

Intentionality in the Second Person: An Evolutionary Perspective

Juan Carlos Gómez

RESUMEN

En este artículo abordo la relación entre las atribuciones de estados mentales de segunda y tercera persona, sugiriendo que, en su forma más simple, tanto la segunda como la tercera persona tienen en común la posibilidad de atribución no inferencial de estados mentales mediante formas de mentalismo corporeizado [*embodied*]. Esta transparencia y disponibilidad pública no es exclusiva ni derivada de las atribuciones de segunda persona, sino una propiedad del mentalismo corporeizado con independencia de la persona en que se exprese. Argumentaré, asimismo, que las relaciones intencionales de segunda persona, como sus homólogas de tercera persona, contienen elementos mentalistas opacos, que no derivan de una combinación con atribuciones de tercera persona, sino que son componentes primarios de la segunda persona. De hecho aprender acerca de la opacidad de los estados mentales puede ser uno de los resultados y beneficios de la interacción en segunda persona. Lo que es distintivo de las atribuciones de segunda persona es la peculiar estructura de las relaciones intencionales que generan. En las interacciones recíprocas entre dos organismos, de larga historia evolutiva (p. ej., las interacciones de apareamiento o entre depredadores y presas), hay dos líneas de intencionalidad que entran en colisión, generando, por una parte, una estructura interactiva que contiene *implícitamente* la estructura cognitiva de la intencionalidad Griceana, y, por otra, un conjunto de experiencias de primera persona únicas (“ostensivas”) que derivan de mecanismos conductuales y expresivos ligados a la interacción social y surgidos durante una prolongada historia evolutiva. Estas ideas se elaboran en el marco de un bosquejo de los orígenes evolutivos de la intencionalidad de segunda persona en animales no humanos, de los que surgió el tipo de intencionalidad de segunda persona que se da en la interacción y la comunicación humanas.

PALABRAS CLAVE: *intencionalidad, segunda persona, mentalismo, evolución.*

ABSTRACT

In this paper I address the relation between second person and third person attributions of mental states suggesting that, in their simpler forms, both the second and the third person have in common the possibility of non-inferential attribution via embodied mentalism. Such public availability and transparency is not distinctive of, or derived from, second person attributions, but a property of embodied mentalism irrespective of the “person” it is expressed in. Moreover, I will argue that second person intentional relations, like their third person counterparts, contain opaque mentalistic elements. These are not due to

their combination with third person attributions, but are primary constituents of the second person. Indeed, learning about the opacity of mental states may be one of the outcomes and benefits of second person interaction. What is distinctive of second person attributions is the peculiar structure of the intentional relations they generate. In reciprocal interactions between two organisms, which have a long evolutionary history (e.g., mating, predator/prey interactions), two lines of intentionality collide generating, on the one hand, an interactive structure that contains *implicitly* the cognitive structure of Gricean intentionality, and on the other a set of unique first-person (“ostensive”) experiences that derive from a long evolutionary history of behavioural and expressive mechanisms linked to social interaction. I develop these ideas in the framework of an outline of the evolutionary origins of second person intentionality in nonhuman animals and how it led to the sort of second person intentionality that occurs in human interaction and communication.

KEYWORDS: *Intentionality, Second person, Mental attribution, Evolution.*

I. ENTERS THE SECOND PERSON

The essence of the second person perspective of psychological attribution was well captured by the two short commentary papers that first coined the term in response to Barresi and Moore (1996)’s model about the origins and nature of social understanding. These authors proposed that there are two types of intentional relations (in a Brentanian sense of ‘intentional’, i.e., relations of ‘aboutness’ between agents and the objects of their mental states): First person (1P) intentional relations, in which one perceives one’s own activity about an object (e.g., seeing object X); and Third person (3P) intentional relations, in which one perceives another organism’s activity in relation to an object (e.g., organism O1 sees O2 looking at object X). Each type involves -- they argued -- a qualitatively different type of intentional/psychological information: 1P focused on the object side; 3P on the agent side of intentional relations. According to them, this leaves a gap between these two different types of information. This gap needs to be filled by an abstract “intentional schema” that integrates the understanding of agents from a third person perspective with the understanding of relations to objects from a first person perspective. The result of this integration is our mature understanding of the social world in terms of agents’ intentional relations to objects.

