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Wundt and Bühler on Gestural Expression: From Psycho-Physical Mirroring to the Diacrisis

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1 Introduction

Contemporary research on gestures—as an empirical, interdisciplinary body of work involving anthropology, linguistics, philosophy, and psychology—can be characterised as having a couple of overarching traits. In the first place, it seems disposed toward a kind of empirical but also egalitarian prudence when it comes to the relation of gesture to those communication phenomena typically designated as having to do with language or speech. With increased attention being given to gestured (e.g. signed) languages as robust and wholly developed communicative systems in their own right (i.e. not merely derivative of other linguistic systems) has also come a reluctance to reduce gestural expression to verbal expression, or vice versa.¹ A second feature has to do with how gestures are delineated as ‘integral’ phenomena for scientific investigation in their own right, namely as fully fledged ‘partners’ if not self-sufficient

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components within any human communicative interaction, with the potential if not requirement to contribute just as much as that other much more well known and oft-studied partner, i.e. verbal language. That is, there is a strong focus today on the multi-modality of human communicative action, meaning, depending on one's point of view, co-speech gestures or co-gestured speech.

A simple example can illustrate this multimodal approach to gestures and language. Two people are bent over a bit of exposed dirt in a field, in discussion with each other about something they are excavating.² In so communicating, they might use words, but also their hands and the tools they are holding. For instance, the one person might complete a verbal phrase with a gesture with her right hand that traces an outline in the dirt. In response, the other might show an understanding of this tracing as the joint object of scrutiny by repeating the same pointing gesture and then take it as the point of departure for both her own gesture with her trowel and her further verbal communication.

Two things are noteworthy here. First, if by 'gesture' what is meant is body information provided in this example of communicative interaction, then only certain types of body information seem relevant to be being counted as gestures: namely, those that are express or intentional movements or configurations of the body, and not such things as one's rate of pulse or breathing, one's pallor, or one's twitches. This is nonetheless a fluid and pragmatic distinction. The lower threshold of gestural expressions may be quite hard to establish definitively, and this means certain 'body information', like one's stance or mien, may pass from one to the other side of this distinction, based on circumstances or other factors. Importantly, this fluidity does not seem to impinge upon how, as stressed by Kendon (2004, 11–13), humans seem adept at judging just which body information is relevant to the interaction as 'deliberate, expressive action', that is, as gestures.³

Second, in this example the persons involved are deploying different sorts of communicative 'resources', each with their own distinct features, yet which are nonetheless 'interdependent phenomena' (Streeck et al. 2011, 3). The first person's initial verbal phrase is a kind of directive whose object and content can only be understood via her gesture, and the interlocutor can immediately grasp this. Likewise, the second person's

own gesture in response will provide the referent for what she might go on to express verbally; indeed, one can easily imagine a case where whatever else she will say verbally will have already been expressed in her trowel gesture. The nature of the semantic and performative relationships between these distinct phenomena seems to run in both directions, from both gesture to speech and speech to gesture.

From the moment there is recognition of distinctive communicative resources enmeshed in human communicative interaction, there arise questions about the conditions, rules, or norms—broadly speaking, the ‘grammar’—under which this enmeshing occurs, in the co- or alternating performance of gesture and speech. For instance, the more someone would be committed to a kind of ‘semantic holism’, the more they would be required to come to a position on the underlying nature of the fundamental (inter)relation of gesture and speech which multimodality would denote. This is a fascinating but challenging question for contemporary philosophy and linguistics.⁴ In the latter, for one, one finds numerous careful attempts to identify and catalogue different sorts of multimodality in human communication, in different contexts and cultural situations, but a basic concern remains as to how best to arrive at hypotheses about why such phenomena of multimodality should take certain forms rather than others. Should such rules or conditions be understood primarily in terms of the regulating limitations and competencies of the human organism in its psychic and corporeal constitution? Are they strictly dictated by the material conditions of the human interaction,⁵ or by the historical customs and cultural conventions of a person’s upbringing and surroundings? Notably, proposals of this last sort would fall under a relativistic or even psychologistic position on the notion of the ‘grammar’ of multimodal communication.

