



e-ISSN 2084-1043 p-ISSN 2083-6635
Published online: 15.10.2026

ARGUMENT
BIANNUAL PHILOSOPHICAL JOURNAL

Vol. 16 (1/2026) pp. 175–190
<https://argument.uken.krakow.pl/>

Current challenges in animal communication research. Griffin's *The question of animal awareness* half a century on

Marcin URBANIAK*

ABSTRACT

In the fifty years since Donald Griffin's groundbreaking publication, countless scientific papers have appeared on the 'mental landscape' (broadly interpreted) of various groups of animals other than humans. It is noticeable that as the number of publications has grown, so have controversies and theoretical debates, and advances in our understanding of animal minds continue to be called into question. In this article, I attempt to outline four key ways in which Griffin's 1976 hypotheses have been both a challenge and an inspiration for the development of interdisciplinary animal cognition and comparative cognition. Griffin repeatedly emphasises the potential value of communication with animals as a source of information about the mental experiences and states animals may possess, including states of consciousness, so these four challenges for contemporary interdisciplinary studies are also related to methodological issues relating to animal communication.

KEYWORDS

animal communication, animal awareness, animal mind, animal consciousness, zoosemiotics

* Ph.D. (habil.), associate professor, Department of Sociology, University of the National Education Commission in Krakow. E-mail: marcin.urbaniak@uken.krakow.pl.

INTRODUCTORY REMARKS

Half a century has passed since the publication of Donald R. Griffin's book *The question of animal awareness*. Evolutionary continuity of mental experience (Griffin, 1976). This unassuming, 105-page work sparked "immediate and vociferous reactions" in the fields of zoology, psychology and philosophy, and it soon became a milestone in the cognitive sciences, the natural sciences and the humanities. To paraphrase Griffin himself, since its publication in 1976, "the ferment of constructive excitement" in cognitive and natural sciences has continued, constantly prompting consideration of the degree to which "nonhuman animals share with us the capacity for conscious thinking, planning of future actions, or any of those mental experiences which are known under the general term 'awareness'" (Griffin, 1981: vii). As early as the 1970s, he realised that the questions he himself had raised along with Jane Goodall, David Premack and Thomas Nagel regarding the mental life and conscious states of animals would gain momentum with each passing decade and give rise to ever-wider, interdisciplinary fields of research. So he undertook, amongst other things, the task of providing an outline of a possible direction in which ethology should develop within the cognitive paradigm. But above all, he described in detail the evidence for the existence of mental life among vertebrates and invertebrates and presented a possible method for accessing this life — by interpreting communicative behaviours as manifestations of the inner lives of animals.

Five decades after the publication of *The question of animal awareness* (abbreviated here to *QAA*) and its subsequent, expanded editions, research into communication strategies, types of signals, as well as cognitive processes and mental phenomena in the minds of animals has grown into an interdisciplinary subject I provisionally refer to as the multidiscipline of 'animal cognition' — combining neurological, evolutionary, behavioural, cognitive, philosophical and even mathematical perspectives. This growth led, at the start of the 21st century, to an explosion of countless analyses, experiments and speculations, now ongoing for almost three decades and producing a flood of hypotheses and conclusions of varying quality and expanding on Griffin's 1976 reflections in many ways. However, the greatest significance of *QAA* lies elsewhere, in a less spectacular but perhaps scientifically more important area: In simple, clear language, Griffin highlighted the methodological problems and challenges faced by cognitive ethology — only just emerging in 1976 — and which, half a century on, still represent a key challenge for the expanding multidiscipline of animal cognition. The significance of these

methodological challenges is all the more profound given the wide range of research objectives and questions posed by entire research teams as they tackle the phenomenon of cognition and cognitive systems not only in vertebrates, but also in many groups of little-known invertebrates — such as coelenterates, echinoderms, microscopic arthropods, or cephalopods — subjects of research very much in vogue in over the last decade. For this reason, in this text, which serves as a tribute to Griffin's groundbreaking book, I shall not attempt to summarise the contents of the *QAA*. Instead I will highlight four issues I see as emerging from Griffin's work and which, half a century on, still appear to be pressing.