It was immediately obvious to some commentators that something essential, that might make unnecessary the integrative abstract schema, was missing from Barresi and Moore’s account: the second person (2P) perspective — the intentional relations that occur when two agents are interacting among themselves, which could produce information and experiences that are qualitatively different from both 1P and 3P relations.

Gómez (1996a) argued that second person intentional relations (2P), in which an observer is the target of an intentional activity by an agent (e.g., being looked at by someone) are qualitatively different to 1P and 3P because “they generate a peculiar, bidirectional kind of intentionality”, and that evolution had selected systems specialized in dealing with 2P intentionality which could be considered to be “the evolutionary precursors to the human theory of mind.” [Gómez (1996a, p. 129)].

Reddy (1996) argued that developmental studies show that the alleged gap between the 1P ‘self’ and the 3P ‘other’ may not exist, because from birth young infants engage in dyadic interactions with their caregivers of the “you” or second person (2P) type (what Trevarthen (1979) called ‘primary intersubjectivity’). These interactions bridge any gap between self and other and are not guided by abstract cognitive schemas or concepts, but by “emotional engagement” that allows the “perception of aspects of intentionality that are not possible without it.” This perception is of the organisms’s own feelings and “its experience of the partner’s feelings”.

Reddy in human development and Gómez in evolution both suggested that there are 2P intentional relations that are qualitatively different to 1P and 3P intentional or psychological experience, and that these may be at the root of the psychological attribution ability that in those years was being investigated under the rubric of Theory of mind.

Since the inception of the notion of 2P, different authors from different disciplines have developed more elaborate proposals and models about intentionality and psychological attribution from a second person perspective [e.g., Gallagher (2001); Gomila (2003); Dullstein (2012); Reddy (2008); Schilbach et al. (2013)]. A telling indication of the success of the idea is that Moore and Barresi (2017) themselves, twenty years later, have revised their model conceding that those second-person intentional relations that they initially ignored are a distinctive and fundamental component of social cognition.

One of the more substantial and ambitious models of second person attribution is Pérez and Gomila’s (2021). They develop in detail, from an unusually broad interdisciplinary perspective, the idea that the type of psychological attribution that occurs in second person interactions may be, not only unique, but the road to all mentalistic attribution as we know it in human social life, due to the distinct psychological characteristics of how minds are experienced in the second person.

II. DEFINING THE SECOND PERSON: NON-INFERENTIAL ATTRIBUTION

What is the defining feature of 2P relations and the 2P experience that makes it so decisively different to 1P and 3P? In their re-assessment, Moore and Barresi (2017) list up to five key features that could make distinctive the social information provided by 2P relations: the *self-directedness* of the others' intentional activities, the special type of *contingency* provided by 2P interaction and its associated *reciprocity* of action, the mutual *affektive engagement* between interacting participants, and the *shared* nature of intentionality in 2P relations. However, these are not mutually exclusive features and appear to mix different levels of analysis.

In their comprehensive survey and elaboration on the topic, Pérez and Gomila (2021) identify two features as the key properties of 2P, which to a large extent subsume Moore and Barresi's criteria: the transparent, *non-inferential*, directly perceived nature and public availability of mental states in 2P; and the unique dynamics of *reciprocal contingency* of interaction and attribution in which those mental states are displayed.

The purported transparency of at least some mental states in 2P is of special importance because it is the feature that would allow 2P to, as the authors put it, “dissolve the problem of other minds”.

However, evidence in developmental psychology suggests that non-inferential, transparent attribution of some mental states may also occur from very early in the 3P perspective. In an influential series of studies, Amanda Woodward (2009) found that by 5 months of age, or even earlier, infants can attribute “intentions” (in the sense of goal-directed actions) to agents acting in relation to targets. For example, after seeing an actor's hand reaching for one out of two available objects, infants expect the hand to continue to reach for this object even if its spatial position is exchanged with the other object, as if they are coding the goal of the actor rather than just their physical movement. Interestingly, in the typical experimental scenario of these studies, even when they are conducted with real people, no 2P interaction is possible because the infants only see the arm of the actor who reaches for the object from behind a curtain. Moreover, such goal-directed coding of movement occurs only if it is the arm of an actor that reaches for the object. If, instead of a human arm, the actions are performed by a mechanical arm, no intentional goal is attributed by the infant.