By contrast, are such rules or conditions dictated by some sort of intrinsic, adequate link between whatever communicative motivation is going on ‘inside’ an individual and the external expressive (gestural and/or speech) utterance, as has been shown to be the case for Wittgenstein and Scheler in the context of emotional expressions (Mulligan 2012, 63)? Might the rules for combining gestural and verbal expression be thought of in terms of dependent, co-dependent, or independent parts and wholes, or in terms of how a certain *Meinen* or communicative intention

with a determinate content gets parsed across these different semiotic resources, while still meeting sufficiency conditions for expression in each mode and within the whole? May there be certain structural conditions imposed upon such multimodal communication (across gesture and verbal expression) whose necessity is independent of any specifically human communicative function or need? What might they be and how might one identify them?

In the ensuing, we aim to broach these questions by exploring how Wundt's and Bühler's respective theories of gestural expression would treat them. This will require some careful positioning of each figure with respect to this line of questioning. It does not go without saying that what Bühler investigates as gestures entirely correlates with how gestures are studied today (Friedrich 2012, 210, note 14), and the same might be said for Wundt as well. It will thus have to be shown how there are sufficient conceptual grounds for connecting these past thinkers with today's approaches, and to do so we shall proceed in the following manner. With Wundt, the goal is to see how he advocates a problematic position on the relationship of gesture and language, which stems from his underlying conception of expression. Such a demonstration will allow us to recognise and develop a critique of a neo-Wundtian position that has surfaced in contemporary work on gestures. With Bühler, on the other hand, the goal will be to outline a positive contribution to these questions, which is, on the one hand, structurally focused and phenomenologically grounded but which on the other remains empirically informed and thus commensurable with recent accounts of gesture.

2 Wundt: Expression and Grammar

The verdict on Wundt's theories of language by Danziger, already in 1983, seems categorical and unstinting; '[they are] of limited interest today' (1983, 308). For Danziger, with his emphasis on Wundt's conception of *Völkerpsychologie*, perhaps the only source of curiosity is that of the historian in what might have been. But can Wundt say nothing to us today?

There is indeed still much to appreciate in Wundt, at least in light of his analysis of gestural expression: the considerable granularity of his catalogue of different kinds of gestures; his proto-pragmatic recognition that facial expressions provide the basic tone (*Grundton*) for interpreting gestures (1977, 86); the innovative manner in which he broaches the issue of the grammar or syntax of gestures. These reasons aside, one further motivation still to take an interest in Wundt is that his intellectual legacy seems very much alive and well today, albeit under another, not very explicitly Wundtian form. What is meant here is the widely influential ‘Growth Point’ (GP) theory of the psychologist David McNeill and his colleagues, which has become paradigmatic for a number of studies on gesture today (De Ruiter and De Beer 2013, 1015; Kendon 2004, 77–78).⁶ For McNeill, the notion of ‘growth point’ is meant to capture how a person’s thoughts can come to different means of expression, through either speech or gesture or both; the growth point is ‘[t]he initial organising impulse of an utterance, and the starting point for developing its meaning; [it is] a minimal, irreducible, psychological unit that [...] is a microcosm of the whole utterance’ (Duncan et al. 2007, 5).

Such a notion already indicates a kind of affinity with the Wundtian view of communication (*Mitteilung*),⁷ but even more decisive for establishing the link to Wundt is how gestures and co-speech gestures are understood by McNeill. Of the gestures he deems most interesting and relevant for investigation, he writes that they are ‘idiosyncratic spontaneous movements of the hands and arms accompanying speech [which] can be taken to reveal the utterance’s primitive stage’ (McNeill 1992, 40); with these gestures, ‘people unwittingly display their inner thoughts and ways of understanding events of the world [...]. Gestures are like thoughts themselves [...] [and] belong, not to the outside world, but to the inside one of memory, thought, and mental images’ (McNeill 1992, 12).⁸ Statements like these seem to have a Wundtian conception of gestural expression at their core. To understand why that is and the questions they invite, we need to understand the role of the principle of psycho-physical parallelism (PPP) in Wundt’s own theory of language and expression.

