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Grasping abstract notions via embodied language in Mark's Gospel

Claudio Tagliapietra
Pontifical University of the Holy Cross, Faculty of Theology and DISF Center
c.tagliapietra@pusc.it

Ivan Colagè
Pontifical University of the Holy Cross, Faculty of Philosophy and DISF Center
i.colage@pusc.it

Giovanni Buccino
IRCCS San Raffaele and Università Vita-Salute San Raffaele
buccino.giovanni@hsr.it

Abstract Jesus of Nazareth used parables to convey religious concepts with an unparalleled mastery of everyday experience. These "examples" were pedagogical tools for communicating moral and religious content in a concrete manner. However, evaluating this concreteness requires consideration of recent developments in embodiment neuroscience concerning how language acquires meaning and conveys content. This paper employs these neuroscientific developments to explore the concreteness of Jesus' language, and shows how the perspective of embodied language aligns with the three levels of concreteness identified in the parables' narrative.

0. Introduction
Jesus of Nazareth used parables with an unparalleled mastery of everyday experience to convey religious concepts, such as his view of God and the Kingdom, his identity as the promised Messiah and Son of God, and the mission of his followers. These short stories were pedagogical tools for communicating moral and religious content in a concrete manner. However, evaluating this concreteness requires consideration of recent developments in embodiment neuroscience concerning how language acquires meaning and conveys content.

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This paper employs these neuroscientific developments to explore the concreteness of Jesus' language. Section 1 begins with a presentation of Jesus' preaching in the Gospels as an example of religious language. Then, in Section 2, we analyse four parables from Mark's Gospel that exemplify Jesus' concrete language. In Section 3, we offer a three-level systematization of this concreteness, based on previous knowledge, proximate experience, and embodied language. Sections 4 and 5 provide an overview of key findings in the neuroscience of embodiment and its relevance to our analysis of the parables' religious language. Finally, in Section 6, we show how the perspective of embodied language aligns with the three levels of concreteness present in the parables' narrative.

1. The language of the religious message of Jesus of Nazareth

Sacred texts can be seen as repositories of human experiences related to the spiritual realm, and the Bible is no exception. For the purposes of this paper, we will focus on those passages of the Bible where characters in the narrative use *direct speech* to convey moral and religious messages.

In the Old Testament and rabbinic literature, direct speech is used to convey moral and religious content through the *mashal* (example) or parable (Greek: *parabolè*), a short story that draws on the hearers' common experience. The *mashal* typically uses a comparison between an everyday experience and the spiritual message, allowing for multiple interpretations that depend on the hearer personal experience and background knowledge. As Amy-Jill Levine notes, «with such comparisons, no single meaning can ever be determined, just as no single metaphor or simile can be restricted» (Levine 2014: 3-4). The *mashal* thus induces the reader to match the message with his/her own conduct and to reflect upon it. A typical Old-testament *mashal* is in Judges 9:8-15. In the New Testament, the parables told by Jesus often follow a similar pattern. In Mark's Gospel we read that «With many such parables he [Jesus] spoke the word to them as they were able to understand it» (Mk 4:31). Levine defined Jesus' parables as "enigmatic stories of a controversial rabbi" (Levine 2014), while Zimmermann recently acknowledges Jesus' parables as "puzzling", very challenging to interpret (Zimmermann 2015).

Our aim here, is not that of interpreting the parables' meaning but only to analyse their language. For this same reason, we do not consider the order of the parables, nor the overall narrative scheme of Mark's Gospel. We should also note that we do not elevate direct speech over the remaining Gospel narrative in terms of historical value or authorship (cfr. *Dei Verbum*, 18-19). Additionally, identifying a parable is not always a simple task (Jodar 2015: 153-166, Zimmermann 2007: 12-50). Therefore, we treat the parables as a narrative tool used to report Jesus' teachings through *direct speech* (i.e., sayings; Greek: *loghia)*.

All the above considered, in the next section we present four Jesus' parables from Mark's Gospel (Zimmermann 2007: 50-54, 1547-8), which is generally considered the oldest among the canonical writings containing Jesus' teachings, dated between 68 and 73 CE (Brown 1997: 127). While we focus only on four examples, the following analysis might be replicated on other parables. However, extending the analysis to include the remaining parables in the Gospel of Mark, as well as those in the other synoptic Gospels (Matthew and Luke) and the apocrypha, would lengthen the analysis without providing substantially new insights to our argument.