One interpretation of these findings is that there might be an innate ability to recognise, or quickly learn to recognise, signs of agency and goal-directedness, which allow perceiving the behaviour of agents as intentional

and goal-directed in a 3P perspective in a relatively automatic and non-inferential way. Recent research has proposed that mentalistic coding in early infancy might be even more complex, encompassing not only intentions but also epistemic states such as beliefs [Scott and Baillargeon (2017), but see Barone & Gomila (2021) for an alternative interpretation of the evidence from a 2P perspective]. These purported 3P mentalistic attributions in early infancy are supposed to rely on automatic, implicit, non-inferential cognitive systems [e.g., Low and Watts (2013)].

Such ability to code the intentions of others in relation to objects in 3P scenarios at 5 months of age or earlier contradicts the idea that 2P experience is the necessary basis for the development of mentalistic attribution. Although 5 month old infants already engage in complex 2P face-to-face interactions of the “primary intersubjectivity type”, they do not engage yet in triadic interactions involving object manipulations by themselves and others until 9-12 months of age. This could be taken as strong evidence that such attribution of intentionality about objects does not derive from 2P experience, but might constitute a primary, non-derived adaptation for 3P mentalistic attribution.

One could question, however, to what extent the findings of Woodward really demonstrate an early attribution of intentions. Maybe they could be explained by simpler forms of action anticipation based on lower-level properties of movement not requiring mentalistic attribution [Uithols & Paulus (2013)]. This is an unresolved question that depends upon how intentionality and goal-directedness are defined. However, a similar objection may be posed in relation to second person interactions, where the contingent anticipation of others’ actions (e.g., offering an object and taking it) could be interpreted as not needing mentalistic attribution at all, but might rely on simpler mechanisms of action anticipation and bodily coordination [Uithols & Paulus (2013); Gallese (2014)]. In this respect, there seems to be little difference between 2P and 3P in relation to the interpretive problem of how much experience of the others’ minds is really involved. Both 2P and 3P are in principle susceptible to alternative, low level interpretations.

Interestingly, some of Amanda Woodward’s findings with babies might indicate a close relationship between 1P and 3P information. Her laboratory has consistently produced evidence that infants’ goal attribution to others may depend upon their first-person experiences of goal directed actions: there is a correlation between the ability to attribute goal-directedness to types of actions and the ability to perform such actions by infants themselves [Woodward (2009)].

A particularly interesting finding comes from experimental work with three-month-old babies who were not yet able to grasp objects manually. They were allowed to discover how to “grasp” objects by wearing a special velcro glove to which the object would become attached. When compared with a group of infants who just had the opportunity of watching another agent catching objects with the velcro, the infants with first-hand experience of velcro-catching demonstrated an ability to expect goal-directed actions of others wearing the velcro; not so the infants who just watched others do the velcro-catching. Woodward suggests that this means that third person attribution of intentions may rely on the first-person experience of one’s own intentions, possibly through some mirror-neuron-like automatic mechanism [Woodward (2009)].

Although at first sight this would appear to support the original model of Barresi and Moore (1996), in which intentional attribution is explained through the coordination of 1P and 3P information, in fact their model stated that this coordination did not initially exist, most certainly not in such young infants. Intentional relations between agents and objects, they argued, are initially not understood because these relations are not physical dimensions that can be perceived (e.g., the baby sees a person looking in a particular direction, but not the intentional link to the person’s object of attention). Hence their proposal that an abstract intentional schema was required to integrate 3P (agent-focused) and 1P (object-focused) information to eventually experience relations of intentionality between agents and objects in later development.

Gómez (2008), however, using the Brentanian notion of intentionality in a different way, proposes that, although intentional relations are not physical magnitudes, they can be directly perceived in a Gestalt-like manner, like so many physical phenomena in which perceivers go beyond the information physically available, without the need of inferences or abstract schemas. For example, the direction of gaze to an object is perceived as a relation between an agent and an object in a third person way without the need to conceptually integrate 1P and 3P perspectives — a Gestaltic ‘line of gaze’.

In sum, developmental evidence suggests that during the first year of life the three perspectives of psychological attribution may be already active in a simultaneous way and may work with relative independence or, at least in the case of 1P and 3P, with some degree of integration. Be it as it may, current evidence suggests that non-inferential 3P attribution of mental states is not exclusive of 2P experiences, and therefore is not a good candidate to be the distinctive feature of 2P experiences.

