly notes that even in his pre-linguistic years he was able to communicate with members of his family using "natural signs and pantomime" (James 1890: 266). Evidently, James does not believe that this concession threatens the description of Mr. Ballard as languageless. A plausible reason for this is that natural signs and pantomime lack the property of *arbitrariness*, which is generally taken to be a defining characteristic of linguistic signs.[21]

If the stakes were exhausted by this classificatory question, we might be well advised to let it lie. But philosophers have been remarkably quick to read a cognitive dimension into the matter. For instance, several philosophers of the French enlightenment believed that gestural language—a holistic and organic "language of action," according to Condillac—provided a glimpse into a different frame of mind altogether, perhaps a mind unfettered by the "chains of syntax" (borrowing a phrase from Diderot).[22] Kant, as one might expect, took a less sanguine stance: in his *Anthropology*, he argues that spoken words, precisely on account of their arbitrariness, are the "best means of designating concepts" (Kant 1798: 47). Accordingly, those whose deafness bars them from access to a spoken public language can never "arrive at real concepts" and can never develop more than an "analogue of reason" (ibid., 51, 47). These views may seem quaint by current standards, but discussions of similar

[20] Note the "maybe": see Davidson (1986) for a dissenting voice. I develop Davidson-inspired ideas about these and related issues in Begby (2013, 2014, 2016).

[21] The terminology is due to de Saussure (1916), but recognition of the phenomenon goes back at least to Plato's *Cratylus*. Unfortunately, however, the literature tends to conflate the properties of arbitrariness and conventionality. For illustration, consider Lyons (1977: 100): "Saussure (1916) made what he called the 'arbitrariness of the linguistic sign' (that is to say, the conventionality of the relationship between form and meaning) one of the most basic principles of his whole theory." But to treat the two notions as though they were identical is clearly mistaken; in fact they are not even co-extensional. Proof: from any arbitrary mapping of words to meanings (say, that of the English lexicon), we can generate another by random reassignment. If the first mapping was conventional, the second is clearly not. But it is no less arbitrary than the original mapping.

[22] See Ree (1999: ch. 13) for an account of these views and their historical background.

consequence are carried out even today. For instance, Jose Luis Bermudez (2003: 156) concludes, based mostly on an assessment of structural features of homesign gestures, that homesigners' cognitive and communicative achievements are not fundamentally different from those of trained bonobos and pygmy chimpanzees.[23]

Contemporary discussions relevant to this topic are usually cast in terms of C.S. Peirce's distinction between three kinds of signs—icons, indices, and symbols (Peirce 1902). In an influential appropriation of Peirce's ideas, Deacon (1997: 70) defines the terminology as follows:

> icons are mediated by a similarity between sign and object, indices are mediated by some physical or temporal connection between sign and object, and symbols are mediated by some formal or merely agreed-upon link irrespective of any physical characteristics of either sign or object.

Peircean symbols, then, are defined in terms of arbitrariness. Deacon goes on to argue that symbol use manifests a distinctively human cognitive capacity and is importantly tied up with language. Words have semantic properties precisely in virtue of being symbols: human language is a uniquely powerful cognitive and communicative medium in virtue of the fact that the representational function of its lexical primitives is unconstrained by their form.

Importantly, Peircean terminology also looms large in the empirical literature on homesign. Consider, for instance, the following classification of homesign gestures, due to Goldin-Meadow (2003: 68):

> The children [observed in the study] produced three types of gestures. *Deictic* gestures typically were pointing gestures that maintained a constant kinesic form in all contexts. These deictics were used predominantly to single out objects, people, places, and the like in the surroundings. In contrast, *characterizing* or *iconic* gestures were stylized pantomimes whose forms varied with the intended meaning of each gesture (e.g., a fist pounded in the air as someone was hammering; two hands flapping in the presence of a pet bird). Finally, *marker* or *modulator* gestures were head or hand gestures (e.g., nods and headshakes, two-handed "flips" in which the palm rotates from down to up) that are conventionalized in American culture and that the children used to affirm, negate, or convey doubt.

Setting aside the modulating gestures,[24] the remaining two forms map neatly on to the Peircean classification of icons and indices. Conspicuously absent is any

[23] Though I will not pursue the matter here, I wish to register that I have serious reservations about Bermudez's reading of the empirical literature on homesign, specifically regarding the evidence for syntactic and morphological structure. The main thrust of Bermudez's book, however, is that one class of crucially important and distinctively human cognitive abilities—metarepresentational abilities—could only develop through the acquisition of a conventional public language, and so must presumably remain unavailable to homesigners. On this specific point, I believe contrary evidence can be found, inter alia, in Butcher et al. (1991: 329).