Wundt’s PPP may be understood as a neo-Leibnizian thesis about the ‘contents of experience’ (*Erfahrungsinhalt*) which makes two related claims. First, it holds that these contents are available to two sorts of

scientific investigations, one ‘indirect’, via brain- or neuroscience, and the other ‘direct’, via psychology. Second, it postulates that every process on the one side of that distinction has to have a corresponding process on the other side (Wundt 1896–1897, 389). As cited by Rieber, Brentano apparently claimed that Wundt ‘forfeits the unity of mental life’ by saddling himself with the PPP; in so doing, ‘he gives himself three problems instead of one’ (2001, 152). These are, ostensibly, the relation of the neuro-physical processes to experience, the relation of psychological processes to experience, and the relation of the unity of the neuro-physical and the psychological to experience. In Wundt’s defence, one could say he sought to define the PPP only as a sort of ‘general heuristic principle’ for phenomena that seemed quite disparate (Fahrenberg 2012, 230). These are, as Ungeheuer explains, phenomena in the bio-physical system of the human being that do not seem to obey the law of the conservation of energy (in terms of inputs and outputs) (1984, 16). As such, Wundt could be seen to be advocating a kind of methodological dualism with which to explore ‘a unitary, monistic conception of life’, for instance, as evinced in the two very different approaches to gestural expression taken in the first two chapters of the *Sprache* volume of his *Völkerpsychologie*.

The interesting problems arise from the way that Wundt comes to rely on the PPP when he turns his attention to human social phenomena and especially what he calls the ‘drive to communicate’. As commentators like Bühler (1933) and Nerlich and Clarke (1998) have pointed out, this parallelism—initially serving as a methodological safeguard against confusing two sets of facts or two frames of references—morphs into something more, namely a descriptive framework by which Wundt analyses human communication in general and gestural expression in particular. As Bühler stresses in his critique of Wundt in the former’s *Ausdruckstheorie*, the PPP goes from being a more cautious claim about the intimate relationship between the neuro-physical and the experiential domains to a much more ambitious or ‘generous’ (Bühler’s term) thesis. Namely, the PPP for Wundt also comes to imply an expressive thesis concerning a ‘mirroring’ between the inner psychic state and the ‘outer’ gestural expression (Bühler 1933, 133) and a pro-social thesis about the mirroring between the psychic states of the persons involved in communicative interaction.

To understand the thrust of Bühler's critique of such an ambitious thesis and its relevance today, it will be useful to clarify how Wundt understands gestural expression according to the PPP. On the whole, for Wundt, the expressible contents of the psychic life of human beings are constituted by affects, as counterparts to the physical excitations of the body.⁹ These affects, which are themselves complexes of sensations that alone would not be expressed (Wundt 1904, 45, 47), give rise to a binary drive that underpins the basic forms of human expressive activities. On the one hand, the drive pushes for comprehension (*Verständigung*) of the affect, namely by associating it with a representation (*Vorstellung*) that can then be linked to other representations and their respective affects. On the other, the drive pushes for communication (*Mitteilung*) of the affect via bodily movements. In this respect, Wundt can then claim that 'the gesture is the direct expression of the concept which at the moment governs the affect' (Wundt 1977, 147).¹⁰

