Glossary of terms as used in Ann Long's paper

[1] ABSTRACT NOUNS: every entity is either a material thing or a happening. Abstract nouns delineate happenings. 'Thought' is the abstract noun delineating the happening 'thinking'.

[2] AUSTRALOPITHECINES: bipedal creatures**,** dentally similar to humans, but with much smaller brains: brains which were more similar in size to those of modern apes.

[3] CHANGE: the process whereby material things and happenings alter their present state to adopt a different one. Change itself changes. For example, while 'evolution', 'growth', 'maturation' and 'development' are all forms of change, they are all *different* forms of change.

[4] COGNITION: the process whereby, via the processing of sensory information, knowledge and understanding is acquired. The 'cognitive revolution' in psychology, often dated from the publication of Ulrich Neisser's book *Cognitive Psychology* in 1967, introduced what is still today the dominant approach within the discipline. It is based on the idea that 'mental activities' are information processing systems, which, like any other such system, exhibit such things as 'coding via the use of symbols', 'redundancy' and 'channel capacity'.

[5] COOPERATION: the working together with an other, or others, to achieve a jointly or collectively agreed end.

[6] CULTURAL: of culture, where culture is understood as consisting in everything made by humans - - - as opposed to being found by them in nature.

[7] DETERMINISM: the theory that the state of every material thing and happening in the universe, the biosphere and the world is caused to be as it is by the state of antecedent material things and happenings in the universe, the biosphere and the world.

[8] DEVELOPMENT: a technical term used in the sciences of persons, particularly in psychology. It is used to capture a type of change to be distinguished from perhaps three others: from *growth*; from *maturation*; and from *evolution*. It is to be distinguished from all three by being change in a different medium: that is, change not in an organism but in a person. Material organisms change via *growth* (a change in their material size), *maturation* (a change in their material age), and *evolution* (a change in their genetic composition). But being not a material thing but a happening, a person does not exhibit material size, material age, material composition, or material anything.

A happening is something which, rather than *being* a material thing goes on *in and through* a material thing. Thus just as 'digestion' is a happening which goes on in and through the material things called mouths, stomachs, colons and the like, so 'experience' is a happening which goes on in and through the material things called nervous systems. And it's this experience, linguistically structured, which, in a human, constitutes a person. A person changes via *development*: which consists in change in experiential content.

[9] DISJUNCTIVE SYLLOGISM: also known as modus ponens, and one of a pair with modus tollens, an argument of the form 'if there is A, then there will be B; there is A; therefore there will be B

[10] EMERGENCE: the process of coming into being. An emergent property is usually understood as one which arises as an effect of the operation of causes, but cannot be analysed simply as the sum of those causes. Thus wetness is an emergent property of a collection of molecules of H_2O, but only when there are six or more of them together: it is a property which emerges at the 'sixness' stage, but not before.

The shift from individual intentionality to joint intentionality provides a nice illustration of emergence at work, because joint intentionality establishes a new motive for communicating. In collaborative activity, telling it like it is, telling the truth to the collaborator and helping her or him to see what you see is of the essence. The default position of those working with jointly intentional goals is truth telling. Even when such communicators lie, it only works if there is first in place a mutual expectation of truth: X only lies because she knows that Y will trust her information as truthful and act accordingly. Thus the idea of truth, of thinking in terms of 'the truth', arises not from individual intentionality but from joint intentionality. Each of the two who participate in a communicative interaction mutually assume the truth telling of the other.

[11] ESSENTIALISM: is the belief that the job of philosophy is to delineate the 'essential' characteristics of an entity – the things which make it what it is – and further (frequently), that such 'essence' is logically prior to 'existence'.

[12] EVOLUTION: is a word with both a general and a technical usage, between which it is vital to distinguish. In everyday parlance, it can refer to any sort of slow change over time. In the biological sciences, however, it refers only to a very particular *type* of slow change. In this second, technical sense, it refers to a process taking place only in the biosphere whereby, in a given environment, there are *produced* a larger number of living things than can survive, come to maturity and *reproduce*. On the basis then of variations in reproductive 'fitness' among them, the less fit are naturally culled (they die out) and the more fit are naturally selected (they flourish). There is widespread agreement in current biology that the unit of selection – and thus the level at which this process operates – is the gene (or more usually, the combination of genes). Group selection and individual selection, each of which had considerable support in the past as being that unit, are not now thought to provide the motive force of the process.

[13] EXPERIENCE: the summed-to-date consequence of all the previous moment-to-moment states of the nervous system of a sentient being. As used here, experience has the following six characteristics: (1) it is a characteristic only of the nervous systems of living things; (2) it consists in states of those nervous systems brought about by input into them from their environments; (3) those environments are both internal and external, with the rest of the body of which the nervous system is a part constituting the internal environment, and the parts of the universe, biosphere and world outside the body, but available as input to its senses, constituting the external environment; (5) because it consists in receiving input from the internal and external environment, 'experiencing' is always 'experiencing something' - - - the verb 'to experience' cannot be intransitive; (5) the type of experience unique to *Homo sapiens*, is linguistically structured experience; and (6) it is this category of experience which constitutes personness.