It is worth emphasising that Griffin, in his numerous works, maintains the premise that it is possible to gain access to the complex mental states and experiences of animals, including states of consciousness. Secondly, this access is facilitated by the medium of communicative behaviour, provided it is adequately recorded and interpreted. An ethological, cognitive and comparative analysis of communication in the broadest sense is “a possible window on the minds of animals” (Griffin, 1976: 87). Griffin therefore devotes the first three chapters of *QAA* to discussing various forms of animal communication — from the echolocation of bats and dolphins, through the symbolic communication of honeybees, to sign language in apes — alongside philosophical reflections on the capabilities of symbolic communication (*ibidem*: 16–37). The second part of *QAA*, comprising the next three chapters, is an attempt to clarify the adaptive value and cognitive function of mental experiences and the mental state of consciousness. The book also contains summaries of conflicting views on the existence or non-existence of complex mental content in non-human animals. As I have mentioned, we shall omit detailed analyses of scientific positions and the communication of selected species and focus on a few general methodological issues that remain relevant today. The relevance of these methodological issues seems to be growing more complex with each passing decade, in direct proportion to the increasing, interdisciplinary interest of researchers worldwide in non-human cognitive systems and processes.

CURRENT ISSUES IN ANIMAL COMMUNICATION RESEARCH

Among the various approaches for gaining insight into the minds of animals, the analysis of complex communicative behaviours is, according to Griffin, the most convenient approach, though not the only one possible. “I believe that the communicative behavior of animals offers especially promising insights

into whatever thinking may be going on in their brains” (Griffin, 1981: 2). Communication acts are a class of behavioural patterns identified by Griffin and occurring ‘in real time’ during ethological observation — an expression of the richness of an animal’s mental life. This wealth of mental phenomena includes sensory experiences, mental representations and concepts, advanced cognitive abilities and processes, emotional feelings and complex mental states, including awareness and conscious awareness. The study of these mental processes, ideally through direct cross-species communication between the researcher and the animal, is the future of “a truly experimental science of cognitive ethology” (Griffin, 1976: 105). For Griffin, all these sensory and mental phenomena are as self-evident as the physically tangible features of anatomy or physiological structure. Griffin met with criticism and accusations of anthropomorphism, a point to which we shall return. In opposition to these sceptical reactions, which he decisively rebutted in the pages of *QAA*, he went on to argue that attributing mental experiences and states of consciousness solely to the human species is an expression of scientific arrogance — as well as, often as not, factual ignorance and naïve anthropocentrism. Taking as an axiom the phylogenetic continuity of neurobehavioural and psychophysical traits from common ancestors, he defended a thesis that has become less controversial today: the view that mental life is universal amongst vertebrates at the very least, differing only in terms of the complexity of associations, representations or sensory modalities.

A recurring theme throughout the work is the fundamental scientific challenge: to accept or reject the existence of mental and emotional experiences, or of representations thereof, as we seek to investigate the relevant phenomena without scientifically detrimental bias. The question of whether to accept or reject high-level mental states appears to be, for Griffin, a basic binary choice — for serious analysis or its abandonment. Accepting the existence of mental content in non-human species leads to the next step, which is adopting a principle of caution regarding speculations as to what kind of mental richness these species possess. This is where the real challenges begin. Griffin suggested exercising a degree of caution until reliable methods for collecting verifiable data on the mental lives of animals are developed. Today, fifty years on, it can be said that methods for accessing and collecting data on the inner lives of animals have made great strides ahead. However, scientists still readily express agnosticism regarding reliable facts about the mental landscape of animals. As neuroethologist Yoram Gutfreund wrote in 2024 in an article with the telling title *Neuroscience of animal consciousness: still agnostic after all*, “Despite its importance and long-history of research, [...]

the main problem is that consciousness in other animals cannot be directly observed, only inferred. Determining whether it is possible to scientifically infer consciousness in non-human animals [...] is unresolvable through scientific methods” (Gutfreund, 2024).