[24] Crudely, they are not referential phenomena, in the sense that so captivates philosophical semanticists, but more like sentential operators ("yes," "no," "maybe"). Moreover, these may be among the relatively few conventionalized gestures that the children adopt from their social environment, and so fall outside the scope of the present argument.

mention of Peircean symbols. Drawing on Deacon's analysis, then, one might think to summarize Goldin-Meadow's classification in the following way: even though each child's gesture repertoire is idiosyncratic, their gestures remain bound to two kinds of forms; on the one hand, those that signify by pointing (indices, or deictics) and, on the other, those that signify by drawing pictures in the air (iconics). Syntax and morphology aside, then, what is going on in homesign is fundamentally different from what is going on in ordinary linguistic communication: the deictics can be accounted for in terms of directing the interlocutor's visual gaze toward particular objects in the shared environment, whereas the iconics belong in the ambit of pictorial rather than symbolic representation. These children, then, are pointing and they are drawing pictures in the air. But they are not *saying* anything; they are not *expressing propositions* in the way that speakers of conventional languages are.

This conclusion may also be supported by more general theoretical claims. For instance, Deacon writes (2011: 393–394): "Symbolic reference is a distinguishing feature of human language […]. Because of its arbitrary and conventional nature, symbolic reference must be acquired by learning." Clearly, homesign is not acquired by learning: for all that it may come to mimic the syntactic and morphological properties of language, then, one crucially important aspect must remain missing, namely the symbolic dimension. And it is in this dimension that we typically locate the semantic properties of a communicative system, to the extent that it has any.

As I will argue, however, such an analysis would be guilty of focusing too much on the outward *form* of homesign gestures, failing to consider the full reach of their use in real-time communication. Once we dig deeper into the empirical material, we will find that there is in fact ample evidence for significant degrees of arbitrariness in homesign. (As we shall see in Sect. 6 below, the separate questions of why there is not *more* arbitrariness, and why there should even be such a restriction on form in the first place, will turn out to have a natural and intuitive answer, though one with deep and interesting consequences.)

To begin, it is important to note that even full-blown conventional sign languages such as ASL make extensive use of deixis and iconicity.[25] This does not mean, however, that its individual gestures fall under Deacon's analysis, even in cases where their meaning can be traced to their form in fairly obvious ways. Specifically, the fact that signs are iconic in form does not mean that they are comprehended or processed as such by the signers who nonetheless make competent use of them.[26] A poignant illustration of this fact can be found even in the simplest of deictic gestures. It is well known that cognitively normal hearing children will sometimes commit pronoun reversal errors, i.e., they refer to themselves by "you" and to the hearer by "me" or "I."[27] In English, this phenomenon is conveniently explained by the fact that the word forms "you" and "me" are arbitrarily related to their meanings, and that children's early exposure to these words is typically in situations

[25] See Frishberg (1975).

[26] See, e.g., Tomasello (2008: 147).

[27] For an overview, see Dale and Crain-Thoreson (1993).

where "me" refers to the adult speaker while "you" refers to the child. It is striking, then, that deaf children acquiring ASL are also observed to commit pronoun reversal errors, despite the fact that the relevant gestures are, as one would think, transparently deictic—the gesture for "me" involves pointing to oneself and the gesture for "you" involves pointing to the hearer.[28]

This observation shows that even deictic gestures can function cognitively like arbitrary mappings of form and meaning just like words in conventional language do. But ASL gestures, however much they may retain deictic or iconic form, are part of a fully conventionalized system of communication which children must acquire rather than make up themselves. Can we find similar evidence for arbitrariness in homesign? Here it will be helpful to think of arbitrariness as a matter of degree. Let us consider iconic gestures first: a telling fact is that although homesigners are in some sense working with an analog representational medium, one that would in theory permit them to convey an indefinite degree of informational richness with each gesture,[29] they systematically refrain from exploiting such possibilities: for instance, rather than deploy specific gestures for grasping umbrellas, kite strings, or newspapers, a homesigner might settle for a generic grasping gesture to cover them all.[30] This gesture is, of course, iconic to the extent that it involves displaying a clenched fist. But it is also significantly arbitrary, in that it is deployed to generically represent a wide range of different possible grasping postures, including, importantly, postures that may not involve a clenching of the fist at all.