[14] FREE WILL: that which human persons are thought by some to possess which means that – uniquely? – they are not determined entities. But now, with the increasingly conspicuous advances of neuroscience, and the increasingly conspicuous bankruptcy of dualism, it is being questioned maybe more seriously than ever before in history.

[15] GESTURING: communicating with conspecifics via moving parts of the body, especially parts of the head, hands and arms, to express meaning.

[16] HAPPENINGS: also variously called 'events' or 'processes', happenings go on in and through material things. Where matter might more accurately be called 'matter-in-motion', it is the 'in motion' part of the formulation which constitutes happenings. Perhaps the most important contribution to the history of science made by Galileo was to stop us asking the question: 'what makes things move?' He argued that it was the wrong question. It was a question which assumed 'non-moving' as the initial condition - - - and that was wrong. Ask instead 'what makes things stop moving, or change the direction of their moving?', and get some useful concepts - - - such as 'friction'. Matter **is** matter-in-motion. And its motions constitute happenings.

[17] IDEALISM: the hypothesis, characteristic particularly of the earlier stages of the development of cognition, that ideas are primary, come first; and material things and happenings are derivative, come second. Thus the idea (in the mind of God) 'let's make a universe a biosphere and a world' is primary: comes first. And the material things and happenings of said universe, biosphere and world are derivative: come second. Similarly, the idea (in the mind of a person) 'let's clench a fist' is primary: comes first. And 'fist clenching' comes second: is derivative.

[18] INFANT: the word is sourced in Latin -- 'in' (not) 'fant' (speaking) – but this origin can lead to confusions. To call a not-yet-speaking baby 'pre-linguistic' confuses the efferent *production* of language, which usually emerges around the end of the first year of life, with the afferent *reception* of language, which probably begins in the womb. In addition, while its technical use in *education* is for a child between the ages of five and seven, and its technical use in *law* is for a person who has not yet attained legal majority, its technical use in *psychology* is reserved for a child under the age of one, speaking or not. It is this last which is used here.

[19] INTENTIONALITY: was a term coined by medieval Scholastics, with its earliest theoretical treatment coming from St. Anselm. In his ontological argument for the existence of God, he made a distinction between objects that exist in reality and objects that exist in the mind. The mental ones exhibit 'intentionality' about the

real ones. It was a term which fell out of use for centuries, but was resurrected by the German psychologist Franz Brentano (1838-1917), in his book *Psychology from an Empirical Standpoint* (1874).

The type of intentionality which Tomasello claims is characteristic of fully developed modern humans is collective intentionality. It is, he suggests, (1) cultural, (2) conventional and (3) agent neutral. In its *cultural* manifestation, it involves (a) group identification, (b) conventional cultural practices, (c) social norms, (d) normative self-monitoring, and eventually (e) the reality of full blown institutions. In its *conventional* manifestations, it involves (a) communicative conventions as inherited conceptualisations, (b) complex representational formats based in linguistic constructions, (c) discourse, (d) reflective thinking, (e) shared decision making, and perhaps quintessentially, (f) the giving of reasons. And in its *agent neutrality* it involves (a) representing objectively, (b) reasoning reflectively, and vitally, (c) self-monitoring normatively.

[20] LANGUAGE: a symbolic communication system, employing grammatical rules and a considerable lexicon, unique to humans. Its uniqueness consists in such characteristics as 'traditional transmission' (the older members of the group teaching the younger ones); 'displacement' (the ability to communicate about things not currently present); 'novel utterance' (the ability to generate that which has never been said before); 'lying' (the ability to say that which is not the case, as well as that which is); and 'reflexivity' (the ability of the system to self-refer). A more complete list of the characteristics of language, as linguists use the term, can be found in Hockett (1960) and Aitchison (1983).

The basic units of this communication system are phonemes and morphemes.

Phonemic production is an organic phenomenon. A phoneme is a sound made by a particular configuration of the six speech organs of a member of the species *Homo sapiens*. The six are the larynx, the soft palate, the root of the tongue, the body of the tongue, the tip of the tongue and the lips. And their form and musculature being a species-wide phenomenon, all the phonemes of all the languages of the world can be uniquely described in terms of the shapes and movements of these six organs. Phoneme production begins between six and nine months of age, first expanding steadily, then contracting. In English, there are some 44 phonemes. About 60 per cent of them have been mastered by 18 months of age: the full range, not usually before the child is seven.

Verbal behaviour, a means of communication unique to *Homo sapiens*, emerges when the genetically acquired phonemes characteristic of all members of the species, are combined into the culturally acquired morphemes of only the speakers of a natural language. A morpheme is the smallest linguistic unit to carry meaning. All words are morphemes, or combinations of morphemes. But not all morphemes are words.