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2. An analysis of the language in four parables from Mark's Gospel

This section analyses four parables from Marks's Gospel as instances of religious language. We consider the prior knowledge and immediate context of the hearers, as well as the language used by Jesus, with a particular focus on the verbs used in the original Greek text.[1] Verbs are a crucial part of speech, conveying information about actions, events, and states, as well as their mood, tense, aspect, and voice.

Example 1. The physician and the sick (Mk 2:17)

οὐ χρείαν ἔχουσιν οἱ ἰσχύοντες ἰατροῦ ἀλλ' οἱ κακῶς ἔχοντες· οὐκ ἦλθον καλέσαι δικαίους ἀλλ' ἁμαρτωλούς.	*Those who are well have no need of a physician, but those who are sick; I have come to call not the righteous but sinners.*

In the narrative framework, Jesus is preaching the Word in an urban context, probably in Levi's house where he had stopped to eat with various tax collectors and sinners (cfr. Mk 2:15), after having performed several healings in the surroundings. The central issue is the identity of Jesus, who identifies himself as a healer, and yet eats with disreputable individuals. Jesus' words refer to the common experiences of the strength that comes from being healthy and of the marginalization of sick people, as well as to the role of physicians in ancient Israel. Ancient medicine was considered an art that was learned through practical experience. In cities, there were traveling doctors and city doctors. Some were serious and wealthy, but many were charlatans. In the biblical context, illness and healing were always connected with the will of God: the former was seen as punishment (Deut 28:20-29), while the latter as an act of divine forgiveness (Ps 103:3). Therefore, the relationship between God and human beings is compared to that of a doctor and his patients. Jesus reveals himself as a sent physician, and the recipients of his healing (salvation) are sinners, i.e., literally "those who are feeling bad". Those who criticize Jesus are those who did not call him, i.e., those who think they do not need salvation.

The verb "to need" is expressed in the original Greek with "to have the need" (χρείαν ἔχουσιν). Subjects are in need because they "feel bad" (κακῶς ἔχοντες), which conveys *sensory* information. Also "to call" (καλέσαι) is sensory as it involves hearing but has some motor nuance as it requires the active use of mouth. The verb "to come" (ἦλθον) clearly recalls *motion*; in some sense motion is also hinted at by the word for "sinner" (ἁμαρτωλός), which derives from a verb (ἁμαρτάνω) that means "to miss the target" or "to deviate from the path".

Example 2. Cloth and wineskins (Mk 2:21-22)

Οὐδεὶς ἐπίβλημα ῥάκους ἀγνάφου ἐπιράπτει ἐπὶ ἱμάτιον παλαιόν· εἰ δὲ μή, αἴρει τὸ πλήρωμα ἀπ' αὐτοῦ τὸ καινὸν τοῦ παλαιοῦ καὶ χεῖρον σχίσμα γίνεται. καὶ οὐδεὶς βάλλει οἶνον νέον εἰς ἀσκοὺς παλαιούς· εἰ δὲ μή,	*No one sews a piece of unshrunk cloth on an old cloak; otherwise, the patch pulls away from it, the new from the old, and a worse tear is made. And no one puts new wine into old wineskins; otherwise, the wine will burst the skins, and the*

| ῥήξει ὁ οἶνος τοὺς ἀσκοὺς καὶ ὁ οἶνος ἀπόλλυται καὶ οἱ ἀσκοί· ἀλλ᾽ οἶνον νέον εἰς ἀσκοὺς καινούς. | *wine is lost, and so are the skins; but one puts new wine into fresh wineskins* |

Jesus continues his preaching in the same house as in Mk 2:17. To the listener, cloak, wine, and wineskins are objects that served to satisfy fundamental needs of clothing and nourishment, and have strong symbolic significance. The cloak, an overcoat covering the entire body, varied in form according to the wearer's status and function. It was considered a necessary garment, only to be done without in time of extreme poverty and need when it could be given as a collateral (Ex 22:25; Deut 24:12). Wine was one of the main agricultural products of ancient Jewish Palestine. It was stored and transported in jars and wineskins; for fresh unfermented wine, new and durable wineskins were required. Wine from the previous year was considered old and generally preferable to new wine (Sir 9:10). The parable describes actions that are illogical and impractical. In the first case, attempting to repair an old cloak with a new patch is a futile endeavour that ultimately results in the complete destruction of the already-damaged garment. In the second case, pouring valuable liquid into an inadequate container is a senseless waste of a potentially useful substance.