Next, let us turn to deictic gestures. Following the train of thought sketched above, it would be natural to assume that homesigners' deictic gestures are restricted to referring to concrete objects in the shared, perceptually accessible environment, as appears to be the case with deictic gestures used by pre-linguistic hearing children. Homesign gestures, however, are precisely not limited in this respect[31]: homesigners make extensive use of displaced reference, typically by way of deferred ostension. In such cases, they may be *indicating* an object in the immediate environment, but are nonetheless *referring* to another, non-present object.[32] For instance, a child may refer to her absent father by indicating the chair in which dad usually sits. This capacity for displaced reference is, as one might expect, delayed in homesigning children, but follows a normal developmental trajectory after its onset.[33]

More impressive, however, are instances of what I will call *double displacement*. The above example involved reference to a non-present object by way of a deictic gesture in actual space. Double displacement, by contrast, involves reference to a non-present object by way of combining deixis and iconicity in a projected space.

[28] See Petitto (1987).

[29] See Camp (2007: 156–157), for illuminating remarks on the informational richness of analog representation as contrasted with linguistic representation.

[30] Goldin-Meadow (2003: 87–89).

[31] See Tomasello (2008: 111–117).

[32] For studies of displaced reference in homesign, see Butcher et al. (1991) and Morford and Goldin-Meadow (1997).

[33] Goldin-Meadow (2003: 138).

Essentially, the child iconically represents a non-actual spatial framework, and then refers to an object by its would-be location in that projected space. Thus, a child may refer to her sled by a gesture indicating an imaginary wall space and a nail on that wall (indicated by hammering motion), this being the nail on which the sled usually hangs.[34] This is reference at two steps' displacement, no longer indexed to mutually salient objects in the shared environment. The sled is referred to by its location, while the location is referred to by iconically representing it in an imaginary space. It is a complex gesture, but one that may carry a simple meaning in context: *sled*.

I conclude that the Peircean tradition is wrong to hold that symbolic reference (and the associated cognitive capacities) could only be acquired via language learning. When we reach beyond the surface classification of gestures in terms of icons and indices, there turns out to be ample evidence for substantial degrees of arbitrariness in homesign communication.

6 Homesign Communication: A Collaborationist Model

This insight allows us to restructure our inquiry in an important way: the real question is not whether or how there can be arbitrariness in homesign, but why there is not more of it. There is, I believe, a relatively simple answer to this question, albeit one that will require us to revisit some fundamental assumptions about how a communicative system is structured. Here is how I propose to think about it: intimately tied up with the notion of arbitrariness is the property of *bidirectionality*.[35] A communicative system is bidirectional if there is a high degree of isomorphism between comprehension and production. In Steven Pinker's gloss (2003: 17), "if I can use a word I can understand it when someone else uses it, and vice versa." These two notions—arbitrariness and bidirectionality—can be usefully played against each other to produce the explanation we seek. For homesign typically remains a largely non-bidirectional communicative system: interlocutors will strive to comprehend as best as they can, but are, to a large extent, incapable of reciprocating in kind. In particular, most innovations are initiated by the child, and will be picked up by the interlocutor only, if at all, with a significant lag.

Bearing this in mind, a plausible explanation for the relative lack of arbitrariness in homesign will emphasize situational rather than cognitive factors. In particular, the restriction to deictic and iconic gesture forms need not reflect limitations on homesigners' capacity for symbolic representation—that is, an inability as such to introduce arbitrariness into their gesture systems. Instead, it may simply reflect the exigencies of the communicative situation they find themselves in. Thus, while there

[34] Goldin-Meadow (2003: 74).

[35] Another term is "interchangeability" (e.g., Hockett 1960). It is obviously tempting, though probably mistaken, to assume that bidirectionality and conventionality are simply two names for the same property. It is well known that comprehension and production are dissociable aspects of language, and many of us are quite capable of understanding utterances in languages that we do not speak. And so, we cannot rule out that homesign communication can at some point be described as conventional, even though it remains largely non-bidirectional.

is room for the introduction of significant arbitrariness in homesign systems, such arbitrariness must always be tempered by interlocutors' capacity to comprehend. Homesigning children certainly face many and serious cognitive challenges; but in this particular respect, we might say that the relevant cognitive limitations lie not on the side of the language-deprived child, but rather on the side of her interlocutors. As Goldin-Meadow observes (2003: 226), "the deaf children must keep their gestures grounded in the here-and-now and relatively transparent, or no one will understand them."