There can be no doubt that Wundt sees such an analysis of gestural expression as wholly consistent with the PPP (Wundt 1904, 90). However, processes running in parallel with each other does not necessarily mean that they mirror each other, yet this is just the direction in which Wundt takes his interpretation of the PPP. This can be seen in how the PPP underwrites Wundt's view of the relation between speaking (a physiological activity) and understanding (a mental activity). He regards speaking and understanding as mirror image processes, a view that allowed him to dispense with any particular psychological theory of how understanding, especially understanding of speech in a social context, is possible (Knobloch 1988, 415). Moreover, further evidence of the link between the PPP and a notion of mirroring can be found in the manner in which Wundt delineates only certain gestures to be relevant to his study of the psychology of human communication. In a manner that shows a striking relationship to McNeill's perspective mentioned earlier, Wundt claims that those gestures that come from 'arbitrary agreement', i.e. via conventions, are of little importance for the psychologist of language (Wundt 1977, 70). Much more relevant are those gestures that constitute an expressive 'means derived from the direct drive to communicate [which are] on the whole unpremeditated' and thus that demonstrate a 'greater primitiveness' (Wundt 1977, 75). This nomination by Wundt of only

certain gestures to be investigated leaves questions about the use of arbitrary or conventional gestures something of a mystery to him; they may stem from an affect or they may not, but Wundt's psychologist of language will never be able to get to the heart of the matter one way or another. The primitive, psychologically interesting gestural expressions, on the other hand, manifest a direct inner connection to the affect that generates the drive to communicate, and indeed do so in a regular or constant fashion—what he calls in a passage that Bühler emphasises, 'inseparable characteristic expressive movements' (Wundt 1904, 100).

With such an assertion, Wundt is perhaps not too far off from Ekman and Friesen's thesis that human emotions have certain universally shared facial expressions across all peoples of the world (1975). This idea would demonstrate one meaning of the notion of mirroring to which Bühler's critique alludes; a faithful and constant mirroring between affects in the body and the movements to which they give rise, where affect and movement reflect each other to such an extent that the occurrence of the one even seems to motivate the occurrence of the other.¹¹ However, there is still another sense of mirroring that comes into play in Wundt's account, which can be seen as a further implication of the previous one; there is also mirroring between individuals, where expressive movements in a communicator can give rise to (co-)expressive movements in the addressee—what he calls *Mitbewegungen*—which in turn link back in the addressee's mind to affects and respective concepts. As he writes, '[...] the [gestural] expression provides a firm basis for the mirroring [*Widerspiegelung*] of the affective movement [*Gemütsbewegung*] in the addressee' and 'excites further concepts associated with the gesture, develops the gesture, or perhaps even elicits its own opposite' (1977, 147). One might find something chilling about the social world hereby sketched by Wundt—one to some extent also present in McNeill (2012, 65, 154–156)—where all human beings are linked in some great chain of mirror neurons. More seriously, such a deployment and transposition of the PPP into a principle of pro-social mirroring between individuals seems to expose a serious flaw in Wundt's analysis, for which Bühler will take him to task; Wundt seems to miss entirely the interactive, person-to-person interdependent character of gestural expression.

This can be seen in how Wundt approaches our earlier question about the rules or conditions according to which gestures are performed (with or without speech). In analysing the performance of a series of gestures that form a certain sentence (i.e. comparing how gestures flow and are linked together with respect to how words in speech flow and are linked together), Wundt considers the following question: why might the order of the subject and predicate be reversed, as seems more often to be the case in gestural communication?¹² His answer is both striking and entirely consonant with his approach. He argues that there are two reasons for such a reversal. On the one hand, gestures have a certain ‘slowness’ of performance with respect to speech, which is due to the time it takes for the hands to make sequential movements. On the other, certain affects have a higher degree of excitation and thus a higher pressure to be expressed (Wundt 1977, 123). To accommodate these two factors, the communicating individual finds it necessary to reverse subject and predicate in cases of ‘animated, excited speech’ (Wundt 1977, 124). To use a metaphor, it is as if the gesturing communicator were like an overworked postal worker having to deliver parcels in function of their urgency or encumbrance for the sender, instead of according to address, order of intake, etc.