The verb "to sew" (ἐπι-ράπτει) recalls the image of the needle passing from above through the new cloth (new because it has not yet shrunk) placed on ("patch", ἐπί-βλημα) an old cloak. The idea of motion is rendered in Greek through the use of prepositions, and with the very image of the enlargement of the tear (χεῖρονγίνεται) because of the patch shrinking. The idea of motion is also present in the verbs "to pull away" (αἴρειἀπο) the new from the old, "to pour" (βάλλει, which the Greek term for "patch" comes from, ἐπίβλημα) new wine, "to burst" (ῥήξει) the old and stiff wineskins. Finally, also "to ruin" is expressed with a verb that means "to destruct" or "to lose" (ἀπ-όλλυται). Thus, the main experiential channel activated through this parable is *motion*.

Example 3. The sower (Mk 4:3-9)

| Ἀκούετε. ἰδοὺ ἐξῆλθεν ὁ σπείρων σπεῖραι. καὶ ἐγένετο ἐν τῷ σπείρειν ὃ μὲν ἔπεσεν παρὰ τὴν ὁδόν, καὶ ἦλθεν τὰ πετεινὰ καὶ κατέφαγεν αὐτό. καὶ ἄλλο ἔπεσεν ἐπὶ τὸ πετρῶδες ὅπου οὐκ εἶχεν γῆν πολλήν, καὶ εὐθὺς ἐξανέτειλεν διὰ τὸ μὴ ἔχειν βάθος γῆς· καὶ ὅτε ἀνέτειλεν ὁ ἥλιος ἐκαυματίσθη καὶ διὰ τὸ μὴ ἔχειν ῥίζαν ἐξηράνθη. καὶ ἄλλο ἔπεσεν εἰς τὰς ἀκάνθας, καὶ ἀνέβησαν αἱ ἄκανθαι καὶ συνέπνιξαν αὐτό, καὶ καρπὸν οὐκ ἔδωκεν. καὶ ἄλλα ἔπεσεν εἰς τὴν γῆν τὴν καλὴν καὶ ἐδίδου καρπὸν ἀναβαίνοντα καὶ αὐξανόμενα καὶ ἔφερεν ἐν τριάκοντα καὶ ἐν ἑξήκοντα καὶ ἐν ἑκατόν. […] ὃς ἔχει ὦτα ἀκούειν ἀκουέτω. | *Listen! A sower went out to sow. And as he sowed, some seed fell on the path, and the birds came and ate it up. Other seed fell on rocky ground, where it did not have much soil, and it sprang up quickly, since it had no depth of soil. And when the sun rose, it was scorched; and since it had no root, it withered away. Other seed fell among thorns, and the thorns grew up and choked it, and it yielded no grain. Other seed fell into good soil and brought forth grain, growing up and increasing and yielding thirty and sixty and a hundredfold. [...] Let anyone with ears to hear listen!* |

The parable of the sower is unique in Mark, as it is the only one having an authentic interpretation by Jesus (cfr. Mk 4:14-20). It rests on the description of crop farming, the sowing and growing of seeds, as a comparison for a spiritual message. The description of sowing is realistic, and also portrays the inevitable loss of seeds not always due to the sower's ability or to the soil features. Crop farming was the backbone of ancient Israel's agriculture, and Jesus refers to the experiential realm of his listeners' daily lives; more

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importantly, this knowledge is literally acquired "in the field", through observation, attentive listening, and imitation of one's neighbours (Xenophon, *Oeconomicus*, 15:4; 15:10; 16:4; 19:17; 20:13; 21:1). The listeners could also relate this story to their religious knowledge regarding the reception of YHWH's Word, a word that is effective because it is God's Word (Isa 40:8; 55:10). God's Word must first be heard (Deut 6:4-9; Is 1:10; Jer 2:4; Am 7:16). Indeed, the main reproach of the prophets to their hearers is that they do not listen to God's words (Hos 9:17; Isa 6:91.0; 42:20; 43:8; Jer 7:13; Ezek 3:7). It is up to the listeners of the parable to make Jesus' word audible again by reading it aloud, just as they do by reading the Torah or the books of the prophets. Thus, sowing looks to be a parallel for preaching, and this "sowing" might have different outcomes in different hearers.