III. THE INTERPLAY BETWEEN PARTICIPATING AND CONTEMPLATING

There is indeed no a priori reason why the non-inferential attribution of mental states is initially confined to 2P. Young infants, like adults, not only engage in direct interaction with agents and objects, they also spend a considerable amount of time watching the world around them: other agents going about their actions in the world, interacting among themselves, moving around, manipulating objects, etc. Observation in 3P is an important part of infants' lives. Indeed, the scientific study of young infants capitalizes upon their ability to meaningfully contemplate, understand, and learn about events without directly participating in them. The looking-time methods, so essential in contemporary developmental psychology, rely on infants' ability to selectively attend to events in which they do not necessarily participate. How much they learn from mere observation may vary (for example, Woodward's infants did not appear to learn much about velcro affordances), but observational learning is a well documented ability of preverbal infants [see, for example, Waismeyer & Meltzoff (2017)].

Moreover, face to face interaction with babies might be a cultural feature especially prominent in Western societies, but not so important in other cultures [Demuth (2015)]. In many cultures infants are carried on the back of their mothers or caretakers while engaging in their daily work, which gives the infants reduced opportunity for 2P experience, but ample opportunity to observe, from a non-participant 3P standpoint, the events in the surrounding world.

The very notion of attachment [Bowlby (1969)], the fundamental emotional system regulating parent-infant interactions, is linked to the idea that emotionally secure infants enjoy a "secure base" from which to watch and explore the world on their own. Infancy is not only about participating, but also contemplating the world. Both sources of learning must be coordinated in successful development. It makes evolutionary and developmental sense that infants are equipped with cognitive and emotional mechanisms that allow them to benefit both from observation and participation. These mechanisms include the ability to non-inferentially understand other agents' behaviour in intentional terms either as an innate skill or one that quickly develops from the observed contingencies of actions in 1P, 2P, and 3P.

Evolutionarily 3P attribution is, therefore, as important as 2P. For example, primate infants initially ride on their mothers' backs or cling to their bellies for prolonged periods of time watching what happens around

them in 3P, with little in the way of face-to-face interaction *à la human* or direct participation in what they see. Observing others is an important source of learning in any primate's life.

Primates are indeed competent contemplators of others' interactions. For example, they can identify unusual dominance/subordinate patterns in interactions in which they do not directly participate [Cheney, Seyfarth and Silk (1995)], and they may adjust their own behaviour to new individuals on the basis of non-participant observational learning. For example, male hamadryas baboons refrain from trying to recruit a newly encountered female if previously they observed her from a distance positively interacting with another male, which is usually an indication of the female already being part of an 'harem' [Bachman and Kummer (1980)].

Adaptively it is as important to detect and negotiate one's 2P engagements with others as to detect and anticipate others' engagements with objects and agents in the environment. The contemplative and the interacting perspectives are equally crucial, and evolution must have provided mechanisms to deal with both simultaneously.

Of course, this is not to deny that the 2P experience is qualitatively different to 1P and 3P, just that it might not be the only or even the primary perspective from which socially competent behaviour emerges in development and evolution. Existing evidence from developmental and comparative psychology is compatible with the idea that 2P and 3P are separate, even if eventually coordinated, strands of mentalistic attribution, and that both perspectives may in principle enjoy a comparable degree of non-inferential transparency of mental attribution. What is therefore the distinctive feature of 2P?

IV. DEFINING THE SECOND PERSON: RECIPROCAL CONTINGENCY

Another candidate to being the distinctive feature of 2P psychological experience, highlighted by Pérez and Gomila (2021) and Moore and Barresi (2017), is the peculiar dynamics of reciprocal contingency in 2P interactions which may produce a distinctive experience of mutually interdependent psychological states.

In developmental psychology it has frequently been pointed out that the nature of the contingencies experienced when interacting with the physical world is qualitatively different to contingencies experienced inter-

acting with social entities. The behaviour of the latter is only partially determined by the actions of the interactant and therefore gives rise to an 'imperfect' type of contingency [Gergely and Watson (1999)].

Contingencies in social interaction are not only imperfect, but also swiftly changing in a reciprocally dynamic way. Any action of agent A may immediately trigger a reaction of agent B, which in turn may trigger a counter-reaction in A, and so on. In a 3P contemplative mode one can track the behaviour of other organisms without directly influencing or being influenced by them (e.g., keeping track of where a potential predator or competitor is without having been noticed), at least not in this immediate reciprocal way. Is therefore this special reciprocal dynamic of 2P behavioural interaction the source of the unique 2P experience of psychological attribution?