The implication in such a view of communication is that it is the human capacities for processing mental content plus the physical limitations of the human body that chiefly condition gesture performance. There can be no question for Wundt of the gestural expression being structurally determined, for instance, in function of the conditions under which another person would understand such expression or with respect to an aim to evaluate the response by that other person to one’s own gesture. This means that, on Wundt’s view, if we aim to understand under what conditions gestural expression can be performed, then we ought foremost to focus our scientific attention on the conditions under which an affect can be manifested—for instance, whether the affect is strong (‘excited’) or weak, confusing or clear, new or old, etc.

For the theorist of language of a Martyian persuasion, for whom manifestation (*Kundgabe*) and intimation (*Kundnahme*) form two interrelated, indispensable, yet distinct functions of human communication (Cesalli 2009, 47, 51), such an emphasis on the conditions of the manifestation

of the affect will seem like a rather problematic view for understanding the conditions under which gestural and verbal expression are related. This view nonetheless seems influential in some current work on gesture. In particular, it surfaces McNeill's ontogenetic view, as a further development of his GP theory, that the origin of language lies in the happy circumstance that our brains are organised in a certain way (2012, 154). It seems moreover to underlie the motivation to rely upon aphasia studies in order to formulate and evaluate models of gestural expression. In a study by De Ruiter and De Beer (2013), extensive consideration is given to how current competing theories may generate and accommodate the 'modules' or psychic capacities that seem to be affected in non-fluent aphasia; their corresponding aim is to formulate a general theory of the psychic capacities that condition or constrain gestural and linguistic expression for aphasic and non-aphasic speakers alike. While such work has its place, the question remains whether these lines of inquiry are the only or most important ones when it comes to the conditions upon multimodal expression. Put in terms of Bühler's critique, such perspectives risk approaching gestural and verbal expression, and their multimodal relationship, from the theoretical perspective of a '*Diogenes im Fass*', which is to say, from the perspective of an organism closed in on itself (Bühler 1977, 37, 47); that is, from the perspective of an organism for whom the constraints upon the verbal or gestural expression of an affect are tantamount to the constraints upon the manifestation of that affect within the organism.

3 Bühler: Diacrisis, Steering, Structure

To explore the potential for Bühler's contribution to understanding the conditions under which gestural and verbal expression are integrated and related, let us consider once more the above example of two persons communicating at a dig site. We can think of the gestures and the verbal speech of a communicating person as two expressly shared streams of information, addressed to another person, and as being about the same state of affairs, with a common communicative purpose driving both streams. When conceived in this way, the two streams show different

kinds of relationships with each other; some seem merely possible ways of being related, while others seem necessary.

On the side of the possible, the one stream may but need not hold a supplementary or repetitive relationship with respect to the other. The supplementary relationship means each stream can offer information not contained in the other, for instance, by way of completion or amplification, as in the above example where a gesture might provide a referent for the verbal utterance of a relative pronoun. A repetitive relationship means each stream can reiterate information given in the other, so as to enable the one to accent the other, or to enable a referring back in the one stream to information given in the other (anaphora); in the example above, the one archaeologist may trace a line with their gesture and a moment later also verbally describe the path of a line in the dirt.

On the other hand, considered from the perspective of their mutual integration in acts of communication, there are other relationships between the two streams of gestures and verbal expression that seem required. One such would be their mutual non-interference with each other; each stream has to be able to offer information without hindering the information given in the other stream. This might be thought of as a no-noise principle of multimodal communication; uptake of the one, e.g. gestural, stream ought not prevent uptake of the other, e.g. verbal expression, stream, nor vice versa. Another such candidate, related to the latter, would be the relationship of coordination or fit between the two streams. Such coordination is necessary if interaction and integration between the two streams is to be achieved; even when the one stream might undermine or contradict the other (e.g. in irony, sarcasm, or deception), still the two streams must be 'in sync' with each other. Such coordination, though required, can nonetheless take different forms. It might be syntactic, as in the one person's gesture constituting the 'noun' of the verbally expressed prepositional phrase, or it may be temporal, as in the emphasis of the so-called 'beated' or anticipatory gesture which must fit the temporal frame of the verbal expression to which it would be matched.