The verbs employed in the parable are mostly sensory although the illustration portrays a typical day of a sower which moves over a field. Many verbs express (or suggest) motion (σπεῖραι, σπείρειν, ἔπεσεν, ἦλθεν, αὐξανόμενα, ἔφερεν), and others are compounds with prepositions of movement (ἐξ-ῆλθεν, κατ-έφαγεν, ἐξ-αν-έτειλεν, ἀν-έτειλεν, ἐξ-ηράνθη, ἀν-έβησαν, ἀνα-βαίνοντα). Another class of verbs involve sensory channels like touch (ἐκαυματίσθη, ἐξηράνθη), hearing (ἀκούειν, ἀκουέτω), and bodily sensations (συν-έπνιξαν). A similar analysis can be done on the interpretation given by Jesus (Mk 4:14-20): the original Greek verbs express psychological processes – like understanding (συν-ιῶσιν), conversion (ἐπι-στρέψωσιν), forgiveness (ἀφ-εθῇ), and falling away (σκανδαλίζονται, literally: "stumble on a stone") – through motion verbs.

Example 4. The mustard seed (Mk 4:30-32)

πῶς ὁμοιώσωμεν τὴν βασιλείαν τοῦ θεοῦ ἢ ἐν τίνι αὐτὴν παραβολῇ θῶμεν; ὡς κόκκῳ σινάπεως, ὃς ὅταν σπαρῇ ἐπὶ τῆς γῆς, μικρότερον ὂν πάντων τῶν σπερμάτων τῶν ἐπὶ τῆς γῆς, καὶ ὅταν σπαρῇ, ἀναβαίνει καὶ γίνεται μεῖζον πάντων τῶν λαχάνων καὶ ποιεῖ κλάδους μεγάλους, ὥστε δύνασθαι ὑπὸ τὴν σκιὰν αὐτοῦ *τὰ πετεινὰ τοῦ οὐρανοῦ κατασκηνοῦν.*	*With what can we compare the kingdom of God, or what parable will we use for it? It is like a mustard seed, which, when sown upon the ground, is the smallest of all the seeds on earth; yet when it is sown it grows up and becomes the greatest of all shrubs, and puts forth large branches, so that the birds of the air can make nests in its shade.*

Once again, Jesus draws upon the shared experience of sowing, with the added context that the mustard plant was a common and even wild plant that would have been familiar to those listening to his parable, especially those who lived around the lake of Galilee where the parable was delivered (Mk 4:1). The parable reverses the Jewish image of the kingdom of God, traditionally compared to a massive cedar tree (Dan 4:20-21). The reversal is reinforced with a literal quotation from the prophet Ezekiel about the birds coming in the shade of the apocalyptic tree (Ezek 17:22-23). Jesus ridicules this image when he compares the kingdom of God to the seed of a small wild plant that, once grown, lets the birds' dwell in its shade.

The parable mainly uses *motion* verbs to convey this idea: "put" (θῶμεν), "sow" (σπαρῇ), "spring up" (ἀναβαίνει), "become largest" (γίνεται μεῖζον) "dwell" (κατασκηνοῦν).

3. The levels of concreteness

The analysis of the four parables in the previous section allows us to make some remarks concerning the concreteness of the language used by Jesus to convey his religious message. In the parables, Jesus often referred to the Scriptures of Israel. The images, events, and practical knowledge used in the Gospels were very familiar ones: economic issues (the poor and the wealthy, hierarchical relations, debts, servants and lords); jobs (fishing, agriculture, sheep farming, wine merchants, publicans, etc.), social and political relations; Jewish, roman and pagan laws; diseases; jewels; animals and plants. All of these images were used to express a religious message of salvation, an urge to conversion, a call to evangelize until the end of the ages, the prophecy of his death and resurrection, the promise of his second coming. To examine the effects of the parables' concrete language on the hearer's mind, Amy-Jill Levine suggests that «we might be better off thinking less about what they "mean" and more about what they can "do": remind, provoke, refine, confront, disturb» (Levine 2014: 3-4).

Three *levels of concreteness*, referring to the previous experiences of Jesus' hearers, can be identified in the parables.

First level: *background knowledge.* Jesus draws upon his hearers' cultural and personal context: knowledge of the Scriptures and of the history of Israel, their recent memory. This is probably the case of the parable of the fig tree in Mk 13: the Gospel writer says that Jesus and his disciples were sitting on the Mount of Olives, opposite the temple area (Mk 13:2), and Jesus exclaims: «Learn a lesson from the fig tree» (Mk 13:28). The parable that follows builds on the memory of an episode occurred between Bethany and Jerusalem of a fig tree that Jesus cursed and suddenly dried (Mk 11:15.20). Another vibrant example is the parable of the prodigal son in Luke 15:11-32. The story, which begins with the words: «A man had two sons…» (Lk 15:11), makes Jesus' hearer connect with all the stories heard before involving pairs of brothers and their father (Cain and Abel, Jacob and Esau, just to mention two from the book of Genesis) and tells a story of repentance and forgiveness.