V. THE EVOLUTION OF SECOND PERSON INTERACTION

The peculiar reciprocal contingency of interacting organisms is an ancient and key adaptive challenge in evolution — think of sexual reproduction, one of the cornerstones of the evolutionary process. Some of the most remarkable adaptations in evolution have to do with ensuring reproductive mating, which implies successful coordination of two independent agents. Surprisingly, rather than evolving the simplest possible solution to this problem, natural selection has produced some baroque, strangely elaborate solutions, in the form of courtship and mating rituals in which mutual responses to each others' advances and retreats are complexly choreographed in animals [Bastock (1967)]. Although the best-known and most spectacular examples may come from mammals and birds, insects display a surprising amount of complexity and flexibility in their courtship behaviours, too. For example, the humble drosophila melanogaster performs a complex courtship sequential display that is far from rigid and fixed [Cobb et al. (1986)].

Something similar, maybe even more open-ended, happens in another key evolutionary arena where interaction between organisms is literally a matter of life or death: predation. The adaptive and counter-adaptive patterns of approach/escape movements need to work in a flexible and intricate way for successful capture or evasion.

However, these complex patterns of cooperative and competitive reciprocal interaction are in themselves not what we have in mind when we speak about 2P attribution, where we are rather referring to how organisms *experience* each other's intentionality in such reciprocal encounters. 2P evolutionary games such as predation and reproduction come accompanied by

sets of adaptive moods and emotions usually expressed in communicative displays: fear, anger, playfulness, sexual emotion and motivation... On top of these there is one of special importance: the ability to detect oneself as the focus of the attention and intentions of others.

VI. 2P EVOLUTIONARY GAMES AND THE COLLISION OF INTENTIONALITIES

We can think of organisms as “Brentanian agents” that generate brain states about the environment: detecting objects (e.g., a piece of food), acting in relation to them (e.g., picking and ingesting the food), etc. Importantly, these objects may not exist in reality. For example, think of an organism activating an escape response after hearing the noise of a bush moved by the wind. The escape response has been selected to avoid predators and therefore in this case it is “about” a potential predator that does not really exist. An old and key behavioural adaptation is what Pavlov called the “What is this?” or orientation reflex, where animals orient their sensory organs in a particular direction to extract detailed information about an event before activating a specific adaptive response [Phelps (2011)]. This may be considered as a quintessentially “Brentanian reflex” in which organisms are about something they have not yet been able to categorise and that may not exist at all.

And when the objects do exist in reality, organisms do not perceive and act upon them in a detached, objective way. The objects of organisms’ perceptions and activities are not just the objects as they exist independently in the world, but ‘as experienced’ by them. One and the same object might be a prey for an animal, but a predator for another, or what is food for one might be an obstacle or a tool for another. There is subjectivity in any type of perception/action by a particular animal in relation to a particular object. This is well captured by Jakob von Uexküll’s (1957) notion of *Umwelt*, the “phenomenal world of the animal”, or how animals subjectively perceive and react to their environments.

Organisms with brains are therefore Brentanian entities that perceive and act in relation to their world (*Umwelt*) in an inevitably subjective way. Many of these activities involve dealing with objects in 1P and 3P intentional relations (e.g., looking for food, avoiding predator detection). However, a frequent occurrence in the environment is the encounter with other agents. When a Brentanian agent encounters another Brentanian agent, a “collision” of intentionalities occurs. Their intentional processes are about

each other's intentional processes in a relationship of mutual intentionality [Gómez (1996a), (2008)]. This collision generates a peculiar evolutionary dynamics in which any evolved adaptation to the intentional properties of other animals becomes an environmental challenge that may in turn trigger further intentional adaptations, which in turn trigger counter-adaptations, and so on [Gómez (2021)].

This reciprocal evolutionary dynamics has been aptly characterised by behavioural ecologists as involving an “arms-race-like” interaction between *manipulators* and *mindreaders*, where actors ‘try’ to provoke reactions in agents that increase their adaptive fitness, whereas reactors (who are also actors themselves) ‘try’ to avoid being manipulated by engaging in anticipatory “mindreading” [Krebs and Dawkins (1984)]. In this co-evolutionary process evolution must find an optimal solution between evolving adaptations that show and adaptations that hide the interactants’ ‘intentions’, between facilitating cooperation or competition depending upon the socioecological circumstances of each species.

The terms “manipulation” and “mindreading” are of course used metaphorically (not as a reference to the cognitive side of the adaptive mechanisms responsible), but they capture well the fact that *implicit* in this evolutionary dynamics is the problem of the special mutual contingency of 2P interactions that emerges out of the collision of agents’ intentionalities.