THE FIRST CHALLENGE: LATENT COMPLEXITY OF THE MESSAGE

Throughout *QAA*, the researcher is constantly faced with the problem of objectively determining whether the observed communicative activity expresses complex experiences and representations or whether it merely signals simple physiological and affective states. What method can be used to reliably identify complex communicative activity and underlying mental motivation? In 1976, Griffin assumed — perhaps inspired by the Shannon-Weaver linear model of communication and Sebeok’s classification of signs (2001: 39–60) or Hebb’s (1958: 209) — that complexity implies a longer sequence of interaction between sender and receiver than an immediate reaction, one where the receiver modifies their own behaviour in response to the sender’s intentional, multi-bit messages. When a change in behaviour is observed in response to an interpreted signal, the condition of message complexity is met, provided that the sender is intrinsically motivated to transmit the information and the receiver is intrinsically motivated to receive it. In such cases, the complexity of the transmitted content opens up access to encoded emotional or mental experiences, provided we accept the premise — as observers — that animals possess a mental landscape. This kind of categorical, complex communication appears to characterise primarily warm-blooded vertebrates — birds and mammals.

After decades of developing zoosemiotic and biosemioteic research, we know that Griffin’s criterion may be ineffective. It turns out that higher vertebrates very often emit automatic, single-bit signals in response to external stimuli, sudden stressors, simple emotions or physiological states. This means that the vast majority of signals produced by mammals or birds do not meet Griffin’s definition of complex communication, and nevertheless mental processes are most likely taking place in the minds of these animals. Interestingly, Griffin himself considered this possibility in the face of Jane Goodall’s observations at the time (1968), clearly showing that wild chimpanzees communicate with considerable effectiveness by means of gestures and facial expressions: “Yet these have proved to be so difficult for human observers to analyse in detail

that we cannot say whether they convey anything more than such emotional states as threat, affection, hunger, or sexual enthusiasm” (Griffin, 1976: 19). However, as Griffin pointed out, the complexity of communication is often closely tailored to the nuances of the social situation of even a single individual, which makes field observations of unfamiliar individuals difficult. A reliable indicator, suggesting the potential complexity of vertebrate communication, is the organisation of the social structure characteristic of a given species. The more dynamic and numerous the community — ranging from asocial species, through sub-social and semi-social ones, to inherently social ones — the higher the cognitive and social competencies (as adaptation), and the more complex the cooperative communication — as an expression of these competencies. This connection holds true for chimpanzees, dolphins and even prairie dogs (Slobodchikoff *et al.*, 2009). Unfortunately, eusocial ants and termites contradict the pattern — high social organisation coincides with very simple chemical signalling.

The high degree of difficulty in recognising complex mental content — posing a serious challenge in the design of tests involving controlled recording of communication — is also linked to the fact that both most invertebrates and most vertebrates do not communicate through visual perception, but through chemical and acoustic (Sebeok, 1977), tactile (Wilson, 1971), and sometimes even electrical signals (Hopkins, 1974). Meanwhile, olfactory or auditory perceptual fields and stimulus situations are virtually inaccessible to obligate visual creatures such as humans — as compared even to dogs or cats. Thus, the possibility of recognising complex communication, as anticipated by Griffin, together with access to perceptual channels of communication, may prove to be so species-specific that it is the exception rather than the rule in research. Worse still, the norm in the animal kingdom seems to be the automatic transmission of simple stimuli — merely sensory signals indicating the sender’s sex, reproductive readiness, intense emotional arousal or severe stress and thus a readiness to fight, flee or copulate (Hinde, 1972). These signals may vary in intensity, but they constitute key stimuli for instinctive reactions in the recipient, rather than a deliberate, endogenously motivated and controlled exchange of categorical messages regarding an internal need for cooperation, play or conflict resolution. For these reasons, Griffin’s method of accessing the hidden mental contents of animal minds appears, from today’s perspective, to be far more challenging than its author had anticipated half a century ago.

THE SECOND CHALLENGE: BETWEEN ANTHROPOMORPHISM AND MENTOPHOBIA

Reading *QAA*, one sees Griffin's concerns about excessive caution in attributing inner life to animals. As Griffin emphasised, scientists' concern for the objective status of experimental results, combined with decades of the mechanistic paradigm of behavioural psychology dominating the field, has led to a situation where successive generations of scientists unthinkingly adopt a sceptical stance towards non-human minds, often even feeling fear at the prospect of accepting the fact that other species possess a mental realm. To describe this conditioned and still widespread fear among scientists, Griffin even coined a special term. He wrote: "The antagonism of many scientists to suggestions that animals may have conscious experiences is so intense that it suggests a deeper, philosophical aversion that can reasonably be termed 'mentophobia'. The taboo against scientific consideration of conscious, mental experiences is more prevalent when nonhuman animals are concerned" (Griffin, 1998: 13).