These are just a few ways that gestures and speech may interact and be integrated, according to either their possible or necessary relationships. Yet how might one best elaborate further, refine, or correct such a characterisation of the integration of these two streams in communication? On

our understanding, there are at least two Bühlerian concerns to be explored regarding this framing of the relationships between gesture and speech. A first concern would point to a crucial facet thus far missing from the depiction of the two streams. Namely, to which kind of meaningful form or structure of communication are these two streams to be understood as contributing? That is, Bühler would insist that there can never be two such streams in a communicative vacuum; he would thus call for consideration of the communicative structures (*Sprachgebilde*) and communicative products (*Sprechwerke*) in which these two streams and their interaction would always have to fit (Bühler 2011, 57–58).

A second concern has to do with the communicative functions fulfilled by the streams above (Bühler 2011, 35). It is easy to grasp that the one or other stream of information can be involved in representing something the communicator is thinking about (*Darstellung*), or in manifesting something the communicator is feeling (*Ausdruck*), or in drawing the listener's attention to something in the environment (*Appell*), or indeed in some combination of these. However, when these streams of information would be directed at a receiver in an act of communication, by what means would the receiver be guided to the relevance of the one stream for the other, as well as their mutual relevance for the 'whole' meaning of the communicator's streams? This is a question not only when the streams would diverge in their functions, but just as much when those functions would align; it seems necessary that the receiver grasp their importance for each other in order to make sense of the streams, just as it seems necessary for the communicator to intend for their relationship to be taken in a certain way. For instance, by what means should a receiver distinguish what is merely extrinsic or 'supplementary' about the one stream for the other stream, from what might be essential to their relationship? What is needed here, Bühler would suggest, is a principle of steering by which the relationship between the streams and their functions could be understood; in other words, what is needed in order to understand the relationship of gestures and verbal speech is a concept of diacrisis.

For the moment, let us focus on the second of these two concerns. Diacrisis (or sometimes diacritics) is a concept that Bühler draws from his investigations of phonology and the processes of perception thereby involved (2011, 42).¹³ On the one hand, it refers to a process of

abstraction, whereby a person, an ear, or a finger can learn to distinguish the relevant from the irrelevant (Bühler 2011, 53), thus turning some of the information provided into a kind of background, context, or noise, and the remainder into the content of a perceptual apprehension. On the other hand, diacrisis for Bühler would equally indicate the result of such a process of abstraction regarding some quantity or quantities of information—aural, tactile, or symbolic; namely, this result is an (re-)orientation or a guiding of an individual in any given situation where a ‘decision between several possibilities has to be made’ (Bühler 2011, 176). Per Bühler’s examples, this diacrisis means that via perceptual content one can be guided to a recognition that, e.g. there is a one-euro and not a two-euro coin in one’s pocket.

In respect of a Bühlerian conception of multimodal expression via gesture and speech, two further aspects of the notion of diacrisis are of interest. First, although such diacrisis may be arrived at by an individual under their own power, it may also be instigated or initiated in communicative interaction. When a person returns home, for instance, and says ‘I’m home’ or ‘It’s me’, the person upstairs hearing that utterance ‘is supposed to perform a personal diacrisis, more or less as if a personal name had been spoken’ (Bühler 2011, 109); the speaker wants the listener to attend in the utterance only to those ‘distinguishing marks’ of the speaker’s sound of voice that allow the listener to identify just who is the speaker. This kind of utterance is a kind of vocal pointing or steering of the listener to an aural identification; it should enable the listener to decide just who is speaking.¹⁴ At the same time, Bühler holds that diacrisis can occur not just in speech, but also in gestures, or in both at once. Either gesture or utterance can count as ‘islands of language emerg[ing] from within the sea of silent but unequivocal communication’ (2011, 176) as we guide and are guided by others and as we coordinate our activities with others.¹⁵