VII. THE COLLISION OF INTENTIONALITIES: MUTUAL ABOUTNESS

As originally suggested by Gómez (1996a), the key distinctive feature of the 2P experience of psychological attribution is this collision of mutually perceived intentionalities. Among the evolutionary adaptations emerging out of the 2P interaction arena, some became specialised in dealing with experiencing intentional directedness in collision mode. For example, the two core evolutionary ‘games’ of predator/prey and mating interactions have evolved with distinctive emotions and motives associated to them. In highly social species, like primates, other 2P scenarios occur in everyday social life; for example, social play, or dominance/subordinate interactions, and they all come with accompanying cognitive and emotional components.

It is difficult to speculate about the nature of the conscious experience of the different personal stances (1P, 2P, 3P) in nonhuman animals, given the impossibility of introspective reports from them, but at least in

many species there is ample behavioural evidence of adaptations specialised in detecting and negotiating the attention and intentions of others in 2P scenarios.

In more distant species of invertebrates and vertebrates there are adaptations that exploit automatic reactions to being the target of attention of a potential predator or competitor. For example, the polyphemus moth has evolved fake eyes on its wings, that when displayed may provoke escape reactions in predators. Cuyaba frogs have evolved eye spots on their romps, that they inflate provoking the threatening impression of a bigger animal that scares away their predators. Being the focus of other organisms' attention is therefore evolutionarily linked to powerful behavioural and emotional reactions.

In primate species some of these aversive reactions and emotions remain linked to the experience of prolonged mutual gaze, normally accompanied by specific threat signals, such as lifted eyebrows, as part of their communicative repertoire. However, primates have evolved more subtle adaptations around the behavioural phenomenon of mutual gaze, such that eye contact can be used in diverse contexts with very different behavioural and emotional reactions. For example, in social play -- one of the most elaborate and pervasive 2P social behaviours in primates -- virtually all species include mutual gaze as part of their interactions.

The evolution of specific 2P adaptations in expressions of attention and intention is especially apparent in apes, where eye contact is used as a flexible interactive signal in a variety of contexts, ranging from aggression and threat to its exact opposite, reconciliation. It has been proposed that these adaptations for showing and managing mutual attention and intentions are the evolutionary origins of ostension and Gricean intentionality [Gómez (1996b), (2020)]. In its prolonged evolutionary history, eye contact might have become the incarnation' or embodiment of what some animal scientists have proposed to 'exorcise' from comparative psychology as "Grice's ghost" [Townsend et al. (2017)] — the problem of communicative intentionality in non-verbal organisms. Eye contact and its associated patterns to display and detect mutual attention may have evolved as a natural way of signalling and regulating the ostensive component of 2P interactions and experiences of colliding intentionality.

VIII. OPACITY IN THE SECOND PERSON

I argued earlier that non-inferential transparency of mental states is not unique to 2P, but is also found in 3P attributions. However, in all

persons of experience the public availability of mental states is only relative and limited. Transparency and opacity are two sides of the same epistemic coin. In 2P interaction and in 3P contemplation we show our mental states as much as we hide them. Young children must learn not only about how people express their intentions and beliefs, but also about how they may hide them. In the same way that one could argue that 2P is a privileged arena for learning about how mental states can be expressed, it may also be a privileged way of learning about the ultimate opacity, both in an epistemic and semantic sense, of the intentions and thoughts of the other. This is already built in the evolutionary 2P games, which involve a compromise between transparency and opacity of communicative signalling. Think for example of the pervasive social play-chasing and play-fighting behaviours in primates and other mammals. One of the key components of such games is the balance between predictability and unpredictability of the participants' actions. One can learn to show and hide, read and misread signals of intentionality in the course of such interactions, and one of the key lessons learned in such 2P interactions might be about the ultimate opacity of others' intentions.

One could even speculate that early 2P interactions in humans might be the ideal playground to discover the impossibility of experiencing and showing all our mental states. Maybe the default state of the infant mind is an assumption of mental transparency of agents, and maybe one of the key functions of 2P interaction is to show the relative opacity of other minds. Perceiving this opacity might be an essential element of the 2P experience. Indeed, in any conversation or interaction there is an interplay between what we show and what we hide. The second person experience, as much or more than the 3P experience, makes us constantly aware of this interplay between transparency and opacity, which is the true hallmark of the mental.