As examples of anthropocentric mentophobia in the context of animals' communicative abilities, Griffin points to the post-Cartesian views of, amongst others, Noam Chomsky with his belief that the ability to learn and use language is a trait unique to the human species (Griffin, 1976: 32). Another example is the statements of philosophers, such as Mortimer Adler (1967), regarding the supposedly purely instinctive behaviour of animals, devoid of the ability to use messages purposefully — suggesting serious gaps in the understanding of the subject matter Adler is commenting on. Griffin also cites the unfounded objection of certain researchers to describing the dance of bees as symbolic communication, reserved solely for humans, even though this dance meets the definition of a symbol as defined by Charles Morris (1955): it is an abstract substitute for directly pointing out food (absent here and now) to individuals. As Griffin noted, behavioural psychology, limited by its preconceptions, was not prepared for the spectacular observations and conclusions provided by ethology in the second half of the 20th century. "We had been poorly prepared by the behaviouristic tradition in psychology or the comparable reductionism in biology" to study the inner lives of animals (Griffin, 1976: 25). It seems that a certain proportion of contemporary researchers, despite decades of research, remain mentally stuck in the shallows of anachronistic mechanistic thinking. "The tendency to think of animals as Cartesian machines is often based on questionable implicit assumptions", wrote Griffin (*ibidem*: 67), assumptions which began to crumble under the weight

of findings from observations of chimpanzees, elephants, dolphins, parrots and even bees, but did not ultimately collapse. Karl von Frisch’s classic observations, and more recently the experiments conducted by Lars Chittka’s research team, have for many decades provided evidence that even some insects are capable of going beyond the rigidity of instinctive responses and engaging in complex social interactions, such as play behaviour (Solvi *et al.*, 2022). However, this is still not enough to eradicate mentophobia from the minds and attitudes of scientists in the 21st century.

An interesting feature of Griffin’s book is its presentation of sceptical viewpoints from the 1970s regarding selected aspects of cognition, mental states and cognitive processes, without categorising them into specific taxonomies (Griffin, 1976: 58):

O.K.	PATTERN RECOGNITION
↑	NEURAL TEMPLATE
↑	SOLLWERT
↑	SEARCH IMAGE
↑	AFFECT
↑	SPONTANEITY
↑	EXPECTANCY
↑	COVERT VERBAL BEHAVIOR
↑	INTERNAL IMAGE
↑	CONCEPT
↓	UNDERSTANDING
↓	INTENTION
↓	FEELING
↓	AWARENESS
↓	MENTAL EXPERIENCE
↓	MIND (MENTAL)
↓	THOUGHT
↓	CHOICE
↓	FREE WILL
TABOO	CONSCIOUSNESS

Griffin wrote that the above list reflected the spirit of the times. To ascertain whether the situation has changed half a century later, social research would be needed. However, it is likely that a sufficiently large survey sample would reflect a similar distribution of doubts regarding the mental life of animals as was the case in the 1970s. Given the current popularity of dogs and cats

on the internet, scepticism or even mentophobia would depend on clarifying which species we are asking about.

Today, the eradication of radical reductionism and harmful prejudices that disregard mental life when explaining animal behaviour remains a challenge with moral and ethical significance, touching upon the very ethos of the scientist. From today's perspective, it seems that a scientifically mature approach to animals is to assume that mental processes are just as universal a phenomenon among evolutionarily related species as neurophysiological processes or neurobehavioural patterns. So, research maturity suggests accepting qualitative continuity (rather than quantitative identity) in the evolution of vertebrate mental life. However, the final casting off of the anachronistic prejudices and preconceptions of mentophobia may prove to be a task spanning centuries. If indeed it is feasible at all.