Second level: *proximate experience.* In his parables, Jesus drew upon experiences familiar to ordinary people and likely present before his interlocutors' eyes. An example can be the mustard seed of the parable in Mk 4:30-32. The Gospel writer places this parable during Jesus' ministry in Galilee, while he was teaching «by the sea» (Mk 4:1). Bible scholars register that the mustard plant – and particularly the black mustard – grows along the Sea of Galilee to a height of two to six feet (Harrington 2002: 154, Zimmermann 2007): Jesus was using as an example something (a local plant) that was under everyone's eyes while he was preaching. A similar reasoning can be done for the parables of the physician (Mk 2:17), of the bridegroom (Mk 2: 18-20), of the cloth and the wineskins (Mk 2:21-22), and of the strong man's house (Mk 3:27), which Jesus delivered in the urban context of private houses in Capharnaum of Galilee. Jesus refers probably to professions in town (physicians, tailors, vintners), playing with their experience of weddings (e.g., the fellows of the bridegroom were dispensed from many religious obligations), or criticizing the rich people in a society with a high economic inequality (the story portrays the strong man as rich, and obnoxious to the hearers).

Third level: *embodied language.* The third level of concreteness is language-specific: the parable is concrete because the words used by Jesus tend to activate experiential channels, namely motor and sensory ones. The message in the parable is immediately grasped by the hearer because it is expressed with words (and verbs, in particular) that immediately recall concrete sensory and motor experiences of the hearers. The point is

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emphasized by the very words used by Jesus to explain his theory of parables after telling the parable of the sower in Mk 4: «The mystery of the kingdom of God has been granted to you. But to those outside everything comes in parables, so that '*they may look and see but not perceive, and hear and listen but not understand, in order that they may not be converted and be forgiven.*'» (Mk 4:11-12). Though there is debate over whether the quote from Isaiah (Isa 6:9-10) explains the misunderstanding of the parables as the purpose or as the result of Jesus' parabolic teaching, this is not our concern here. Our point, rather, is that – in Jesus' own words – understanding a parable requires the use of senses (sight, hearing), and to move from a position to another: from the outside into the inside of the story, which is a religious-salvific one. As hearers we are numbered, together with the disciples, among those who are inside and hear Jesus' interpretation (Mk 4:14-20).

We stress that the first two levels are context-specific (space, time, culture), whereas the third is more general and universal. While the first two levels are typically explored in biblical exegesis and hermeneutics, the third level highlights the effectiveness of Jesus' language in conveying religious meaning through activating sensory and motor channels. Recent advancements in neuroscience, particularly embodied language and cognition, support the idea that language that activates sensory and motor channels is more effective in communication. The next section will delve deeper into these topics.

4. Embodied language: from philosophy of language to neuroscience

Although the reflection about human language is almost as ancient as philosophy itself, it has been Gottlob Frege's (1892) celebrated paper *Sense and reference (Über Sinn und Bedeutung)* to initiate the philosophy of language as a full-right branch of philosophy (Dummett 1973, see also Colagè 2013). Frege wondered whether the meaning of a word or expression might be reduced to its referent, i.e., the thing the word refers to. His answer was negative, as clarified by the example of the two expressions "the morning star" and "the evening star" which, though both referring to planet Venus, do have different meanings. Starting from this, Frege distinguishes the referent of an expression from its sense, as well as from the conception (or, representation) that each competent speaker associates with the expression. The sense comes to be the key of an expression's meaning. It is defined by Frege as "the thought", the "objective content" associated to the expression, "the way in which the referent is given". The *conception*, instead, is «an internal image, arising from memories of sense impressions that I have had and activities, both internal and external, which I have performed» (Frege 1982: 212).

Thus, the referent is the *thing*, the conception is the "internal image" of each speaker, and the sense comes to be the key of an expression's meaning. Frege posits that the meaning of a word or expression cannot be reduced to the referent alone, but one may question why the *conception* cannot serve as an expression's meaning. However, Frege argues that the conception is private and subjective so that it cannot serve as the basis for linguistic communication and mutual understanding among the speakers of a language. In order to establish a shared and objective basis for linguistic communication, Frege introduces senses as a complement to the referent. Senses are considered to be objective and shareable and are posited to be necessary for establishing the intersubjectivity of linguistic communication.

The point to be made here is that current developments in both linguistics and neuroscience clearly suggest, instead, that the meaning of linguistic expressions is indeed grounded in something quite similar to Frege's *conception*: his sense impressions (i.e., sensory experiences), and performed activities (i.e., motor experiences).