It is in the reciprocally contingent, quickly evolving arena of second person interaction, where A's intentions are influenced by B's intentions that in turn are influenced by A's reactive intentions, that one may more easily learn that information about what the other is going to do is not always available, reliable, or complete, and maybe also in turn learn about the relative opacity of your own intentions and thoughts to the other.

CONCLUSIONS

I have discussed two key features of the second person perspective: non-inferential transparency of mental states and reciprocal contingency

of interaction. The first is not unique to 2P: developmental evidence suggests that it also occurs at a comparable level in the 3P observational mode from very early in human development; and the second is insufficient to explain the 2P psychological experience.

The distinctive essence of 2P psychological experiences lies in the structure of mutual intentionality and the specialised cognitive and emotional adaptations emerged over a long evolutionary history to deal with the problem of mutual aboutness — the collision of agents' intentionalities when they become each others' focus of intentional activity. Mutual, reciprocal contingency of interaction has existed for very long in phylogeny, giving rise to a phenomenal variety of communicative signals, displays, and rituals in the animal kingdom. To understand 2P psychological experience we must understand the specific cognitions and emotions that have also emerged in evolution to address the problem of colliding intentionalities.

School of Psychology & Neuroscience
University of St. Andrews
St. Andrews, KY16 9JPUK
E-mail: Jg5@st-andrews.ac.uk

REFERENCES

- BACHMANN, C. & KUMMER, H. (1980), 'Male Assessment of Female Choice in Hamadryas Baboons'; *Behavioral Ecology and Sociobiology*, 6, pp. 315–321.
- BARONE, P. & GOMILA, A. (2021), 'Infants' Performance in the Indirect False Belief Tasks: A Second-Person Interpretation'; *WIREs Cognitive Science*. 2021; 12:e1551. <https://doi.org/10.1002/wcs.1551>.
- BARRESI, J., & MOORE, C. (1996), 'Intentional Relations and Social Understanding'; *Behavioural and Brain Sciences*. 19, pp. 107–122. doi: 10.1017/S0140525X00041790
- BASTOCK, M. (1967), *Courtship: An Ethological Study*; London: Routledge.
- BOWLBY, J. (1969), *Attachment*; London: The Hogarth Press.
- CHENEY, D. L., SEYFARTH, R. M., & SILK, J. B. (1995); 'The Responses of Female Baboons (*Papio cynocephalus ursinus*) to Anomalous Social Interactions: Evidence for Causal Reasoning?'; *Journal of Comparative Psychology* 109, pp. 134–141.
- COBB, M., BURNET, B., & CONNOLLY, K. (1986), 'The Structure of Courtship in the *Drosophila melanogaster* Species Sub-Group'; *Behavior*, 97(1/2), pp. 182-212.