An alternative problem, a far less threatening one which may not yet have been apparent to Griffin, is 'interpretative nonchalance'. By this I mean the uncritical anthropomorphisation of non-human cognitive abilities and the over-interpretation of research findings. Countering naive anthropomorphisation in an era of growing multidisciplinary knowledge and the multifaceted nature of animal cognition research is both an expression of research maturity and a methodological challenge. It involves possessing specialist knowledge in a specific discipline, close collaboration with experts from other disciplines, exercising caution when generalising conclusions, and bearing Morgan's canon in comparative psychology in mind — not invoking 'higher' animal mental processes unless necessary. Although it is sometimes criticised by researchers who carelessly anthropomorphise animal minds, George Miller (1962) noted that Lloyd Morgan proposed his rule of parsimony neither with the intention of criticising the mental sphere of animals nor with the intention of casting doubt on their cognitive abilities. Morgan merely sought to establish a scientifically rigorous principle of data collection that would eliminate subjective opinions, conjecture and anecdotes.

THE THIRD CHALLENGE: THE ECOLOGICAL VALIDITY OF TESTS

Reading Griffin's arguments, it seems he succumbed to the trends of the second half of the 20th century in its approach to the studying of the linguistic abilities of hominids. In *QAA*, he devotes many pages to enthusiastic analyses of experiments, including those involving the chimpanzee Washoe and Sarah,

in the context of learning and using American Sign Language (Gardner & Gardner, 1969; Premack, 1971). He repeatedly suggests that the research of the Gardners and subsequent scientists has shown that to a certain extent hominids possess a predisposition to use abstract symbols and a natural tendency for purposeful, internally motivated communication. However, this raises doubts regarding the reliability of the research methods — a point Griffin is keen to emphasise. Studies of higher mental faculties in a few individuals who have lived in research centres since childhood and have been taught unnatural, albeit spectacular, cognitive and communicative behaviours may not be representative of the entire taxon. Such situations still occur today. For example, research into the abilities of the bonobo Kanzi continued almost uninterrupted until his death at the Ape Cognition and Conservation Initiative sanctuary, in March 2025 (Townrow & Krupenye, 2025; Bastos & Krupenye, 2026). It is problematic to assume that Kanzi and his two companions, who have spent almost their entire lives in research facilities and exhibit behaviour not found in wild bonobos, constitute an adequate representation of the species *Pan paniscus*, or of the entire genus *Pan*. Similarly, one might ask whether Washoe, who has spent most of her life in university research institutes, is an adequate representative of the common chimpanzee.

If the answer is no, a paradox arises. To reliably determine what information a complex sequence of stimuli conveys (particularly in a perceptual modality other than vision), it is necessary to place the animal in conditions that permit the control of tests, measurements and environmental parameters. At the same time, control devoid of adequate enrichment may prove so stressful and unnatural that it distorts the cognitive processes being tested and therefore the research results. Conversely, if the ability or process being tested is long-term, spatially extensive and sensitive to the dynamic multitude of environmental influences, observing such a process under natural conditions may prove too difficult a challenge, even using mobile new technologies. Appropriate enrichment in controlled conditions and adequate simulation of a natural habitat whilst maintaining control over the research procedure and the field of perception (especially when vision is not dominant), is part of the challenge of producing ecologically valid tests. This problem appears to be one of the greatest challenges facing both comparative psychology and cognitive ethology, as well as the interdisciplinary field of animal cognition. An effective method of avoiding invalidity here is to make use of an ever-improving understanding of the general and detailed ethograms of selected animal species, alongside increasingly refined concepts of sensory, cognitive, social and physical enrichment of the animals' living environments. The passage of time

and the rapid development of knowledge in the fields of cognitive ecology and behavioural ecology have helped to increase test validity. However, in some particular cases, the knowledge of ethograms and enrichment measures is insufficient — then the only sensible decision may be to refrain from carrying out tests that are of little reliability.

THE FOURTH CHALLENGE: STANDARDISATION OF DEFINITIONS AND TERMINOLOGY

Griffin's book begins with a statement which, five decades on, still represents a problem, one that is likely to become even more acute as multidisciplinary research continues to develop. "Terms such as mental experiences, mind, awareness, intention, or consciousness are obviously difficult to define" and as the decades go by, there is no sign that this terminological ambiguity will become any clearer (Griffin, 1976: 4). Depending on how awareness and mental experiences are defined, conclusions regarding their presence in different animal species can vary considerably. Griffin, employing a popular science style, offers simplified and superficial definitions that are sufficient for the reader to grasp meanings intuitively. In Griffin's terminology, 'mental experiences' refers to all representations of objects and events that are perceptually "remote in time and space from the immediate flux of sensations" (*ibidem*: 5). Mental experiences encompass a very wide range of cognitive structures, mental phenomena and even physiological states: from representations and intentions, through emotional and bodily feelings, desires, hopes, fears, and sensations of pain or hunger, to awareness of objects or relationships in the external world. From the perspective of cognitive science, this raises many doubts, doubts which may be overlooked given the popular-scientific nature of the discussions in *QAA*.