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Linguist Daniel Dor recently proposed an understanding of linguistic meaning according to which the function of a linguistic sign (typically, a word) is to point at a set of personal experiences (Dor 2015: 44-46). Words have the primary role of expressing experiences that the utterer wants to focus on and convey, and of evoking an analogous set of experiences in the hearer. Accordingly, a word meaning is not constituted of an external object (a referent understood as a *thing*) or of an external ideal entity – such as Frege's senses – but of clusters of personal experiences. For example, the meaning of the word "chair" is not a particular chair or a set of chairs, and not even the stereotypical chair as a socially-defined entity that each speaker is supposed to grasp. On the contrary, the word "chair" points at a cluster of chair-related real and concrete experiences made by the speakers.

Moreover, current neuroscientific research in embodied language shows that understanding the meaning of many words resorts to the brain substrates involved in making the experiences those words speak about. Specifically, verbs, nouns and adjectives referring to sensorimotor experiences activate the corresponding brain substrates, i.e., the neural structures involved in making those experiences. For example: the verb "to grasp" activates the hand motor cortex and the verb "to bite" activates the mouth motor cortex (Sato et al. 2008, Desai et al. 2010); the nouns "cinnamon" and "salt" activate the olfactory and the gustatory cortices, respectively (Barrós-Loscertales et al. 2012, González et al. 2006); the adjectives "soft" and "thorny" activate the motor cortex commanding the muscles to close the hand (facilitating contact) and to open the hand (avoiding contact), respectively (Gough et al. 2013). Neuro-physiological data also show that such sensorimotor activations are precocious (as early as 140-250 milliseconds) after word presentation. This implies they cannot be a consequence or by-product of understanding words' meaning, but that they should be regarded as causal to understanding the meaning (e.g., Tremblay et al. 2012, Pulvermüller et al. 2005): meanings understanding depends on (is due to) activation of those motor and sensory brain regions. These and other findings prompt the view that understanding the meaning of linguistic expressions strongly depends on re-enacting one's own experiences (Buccino et al. 2016).

Grounding the meaning of linguistic expressions in the brain's substrates involved in processing the concrete sensorimotor experiences to which those expressions refer allows for overcoming the private nature of experiences, thereby ensuring mutual understanding. This is due to three factors that ensure the intersubjective nature of personal experiences. (Buccino et al. 2016, Colagè and Buccino 2016):

1) Experiences are of a common world, a more or less stable environment shared by the members of a linguistic community;
2) Experiences are made through a body (biological effectors, sense organs, overall body shape, etc.) that shares common features across speakers;
3) Experiences are processed by a brain with a shared species-specific anatomy and physiology.

Additionally, clear data in neuroscience suggest that the human brain has dedicated mechanisms to share experiences from the beginning, even prior to (or independently of) linguistic communication. This is the most fundamental implication of the discovery of the mirror neuron system in the human brain allowing for understanding others' actions and intentions (Rizzolatti et al. 1996, for reviews, Hari and Kujala 2009, Rizzolatti and Fabri-Destro 2010), and of the ensuing notion of so-called "shared systems" for understanding others' sensations and emotions (Gallese et al. 2004, Keysers and Gazzola 2006). The general underlying idea is that when a subject observes another individual performing an action, perceiving a sensation or feeling an emotion, the same neural substrates involved in his/her performing that action and proving that

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sensation or emotion become active. In other words, the human brain has circuits able to match (automatically) what is currently observed with what has been previously experienced (executed or felt) in the first person in actions or situations similar to the observed ones.

Thus, linguistic communication is effective to the extent to which the speakers have a shared experiential background, and the human brain has dedicated mechanisms to ensure such a sharing of sensory, motor, and emotional experiences.

5. Embodying abstract concepts

The previous section established the empirical evidence supporting embodied language in *concrete* domains, involving real actions, simple sensations, and tangible aspects of the world. However, a question arises regarding the applicability of embodied language to more *abstract* domains. Words like "to think", "to love", "freedom", and "opinion" are often considered abstract, in contrast to more concrete words such as "to grasp", "to walk", "cup", and "sugar". Abstractness is usually described as "farness from experience", making it seem unlikely to be treated in terms of embodied language.