A useful way to model this situation can be found in Herbert Clark's collaborationist account of discourse.[36] Clark's experiments explore a dynamic conversational process where interlocutors, building on presumed common ground, will actively seek ways of boosting information flow between themselves by using familiar words with new, context-specific meanings. In so doing, they will carefully monitor for interlocutor comprehension and make the requisite adjustments where needed. But where there is no evidence of failure of comprehension, the new mode of expression will be added to the presumptive common ground for the next stage of discourse. Their usage thereby departs from what might be considered conventional in the language community at large.

Something similar goes on in homesign communication. Starting with simple deictic reference and iconic representation, homesigners can get increasingly adventurous with content over time, spurred on by evidence of interlocutor comprehension at earlier stages, to the point where a bystander (the "overhearer" rather than the "addressee" in Clark's vocabulary) may no longer apprehend any connection between a gesture's form and its representational function in this particular conversational context. Thus, homesigners will retain the old deictic and iconic gesture forms, just as Clark's discourse collaborators will continue to use the old word forms rather than invent new ones. And just as there is no restriction in theory on the degree to which Clark's subjects can depart from what is considered conventional in the language at large, so homesigners can introduce an arbitrary degree of arbitrariness into their gesture systems. The only thing that holds them back is their interlocutors' ability to comprehend.

There is one significant disanalogy, however, between homesign communication and Clarkian discourse collaboration. Clark's subjects start out with highly calibrated linguistic repertoires—they are all mature speakers of English. This is a vital part of their common ground. Moreover, while linguistic innovations will be initiated by one subject or the other, what is striking about Clark's experiments is how readily they are absorbed by the addressee, who is then prepared to use them in her own language output. In short, Clarkian discourse collaboration displays, when all goes well, a high degree of bidirectionality at all stages: the addressee will not just *comprehend* the new word senses proposed by the speaker, but thereby stands prepared to use them in her own linguistic *productions* as well.

By contrast, homesigners share no linguistic starting point with their caregivers. Further, the communicative process they are engaged in will likely never reach the same degree of bidirectionality. Interlocutors will use similar gesture forms, but

[36] See, e.g., Clark and Wilkes-Gibbs (1986) and Schober and Clark (1989).

with no grammatical structure and with few of the enhanced functions (e.g., arbitrariness, deferred ostension, double displacement) that the children put into theirs. It is, I contend, this failure of bidirectionality in the communicative situation they find themselves in, and not the childrens' lack of symbolic cognitive abilities, which limits their gesture repertoires to deictic and iconic forms, and which restricts the degree of arbitrariness they can introduce into their gesture systems.[37]

The constraining nature of such non-bidirectionality is best seen from what happens when these children are placed in the company of other children in a similar predicament.[38] Access to such a community offers the children the opportunity to explore the full potential of the linguistic and cognitive abilities which they already have, but which have hitherto been hampered by the largely non-bidirectional character of homesign communication. A striking instance of this is the case of the Nicaraguan Sign Language, in which, as we have seen, a full-blown natural language emerged rapidly and spontaneously among deaf children, incorporating elements from each child's homesign repertoire.

Thus, while bidirectionality is a prominent feature—possibly even a necessary feature—of human languages as we tend to think of them, it is not necessary for the emergence of linguistic meaning as such. The failure of bidirectionality certainly restricts the freedom that homesigning children have of investing their signs with arbitrary meanings. But this restriction is not cognitively grounded. Rather, its source remains, in an important sense, pragmatic: it is simply contingent on their need to communicate effectively with their caregivers. But even though pragmatic factors weigh heavily in shaping homesigners' communicative strategies, this should not, as I argued in Sect. 4 above, prejudice the conclusion that what is communicated, when all goes well, is entirely meaningful. Their utterances express structured propositions that we can affirm, negate, doubt, and convey to the next person, just as in ordinary linguistic interactions.

7 Final Remarks: Wittgenstein and Grice Revisited

By bringing the example of homesign into the discussion, we have been able to throw doubt on some long-standing philosophical convictions about language, meaning, and cognition. None of my arguments entail that homesigners do not face many and serious cognitive obstacles on account of their lack of access to a public conventional language. But they show, I believe, that none of these obstacles are *fundamental*, in the way that these philosophical convictions would entail. Consider, for instance, John McDowell, who argues (McDowell 1996: 184) that initiation into a public language at least "promises to make intelligible" what would otherwise go unexplained, namely how, "beginning as mere animals, human beings mature into being at home in the space of reasons." Clearly, homesigners do not remain "mere

[37] See, for instance, the recent study by Carrigan and Coppola (2012), which also reveals startling limitations to caregivers' *comprehension* of homesign gestures: ASL signers who have had no previous interactions with adult homesigning subjects are shown to have better comprehension of the subjects' gestures than do the subjects' own mothers.