Griffin, on the other hand, devotes the most space to the definition of 'awareness'. Awareness is a whole set of interrelated mental images of the flow of events (*ibidem*: 5). These may be close in time and space (like a toothache) or extremely distant. On the following pages, he elaborates somewhat: "Awareness can be considered as [...] the existence of [the whole set of] internal images available for comparison with current sensory input" (*ibidem*: 83). This understanding of awareness brings to mind the cybernetic concept of the 'set-point' or *Sollwert* — the value or valence of a sensory signal that an animal's cognitive system maintains as a reference point, and a desired state of harmony toward which the entire organism strives by anticipating expected stimuli and adjusting its behaviour to these predictions (Mittelstaedt, 1972). In this case,

awareness can be understood as a set of endogenous sensory images representing a setpoint (valuable and predicted stimuli), which are actively compared and associated with bottom-up streams of perceived stimuli. To put it simply, awareness is a mental state representing cognitive resources the animal must continually replenish and maintain.

The possession of mental experiences or representations is a significant adaptive advantage, providing a reference pattern against which perceived stimuli can be compared and beneficial resources can be effectively recognized. And not merely in a stereotypical or instinctive way, but flexibly, as beneficial affordances or as additional information to be applied to contexts recalled and anticipated situations (Griffin, 1976: 84). It can be argued that, in a certain sense, Donald Griffin anticipated the contemporary, innovative concept of the biological cognitive system as a 'predictive machine', in which mental experiences and mental states perform the cognitive functions of the predictive processing of sensory data. Awareness as a set of mental predictions of a highly probable future enjoyment of food and mating, or the fear of anticipated injury, has high adaptive value, enabling a flexible control of behaviour that increases the likelihood of positive reinforcement and reduces the probability of negative stimuli such as pain or injury.

The problem of defining terms that are still so ambiguous — such as 'awareness' or 'consciousness' — sparks debates that seem more often to exacerbate discord rather than moving towards consensus. Empirical cognitive neuroscience, including neurobiology and neuropsychology, has achieved far better results in the standardisation of the concepts it uses. Within this field, the concept of 'awareness' is most often associated with the capacity to maintain bound, multimodal representations in working memory. This conception came to the fore in studies of human mental imagery investigating the rating of the vividness of visual and auditory memories under various dual-task conditions. The basic idea of a link between working memory and awareness was also developed through research on eye movement desensitization and reprocessing. Current findings suggested that information communicated and received can be bound with long-term semantic and episodic memory systems and such a message can then be represented within the *episodic buffer*, with its initial registration in conscious awareness not requiring explicit and critical executive control (Allen *et al.*, 2026). From a contemporary perspective, the concepts standardised within neuroscience nomenclature should be accepted across the entire interdisciplinary field of animal cognition and adopted by comparative psychology, cognitive ethology and, in particular, philosophical or phenomenological speculations concerning animal minds. It would then be possible to

avoid the current excessive ambiguity of concepts, their overly complex terminology, and the vagueness of many terms used by the humanities.

THE FUTURE OF ANIMAL COMMUNICATION

QAA has suggested a direction for ethology to develop. This involves emphasising the cognitive dimension by taking into account the subjective mental experiences of animals through their active participation in communicative behaviour. Influenced by the popularity of research into teaching hominids symbolic language, Griffin proposed the development of experimental participatory communication between animal and researcher. This would represent the expansion of ethology to include the cognitive paradigm, and at the same time it would herald the interdisciplinary field known today as animal communication. Participatory communication seemed possible to Griffin due to the success of its pioneers, namely the Gardners and the Premacks, who managed to establish direct, complex communication with hominids thanks to the primacy of the sense of sight in primates and shared hand gestures. According to Griffin, the next step after primates is an interspecies dialogue with companion mammals — dogs and cats (Griffin, 1976: 89). The aim would be to literally engage in dialogue with our pets to verify the full meaning of the signals they use. A significant limitation of which Griffin was aware is the perceptual, neurobehavioural and ethological differences between us and other mammals. These differences mean that, in all likelihood, neither the researcher nor the carer will ever become a fully equal social partner for four-legged mammals, in whom olfactory perception and communication predominate whilst the repertoire of signals is expressed through the movement of the tail, back, ears or piloerection.