The Western philosophical tradition provides valuable insights on the embodied nature of abstract concepts. Aristotle argued that humans form concepts by abstracting them from concrete experiences (*De Anima*, 429 b 11). This process of abstraction is similar for concepts like "cup" and "virtue" as well. Similarly, John Locke posited in his *Essay Concerning Human Understanding* (1690, Book II, Ch. 1) that all human ideas are derived from experience, both external (through the senses) and internal (through introspection). Ideas that come directly from experience are called "simple ideas". In the later part of Book II, Locke introduces the notion of "complex ideas", which are formed by combining simple ideas. Interestingly, Locke includes ideas like "beauty" and "gratitude" among the complex ideas (Book II, Ch. 12, n. 1), which we now consider as abstract. Thus, abstract concepts are also grounded in bodily experiences and are not inherently distant from them. Chapter twelve of Locke's *Essay* concludes with the following words:

> If we trace the progress of our minds, and with attention we observe how it repeats, adds together and unites its simple ideas received from sensation or reflection, it will lead us farther than at first perhaps we should have imagined. And I believe we shall find, if we warily observes the originals of our notions, that even the most abstruse ideas, how remote soever they may seem from senses, or from any operations of our own minds, are only such that the understanding frames to itself, by repeating and joining together, that it had either from objects of sense, or from its own operations about them: so that those even large and abstract ideas are derived from sensation and reflection, being no other than what the mind, by the ordinary use of its own faculties, employed about ideas received from object of sense, or from the operations it observes in itself about them, may and does attain unto. (Locke 1690: Book II, Ch. 12, n. 8)

This passage, as well as the whole context of Locke's *Essay*, clearly claims that the source of our ideas is experience and that, more specifically, our abstract and abstruse ideas are combinations of simple ideas directly drawn from experience. Recent developments in the neuroscience of embodied language seems to confirm this stance. Before briefly reviewing the relevant data and theoretical developments, it is worth mentioning that, for Locke, ideas constitute the content of our words and linguistic expressions. As he puts it at the beginning of his *Essay*'s Book III:

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> Besides articulate sounds therefore, it was farther necessary, that he [the human being] should be able to use these sounds as signs of *internal conceptions*; and to make them stand as marks of ideas within his own mind, whereby they might be known to others. (Locke 1690, Book III, Ch. 1, n. 2, emphasis added)

Worth noting the use of the expression "internal conception" – the very same one used by Frege two centuries later.

Now, in line with the insights drawn from Locke's *Essay*, a recent review (Buccino et al. 2019), addresses the issue of embodied abstract language under the assumption that abstract contents are not such because they are independent of experience but because the experience they refer to is more complex. Accordingly, the concrete/abstract dichotomy may no longer be understood in a yes/no fashion but in terms of a continuum of degrees of complexity of the attached experiences. Therefore, a very concrete term will point at quite simple experiences, whereas a very abstract term at highly complex ones. Moreover, such a complexity can increase along three vectors:

a) *Effector un-specificity*: the number of biological effectors (hand, foot, mouth) implicated in the word content.
b) *Multi-systemic character*: the number of involved systems (sight, hearing, touch, smell, taste).
c) *Dynamicity*: the degree to which the attached experiences may vary and increase during a person's lifetime.

Under this view, an abstract word is linked with very complex experiences that involve many effectors and sensory modalities, that usually change in time, and that are more and more emotionally charged as long as the attached personal experiences enrich.

Empirical data about the embodiment of abstract words/concepts are more limited and less straight than for concrete items. This may also depend on the fact that it is much more difficult to ascertain the neural substrates re-enacted by abstract words when they have to do with highly complex and varied experiences. However, some studies report data suggesting that processing of abstract contents is not sharply distinguished from processing of concrete ones in the brain (see Buccino et al. 2019 for review).

The point is also strengthened by a very recent meta-analysis of brain-imaging studies of activations related to both abstract and concrete language (Del Maschio et al. 2021) showing the processing of abstract expressions to be not sharply distinguished, in the brain, from the processing of concrete ones. Indeed, both kinds of language engage the same widespread set of clusters in the left temporal lobe (including the middle and inferior temporal gyri), in the left motor cortex, as well as in right parietal cortex, left inferior frontal gyrus, and prefrontal regions – all areas involved in the subjects' interaction with the world. These results are in keeping with the above sketched embodied model for abstract language processing (Buccino et al. 2019).

The meta-analysis by Del Maschio and colleagues (2021) also unveils clusters more active for abstract than concrete language: the left inferior frontal gyrus (pars triangularis and orbitalis, largely overlapping Broca's region) and middle temporal gyrus, as well as smaller clusters in medial frontal cortex and bilateral temporal poles. Some of these activations – namely: Broca's region, medial frontal cortex and middle temporal gyrus, as well as ventro-lateral prefrontal cortex (VLPFC) – have been interpreted as evidence that abstract language requires a-modal (i.e., unrelated to sensory or motor processing), language-specific areas to be processed. However, the involvement of these regions in abstract language bears possible alternative explanations.