[38] For a useful perspective, see Richie et al. (2014).

animals." In spite of their relative linguistic isolation, they can produce meaningful linguistic tokens; moreover, these productions are evidence of a distinctively human mode of cognition.

I want to end on a somewhat more conciliatory note, appropriating insights from Wittgenstein and Grice along the way. In the normal course of human development, our initiation into a conventional public language is no doubt an event of inestimable cognitive significance. It is tempting to focus on that event as marking the transition to a fully developed human mind. But even in the normal course of human cognitive development, language acquisition is only one element of a larger whole. For a fuller picture, we may reach for a different Wittgensteinian notion, namely that of a *language-game*, which attempts to capture how language is always embedded in but also serves to coordinate many of our joint practical activities. The sum of these activities Wittgenstein aptly names our *form of life*. Jointly, these concepts may cast useful light on the situation of homesigning children.

The cognitive abilities that manifest in homesign do not arise in a vacuum. Homesigning children are barred from conventional linguistic interaction, but are nonetheless socially integrated as far as their situation allows. In this regard, their situation is to be sharply distinguished, for instance, from that of so-called "feral children," i.e., children who have been barred from any meaningful social interaction, including linguistic interaction, from early stages. The devastating consequences of such isolation can hardly be overstated: these children are severely impaired both in linguistic and in more general cognitive abilities.

By contrast, homesigning children participate in the humdrum of structured activities within the family, in a way that may well be essential to their cognitive development. Although they have no access to the language that usually serves to coordinate these activities, they nonetheless have access to the structured social space that these activities open up. And it is within this social space that their cognitive development takes foothold. Their distinctive communicative strategies emerge in the effort to assert their presence in that social space. It is these activities—eating breakfast, playing football, going sledding—that provides the anchoring points of their linguistic and cognitive development.

Some early responders to Wittgenstein (e.g., Ayer 1954) asked whether a Robinson Crusoe who was stranded in isolation before acquiring a language might nevertheless develop a solitary language to categorize and keep track of objects in his environment. When the question is cast in the mode of *logical* possibility, the answer may well be 'yes.' But if we approach the question in terms of *psychological* possibility, drawing on empirical insights now available to us, the answer is plausibly, 'no.' What homesign suggests, however, is that this inability would be due not to the lack of access to a public language per se, as McDowell and others appear to believe, but rather to the lack of the kinds of social interactions which, in the normal case, accompany the acquisition of language. Even deprived of linguistic input, these interactions may aid an otherwise normal human subject in developing relevant cognitive capacities. Without these forms of interaction, cognitive development would be impaired in a much more fundamental way.

A similar point can be made about the Gricean heritage. Here, again, much focus has come to center on the role of linguistic conventions in mediating

communication. Homesigners are unable to access these conventions, however much their caregivers persist in speaking to them. But there is also a subtler strain to the Gricean story, one that brings to light the peculiarly reflexive structure of *communicative intentions* as such. And this structure may well be something that homesigners can retrieve from their caregivers' doomed attempts at speaking to them. That is, even though they cannot retrieve the specific content of any particular utterance, such acts might nonetheless alert them to the idea that one might "reach out"—make cognitive contact with others—by "encoding" one's states of mind in overt gestures. Thus, though they have no access to a public conventional language, the "software" on which the Gricean machinery ordinarily runs, they can nonetheless learn to manipulate this machinery by other means: learning to exploit these possibilities may well be essential to homesigners' cognitive development, not least in virtue of how it sensitizes them to the fact that others inhabit cognitive perspectives on the world distinct from their own.[39]

If these ideas are correct, what would be essential to cognitive and linguistic development is initiation into distinctively human forms of social interaction. What the homesign phenomenon shows, I argue, is that it is a mistake—though a widespread mistake—to assume that entry-tickets into such structured social interactions can only be gained via the acquisition of a public conventional language.

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[39] Though see Morgan and Kegl (2006), Pyers and Senghas (2009) and Gagne and Coppola (2014) for evidence suggesting that adult homesigners (and other language-delayed deaf subjects) may have impaired Theory of Mind-abilities, as shown by their difficulties in passing false belief tests. I have some reservations about the significance of these findings, and hope to address the issue in future work.

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