Griffin tentatively referred to the evolution of cognitive ethology and comparative psychology towards participatory, experimental and interspecific communication between researcher and animal as ‘comparative linguistics’ (*ibidem*: 95). He saw its value once again in its multidisciplinary impact on the development of human psychology, sociology and sociobiology — and most especially on the development of philosophical reflection on language and the mind. As he predicted, the dynamics of comparative approaches and participatory experiments held the potential to reveal important properties of communication systems “by correlating signals the animals exchange with behavior that is observed either simultaneously or subsequently” (*ibidem*: 97). A direct benefit has been the ability to experimentally manipulate stimuli in

order to detect and analyse cognitive processes occurring ‘in real time’ in the brains and minds of animals.

Griffin, drawing inspiration from the reflections of Thomas Nagel (1974), considered the possibility that different species of vertebrates, inhabiting different *umwelts*, might possess emotions, feelings, beliefs or concepts so vastly different from those of humans that we would be unable to communicate with them. However, among evolutionarily closely related species, with similar cognitive functions and neurophysiological processes, such basic needs as resource acquisition, social communication, emotional bonding or threat avoidance do not differ from one another and are shared across species. In that case, Griffin claimed, it can be argued that the cognitive structures, goals, motivations and intentions of various animals are related to those of humans and are expressed in a system of communication.

Unfortunately, a more serious problem was highlighted by David Premack (1975) and, in subsequent years, by Peter Marler (1979). In contrast to a person who communicates judgements, makes factual claims, asks questions or expresses negations, “much animal communication conveys an emotional or affective state, such as fear” or other simple emotional episodes (Griffin, 1976: 98). It is therefore highly likely that, whilst we may understand the emotions, goals or motives of other mammals, other species will be unable to interpret our mental states, which are inaccessible to other animals because they place an unnecessary burden on the nervous system and lack adaptive value. However, if we share with other species not only anatomical, physiological and biochemical traits, but even a fraction of emotional experiences, and perhaps also mental representations, research efforts — for example, in the form of the development of modern zoosemiotics or comparative zoolinguistics — are by all means desirable and worthy of further development. “Language or, in a broader sense, communication behavior, is virtually the only method we have for learning about the subjective mental experiences [...], the newly recognized versatility of animal communication behavior opens up a window by which we can hope to learn something, at least, about whatever mental experiences animals may have” (*ibidem*: 100).

CONCLUSIONS

“Language has generally been regarded as a unique attribute of human beings, different in kind from animal communication” (*ibidem*: 103). In the wake of analyses, initiated by Griffin and continued over subsequent decades, it is

becoming increasingly clear that the foundation upon which this dubious distinction rests is the erroneous assumption that vertebrates and certain insects or cephalopods lack a conscious, purposeful, internally motivated intention to communicate. The available evidence regarding the communicative behaviour of mammals (Brensing, 2018), birds (Heinrich, 1999), fish (Balcombe, 2016), bees (Chittka, 2022) and cephalopods (Scheel *et al.*, 2016) suggests that there is no qualitative dichotomy, but only a quantitative difference in the complexity of signals and the range of intentions that distinguishes animal communication from human language. Griffin was aware that these hypotheses were difficult to verify using the methods available in the 1970s and for this reason, in the field of comparative cognitive studies, he paved the way for subsequent generations of researchers — addressing us today as well — so that we might not cease from improving research methods to determine when and where animal consciousness may occur and what its content might be. The future expansion and refinement of communication between scientists and animals offers hope for the timely development of a truly experimental field of animal cognition. On the other hand, modern zoosemiotics and animal communication should accept the possibility that some animals have mental experiences which, for a variety of reasons incomprehensible to us, they will never communicate to us, and that their inner lives will forever remain a mystery to us — a mystery that we must respect. Thus, in the 21st century, “we [still] we may be able to discern only the tip of a large and significant iceberg” of animal minds and cognition (Griffin, 1976: 101).