Broca's region is nowadays known to support a variety of functions (Amunts and Zilles 2012, Hardwick et al. 2018): motor representation of mouth, hand-arm and, likely, foot actions (Binkofski et al. 1999, Nishitani et al. 2005); processing of both observed and

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imagined actions (Binder et al. 2009, Hardwick et al. 2018); representation of mimicked actions with no interaction with a target object (Lui et al. 2008); processing of actions able to mediate a semantic meaning through a biological effector, such as emblems (Andric et al. 2013). This suggests that abstract content is coded "motorically" in a brain region where actions are represented in a conceptual manner, taking into account several involved features (see also Buccino and Colagè 2022).

Other regions more active for abstract language – i.e., medial frontal cortex, middle temporal gyrus and VLPFC – are known to be part of the "default-mode" network that is modulated by demanding cognitive tasks or by social cognition (Mars et al. 2012, Raichle 2015). Their engagement in processing abstract language (i.e., language items attached to complex experience) may contribute to define an appropriate context for the processed words and their link with life experiences and personal beliefs (see also Buccino and Colagè 2022).

Taken together, these and other results suggest that:

- abstract language activates sensorimotor cortex similarly to what happens with concrete language;
- abstract words tend to be more emotionally charged than concrete ones and to activate emotion-related brain circuits also depending on the details of the available context;
- cortical areas beyond the sensorimotor system may play the role of contextualizing abstract expressions so to facilitate their understanding when the context does not help to disentangle the many possible meanings (i.e., the variety of experiences) attached to the linguistic material.

6. Conclusions

The neuroscience of embodied language, as discussed above, offers a useful framework to analyse the language used in religious contexts, specifically the parabolic language employed by Jesus in the Gospels to convey his spiritual message.

Our analysis of Jesus' parables reveals that language in religious settings can be examined on three levels, with embodied language being the third. By using concrete sensory and motion verbs, Jesus grounded his message in familiar experiences, making it easier for his audience to understand the deeper spiritual meanings being conveyed. This use of embodied language is a powerful tool for effective communication, enabling the speakers to connect with their listeners on a deeper level and create resonance between the message and the hearer.

In Section 4, we suggested that the grounding of abstract concepts in complex and varied experiences, often emotionally charged and dynamically enriching throughout life, can be inferred from two factors. Firstly, there is evidence that abstract expressions activate the same sensorimotor substrates as concrete words. Secondly, the brain structures specifically activated by abstract concepts are those that generalize over different instantiations of the same action or sensation and connect the abstract expression with one's social context and personal history. Thus, the first and second levels of concreteness that we have analysed in our examination of parabolic language can be seen as initiating these processes in the listener.

Consequently, according to our analysis, the language employed in Jesus' parables displays those very characters that embodied language would predict for communicatively effective utterances and sayings.

There remains a question to address: is embodied language limited to the past, as it is grounded in previous experiences? In other words, if linguistic expressions are

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understood by re-enacting sensorimotor and emotional experiences, how can language prompt novelty or assist in teaching new content to inexperienced individuals?

The latter questions have general relevance, but also acquire a specific one in the context of Jesus' parabolic language. Each Gospel, indeed, should be considered as a pedagogical text; a text, moreover, intended to teach real novelties!

We think that an embodied understanding of language like the one proposed in this paper has resources to answer those questions. Conceptually, we can draw on Locke's thought (as a representative of the broader empiricist tradition).

> Though the mind be wholly passive in respect to its simple ideas; yet I think, we may say, it is not so in respect of complex ideas: for those being combinations of simple ideas put together, and united under one general name; it is plain that the mind of man uses some kind of liberty in forming those complex ideas: how else comes it to pass that one man's idea of gold, or justice, is different from another's? but because he has put in or left out of his, some simple idea, which the other has not. (Locke 1690, Book II, Ch. 30, n. 3)

This quote further supports our argument that abstract concepts, such as justice, are complex ones as composed of simpler ideas. It also suggests that individuals can combine these simpler ideas in innovative ways to form complex ideas, and that speakers can use words that evoke specific sets of experiences to generate novel ideas in their listeners. While a listener's understanding depends on their experiential background, language viewed through an "embodied lens" can serve as an effective tool for teaching and facilitating understanding novel content. In light of this, the three levels of complexity we have underscored in Jesus' parabolic language appear to be wisely put at work to teach novel contents starting from the (ever-changing) hearers' experiential background.

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