- DEMUTH, C. (2015), 'Mother Child Communication: Cultural Differences; in J. Wright (Ed.), *International Encyclopedia of Social and Behavioral Sciences* (2nd ed.); Elsevier Publisher, doi:10.1016/B978-0-08-097086-8.232091
- DULLSTEIN, M. (2012), 'The Second Person in the Theory of Mind Debate; *Rev. Philos. Psychol.* 3, pp. 231–248. doi: 10.1007/s13164-012-0095-2
- GALLAGHER, S. (2001), 'The Practice of the Mind: Theory, Simulation, or Primary Interaction'; *Journal of Consciousness Studies* 8, pp. 83–108.
- GALLESE, V. (2014) 'Bodily Selves in Relation: Embodied Simulation as Second Person Perspective on Intersubjectivity'; *Philosophical Transactions of the Royal Society B*, 369:20130177.
- GERGELY, G., & WATSON, J. S. (1999), 'Early Socio-Emotional Development: Contingency Perception and the Social-Biofeedback Model,' in *Early Social Cognition: Understanding Others in the First Months of Life*, ed. P. Rochat (New York, NY: Psychology Press), pp. 101–136.
- GÓMEZ, J. C. (1996a), 'Second Person Intentional Relations and the Evolution of Social Understanding'; *Behavioral and Brain Sciences* 19, pp. 129–130. doi: 10.1017/S0140525X00041881.
- (1996b), 'Ostensive Behavior in the Great Apes: The Role of Eye Contact'; in A. Russon, S. Parker, & K. Bard (Eds.), *Reaching into Thought: The Minds of the Great Apes* (pp. 131–151). Cambridge: Cambridge University Press.
- (2008), 'The Evolution of Pretence: From Intentional Availability to Intentional Non-Existence'; *Mind and Language*, 23(5), pp. 586–606.
- (2020), 'Intentionality'; in J. Vonk and T. K. Shackelford (Eds.), *Encyclopedia of Animal Cognition and Behavior* (pp. 1–9). Cham: Springer.
- (2021), 'Social Cognition Overview'; in A. B. Kaufman, J. Call, & J. C. Kaufman (Eds.), *The Cambridge Handbook of Animal Cognition* (pp. 225–271). Cambridge: Cambridge University Press.
- GOMILA, A. (2003), 'La perspectiva de segunda persona'; in E. Rabossi & A. Duarte (eds.) *Psicología Cognitiva y Filosofía de la Mente*. Buenos Aires: Alianza Editorial, pp. 195–218.
- KREBS, J. R. & DAWKINS, R. (1984), 'Animal Signals: Mind-Reading and Manipulation'; in J. R. Krebs & N. B. Davies (Eds.), *Behavioural Ecology: An Evolutionary Approach* (2nd ed.), (pp. 380–402). Oxford: Blackwell Scientific Publications.
- LOW, J. & WATTS, J. (2013), 'Attributing False Beliefs About Object Identity Reveals a Signature Blind Spot in Humans' Efficient Mind-Reading System'; *Psychological Science* 24(3), pp. 305–311.
- MOORE, C., & BARRESI, J. (2017), 'The Role of Second Person Information in the Development of Social Understanding'; *Frontiers in Psychology*, 8:1667.
- PEREZ, D & GOMILA, A. (2021), *Social Cognition and the Second Person in Human Interaction*; London, Routledge.
- PHELPS, B. I. (2011), 'Orienting Response'; in: Goldstein, S., Naglieri, J.A. (eds) *Encyclopedia of Child Behavior and Development*. Springer, Boston, MA. https://doi.org/10.1007/978-0-387-79061-9_2037

- REDDY, V. (1996), 'Omitting the Second Person in Social Understanding'; *Behavioral and Brain Sciences* 19, pp. 140–141. doi: [10.1017/S0140525X00041996](https://doi.org/10.1017/S0140525X00041996)
- (2008), *How Infants Know Minds*; Cambridge, MA: Harvard University Press.
- SCHILBACH, L., TIMMERMANS, B., REDDY, V., COSTALL, A., BENTE, G., SCHLICHT, T., ET AL. (2013), 'Toward a Second-Person Neuroscience'; *Behavioral and Brain Sciences* 36, pp. 393–414.
- SCOTT, R. & BAILLARGEON, R. (2017), 'Early False-Belief Understanding'; *Trends in Cognitive Science*, Vol. 21, pp. 237–249.
- TOWNSEND, S. W., KOSKI, S. E., BYRNE, R. W., SLOCOMBE, K. E., BICKEL, B., BOECKLE, M. ET AL. (2017), 'Exorcising Grice's Ghost: An Empirical Approach to Studying Intentional Communication in Animals'; *Biological Reviews*, 92(3), pp. 1427–1433.
- TREVARTHEN, C. (1979), 'Communication and Cooperation in Early Infancy'; *Before Speech: The Beginnings of Human Communication*, M. Bullowa (ed.), Cambridge, Cambridge University Press, pp. 321–347.
- UEXKÜLL, JAKOB VON (1957), 'A Stroll Through the Worlds of Animals and Men: A Picture Book of Invisible Worlds'; in C. H. Schiller (ed.), *Instinctive Behavior: The Development of a Modern Concept*. New York & London: Methuen: pp. 5–80.
- UITHOL, S., PAULUS, M. (2014), 'What Do Infants Understand of Others' Action? A Theoretical Account of Early Social Cognition'; *Psychological Research* 78, pp. 609–622.
- WAISMAYER, A & MELTZOFF, A. (2017), 'Learning to Make Things Happen: Infants Observational Learning of Social and Physical Causal Events'; *Journal of Experimental Child Psychology*. 162. Pp. 58–71. [10.1016/j.jecp.2017.04.018](https://doi.org/10.1016/j.jecp.2017.04.018)
- WOODWARD, A. L. (2009), 'Infants' Grasp of Others' Intentions'; *Current Directions in Psychological Science*, 18(1), pp. 53–57. <https://doi.org/10.1111/j.14678721.2009.01605.x>