BIBLIOGRAPHY

- Adler, M.J. (1967). *The difference of man and the difference it makes*. New York: Holt, Rinehart & Winston.
- Allen, R.J., Baddeley, A.D. & Hitch, G.H. (2026). Awareness as the heart of working memory. *Trends in Cognitive Sciences*, in press.
- Balcombe, J. (2016). *What a fish knows. The inner lives of our underwater cousins*. New York: Straus & Giroux.
- Bastos, A. & Krupenye, C. (2026). Evidence for representation of pretend objects by Kanzi, a language-trained bonobo. *Science*, 391(6785), 583–586.
- Brensing, K. (2018). *Die Sprache der Tiere*. Berlin: Aufbau Verlag GmbH & Co.
- Chittka, L. (2022). *The mind of a bee*. Princeton: Princeton University Press.
- Gardner, B.T. & Gardner, R.A. (1969). Teaching sign language to a chimpanzee. *Science*, 165, 664–672.

- Goodall, J. van Lawick (1968). Behavior of free-living chimpanzees of the Combe Stream area. *Animal Behaviour*, 1, 165–311.
- Griffin, D.R. (1976). *The question of animal awareness: Evolutionary continuity of mental experience*. New York: The Rockefeller University Press.
- Griffin, D.R. (1981). *The question of animal awareness: Evolutionary continuity of mental experience. Revised and enlarged edition*. New York: The Rockefeller University Press.
- Griffin, D.R. (1998). From cognition to consciousness. *Animal Cognition*, 1, 3–16.
- Gutfreund, Y. (2024). Neuroscience of animal consciousness: still agnostic after all. *Front. Psychol. Sec. Consciousness Research and Mindfulness*, 15.
- Hebb, D. (1958). *A textbook of psychology*. Philadelphia: W.B. Saunders Company.
- Heinrich, B. (1999). *Mind of the raven*. New York: Harper Perennial.
- Hinde, R.A. (1972). *Non-verbal communication*. London: Cambridge University Press.
- Hopkins, C.D. (1974). Electrical communication in fish. *American Scientific*, 62, 426–437.
- Marler, P. (1979). *Social behavior and communication*. New York: Plenum Press.
- Miller, G.A. (1962). *Psychology, the science of mental life*. New York: Harper & Row.
- Mittelstaedt, H. (1972). Kybernetik der Schwereorientierung. *Verh. Dtsch. Zool. Ges.*, 65, 185–200.
- Morris, C. (1955). *Signs, language, and behavior*. New York: George Braziller, Inc.
- Nagel, T. (1974). What is it like to be a bat? *The Philosophical Review*, 83(4), 435–450.
- Premack, D. (1971). On the assessment of language competence in the chimpanzee. *Behavior of Nonhuman Primates*, 4, 185–228.
- Premack, D. (1975). Symbols inside and outside of language. In: J.F. Kavanagh & J.E. Cutting (Eds.). *The Role of Speech in Language*. Cambridge: M.I.T. Press.
- Scheel, D., Godfrey-Smith, P. & Lawrence, M. (2016). Signal use by octopuses in agonistic interactions. *Current Biology*, 26(3), 377–382.
- Sebeok, T. (1977). *How animals communicate*. Bloomington: Indiana University Press.
- Sebeok, T. (2001). *Signs: An introduction to semiotics*. Toronto: University of Toronto Press.
- Slobodchikoff, C.N., Paseka, A. & Verdolin, J.L. (2009). Prairie dog alarm calls encode labels about predator color. *Animal Cognition*, 12, 435–439.
- Solvi, C., Kowalewska, A. & Chittka, L. (2022). Do bumble bees play? *Animal Behaviour*, 194, 239–251.
- Townrow, L.A. & Krupenye, C. (2025). Bonobos point more for ignorant than knowledgeable social partners. *Proceedings of the National Academy of Sciences*, 122(6), e2412450122.
- Wells, P.H. & Wenner, A.M. (1973). Do honeybees have a language? *Nature*, 241, 171–175.
- Wilson, E.O. (1971). *The insect societies*. Cambridge: Harvard University Press.