Second, if diacrisis concerns a kind of steering towards a decision between certain possibilities of meaning, an important caveat here is that these are not mere empty possibilities but are rather ones constrained by two related but still distinct factors. First, the possibilities navigated by the diacrisis are already ‘steered by the matter at issue’ (*Sachsteuerung*) (Bühler 2011, 75–76), where such a matter may be understood as a content or state of affairs in respect of which certain understandings,

responses, or actions—that is, certain acts and courses of actions—are most likely. This aspect of the diacrisis reflects Bühler's structural leanings, according to which he would investigate the subject-independent and law-like conditions under which humans communicate and act. Second, Bühler stresses that either the material world or other factors, like the dispositions of other persons, may restrict possibilities in light of which the diacrisis is effected. He thus refers to the 'material clues' and 'material guidance' (*Stoffliche Steuerung*) of the likely choices that one might make in a café, in getting on a bus, in hearing a voice in one's home, and the like (Bühler 2011, 77, 194 ff.). Yet here one ought also to recall that for Bühler diacrisis takes place at many different levels of the communication process (Bühler 2011, 52); there is already diacrisis in the sound and the phoneme, between one gesture or word and another, between a representational function and an appellative function of a gesture or word, and so on.

Combining these thoughts, we arrive at the idea that every diacrisis, as a presentation and a choice of a meaningful possibility, occurs in a respect of a diacrisis at another level of complexity, higher or lower, in the communicative process. What this Bühlerian view thereby implies is that gestures and speech are answerable not only to their environments and the trajectories (*Vorbahnungen*) of the matter at issue jointly attended to by the speaker and the receiver (Knobloch 1988, 419). In addition, they may be crucially answerable to each other, in their relationship to the matter at hand and in providing a context for the performance of each. Thus, gestures may be instrumental in operating alongside speech in both aiding the distinction of one sound from another, one word from another, one concept from another, one kind of utterance from another, one kind of speaker's intent from another. And the same would obtain for speech in relation to gestures as well.

How might this notion of the diacrisis expand or revise the above characterisation of multimodal expression via speech and gesture according to their possible and necessary relationships? One contribution concerns the question whether the relationships of non-interference and coordination between gesture and speech constitute a complete picture of the necessary conditions of their integration and interaction. One hesitation about that picture could run as follows; even if it seems correct to insist that the

one stream (e.g. of gestures) ought not disrupt the comprehension of the other, this condition could also be met by someone merely ignoring the one or other stream. Our description would then miss the very phenomenon it means to target, namely the interaction of gesture and speech. Hence, in insisting upon a necessary relationship of non-interference, the implication cannot be that one stream can simply replace the other—at least, not if one takes these co-speech gestures not to be sheerly ‘self-directed’ or cognitive-facultative bodily movements with no meaning for the other person and no intention to be a matter of uptake.

As an improvement upon that picture, one may suggest that to the non-interference relationship has to be appended a non-negligible or diacritical relationship. According to this latter requirement, each stream has to occupy some position of relevance or importance with respect to the other stream with which it would be integrated (greater, lesser, equal). It would then be in view of this mutual relationship of relevance that the receiver of the integrated streams, gesture and speech, would then attend now primarily to the one or the other, or indeed both at once, in order to grasp the function of each stream, the nature of their roles with the communicative act, the course of action to which they may lead, and so on.

To put this differently, the diacritical relationship of the two streams would ensure that their receiver would be steered to the relevance of both streams for the matter at hand and the communicative situation. One might indeed wonder how that happens, yet on our view such a relationship would not necessarily entail that each stream must carry some ‘meta-information’ about its relevance to the other stream. In some cases, as in the above example of an elliptical statement completed by a trowel gesture, this diacritical requirement seems fulfilled quite straightforwardly, for instance via the coordination (in this case alternation) of gesture and speech. In others, especially where the two streams are co-occurring and not consecutive, it may be more challenging to understand how this requirement is met, and here we can refer to an interesting distinction already made by Wundt between *Hilfgebärden* and *Hauptgebärden*; the former being gestures aimed at helping the comprehension of gestures, or in our example, aimed at directing attention to the mutual importance of the one or other stream, in a manner similar to deictic references in speech. Moreover, if we expand our multimodal scope for a moment, one

might consider whether such steering occurs strictly via gestures or speech or whether it may also even occur via a yet third stream of information, such as prosody, the exchange of eye gazes, or bodily stances.

In the foregoing, we have attempted to demonstrate both why it can still be important to understand Wundt and the criticisms of him, and why Bühler can offer an account of gestural and multimodal expression which is at once amenable to empirical input and structural in its aims. However, this has been but an indication of the potential of Bühler's insights. For further development thereof, one area would be the question of how the necessary and possible relationships of gesture and speech fall within Bühler's fourfold scheme of speech as "Act, Work, Action, and Structure" (2011, 57). We might thereby explore what other relationships between gesture and speech we have missed, and thus take Bühler's scheme as a guide for systematically exploring and interpreting the wide taxonomy of gesture actions and gesture texts recorded by anthropologists, linguists, and psychologists in today's and yesterday's human world. Where are they populous within Bühler's scheme? Where might each need to be filled out further, and why?

Notes

1. See (Kendon 2007, 24; Kendon 2004, 73, 75; Streeck 1993, 276). Bühler, for one, already appealed for a scientific openness to the variety of functions of gesture in warning against such a reductivism: "No, gesture is gesture and language is language, and the use of mimicking expressions and gestures in human interaction would be in a bad way if everything had to be underpinned and adequately translatable (interpretable) into spoken language" (2011, 178 [trans. changed]). There are some questions then about any tendency to interpret Bühler's earlier work on gestural expression (1933) as claiming that "there is no principal difference between vocal and bodily (e.g. sign) language" (Müller 2013, 203–4). In fact, this overlooks how in that work Bühler's point was more nuanced. He disagrees with Engels and claims that gestures, like speech, also have a capacity for sophistication and differentiation in expression (1933, 40). This does not entail that gestural expression would attain such fea-

tures in just the same way as speech does or that there would no differences between the two forms of expression; earlier in the same passage (39), Bühler points to the particular capacity of speech to combine linguistic functions in a way freer and smoother than how they may be combined in gestures.

2. This example is drawn from (Streeck et al. 2011).
3. See (Müller 2014) for a further discussion of this aptitude.
4. See (Müller et al. 2013) and (Fricke 2013) for two recent approaches to such questions from the perspective of linguistics. (Müller et al. 2013) embraces McNeill's notion of gestural expression, which leaves open opportunity for a more Bühlerian contribution; Fricke takes 'grammar' in a narrower sense than considered here.
5. See Kendon's 'context of use' thesis (2004).
6. Streeck (1993) already hints at this link. See (McNeill 2012, 130–31) for an explicit parallel between the GP and Wundt's notion of the 'sentence'.
7. As in Wundt's assertion that '[l]anguage is the mirror of the human being in the totality of its psychic achievements' (1977, 148–149).
8. See also (McNeill and Duncan 2000, 143), which describes 'co-expressive speech-synchronised gestures' as 'a "window" onto thinking'.
9. (Wundt 1904, 50).
10. See (Araujo 2016, 52), for a more complex picture of the notion of 'affect' in the earlier Wundt.
11. See (Wundt 1904, 134–135).
12. See how Wundt analyses a series of gestures which he renders as meaning 'the child was hit, the man was angry'.
13. See (Mulligan 1988, 209).
14. In this respect, we might even go so far as to say such diacrisis goes to the heart of what Bühler calls in his *Krisis* the 'mutual steering' (*Gegenseitige Steuerung*) and the 'interpersonal process of appeal' (*Auslösung*).
15. See also (Bühler 2011, 160). In this regard, diacrisis has an important pragmatic function, in the linguistic sense of the term.

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