[21] MATERIALISM: the theory that material things, and the happenings that go on in and through them, constitute all that there is.

It is widely accepted that the most fundamental divide in philosophy is that between 'materialism' and' idealism'. Put simply, materialists believe that nothing exists except matter and its movements, while idealists adopt any one of various systems of thought in which the objects of knowledge are held to be in some way dependent on the activity of 'mind'. This paper adopts a materialist standpoint: its author is a materialist. But given its centuries-long history, it should come as no surprise that the concept 'materialism' comes in more than one version.

The version adopted here is non-reductive materialism. The 'materials' of materialism are taken to be primary: they emerge first. The 'ideas' of idealism are taken to be secondary: they emerge second, and from the materials. The inorganic materials of the universe precede the organic materials of the biosphere - - - by some twelve thousand million years. The organic materials of the biosphere precede the 'ideas' or 'thoughts' of the world by some two or three thousand million years. To the best of our knowledge, that's a sequence which has never been gainsaid. There has never been found a thought which existed before there was a biosphere, nor a living thing which existed before there was a universe. For a non-reductive materialist, it's the *sequence* which matters: a *sequence* which, for example, makes the concept of God incoherent.

[22] MECHANISM: that which is the property of a machine. A machine is any kind of structure which, via the joint operation of its several parts working together, has the power to perform a particular task or function. Brains are machines. That does not mean they are made out of metal.

[23] MODUS TOLENS: in its simplest form – the one anyway that the Great Apes seem to be able to manage! – it's the idea that if a conditional statement is true but its consequent is not, then its antecedent is not either. Something like: 'if this, then that; but not that; so not this either'.

[24] NATURAL: an adjective applying to all the material things and happenings which make up the inorganic universe and the organic biosphere, combined.

[25] NECESSITY: the theory that how things and happenings are now is a caused consequence of the way things and happenings were in the past; and that the way things and happenings will be in the future will be a caused consequence of the way things and happenings are now.

[26] NEGOTIATED COORDINATION: a term borrowed from economics, where it is used to describe a particular alternative to 'the invisible hand' of the market as a mechanism to achieve the optimum production, distribution and exchange of commodities.

[27] PYSICALISM: today extensively used as being synonymous with materialism. It isn't. Materialism has a very long history, arriving in Middle English from the Latin 'materialis'. Physicalism, by contrast, has a very short history, having been introduced into philosophy by Otto Neurath and Rudolf Carnap in the 1930s. And they used it specifically to *differentiate* themselves from materialists. They thought of 'physicalism' as a *linguistic* thesis (every statement is equivalent in meaning to some physical statement). But they dubbed the 'materialism' of others as a *metaphysical* thesis (purporting to say something about reality as such) - - - and therefore, according to them, nonsensical. Perhaps it's because of the demise of positivism that this distinction also seems to have died. However, non-reductive materialism is neither a *linguistic* thesis nor a *metaphysical* thesis. It's an *hypo*thesis: a candidate theory of reality, whose credentials for being 'appointed' are pretty over-whelming.

[28] REASONS: explanations offered by persons as to the causes of things, which may or may not tally with their actual causes. Not all causes are reasoned. But as the necessary consequence of the experiential history of those who offer them, all reasons are caused.

[29] REDUCTIONISM: the hypothesis that a sufficient explanation of a more complex phenomenon can be derived from a study of its less complex components. Here reductionism is taken to be an ideology: that is, a very widely held belief which is nonetheless wrong.

[30] REIFICATION: that process whereby entities which are not material things are treated as if they were.

[31] SCIENCE: the application of the scientific method to the study of material things and happenings. It is a collective method which aims to diminish subjective bias - - - which is difficult. Its 'difficulties', however, in no way justify what is a thoroughly irrational response: a response which, in effect, says that because science cannot diminish subjectivity to zero, we should use *as well as* science (the moderately irrational position), or *instead of* science (the totally irrational position) those procedures such as 'common sense', or 'intuition', or 'just knowing', which cannot diminish subjectivity at all.

[32] STAGE THEORIES: theories which postulate a series of invariant stages through which an entity moves, marked by the occurrence of significant inter-stage change. At both a social and an individual level, stage theories of human development are legion. Among the first are those of Marx, Comte and Freud. Among the second are those of Freud again, Erikson, Piaget, Vygotsky, and Kohlberg. A useful way of characterising them is to think in terms of the quantitative accumulation of slow causative changes, followed by the qualitative tipping-point of sudden consequential change.

[33] THOUGHT: the capacity of the nervous system of a sentient organism, having first registered an *actual* experience, to later simulate the like as *potential* experience. Or as one philosopher somewhat graphically put it: 'the difference between the worst of architects and the best of bees is that the architect builds his structure first in his head'. When the 'thought' concerned is specifically *human* thought, then while Watson's famous designation of it as 'a sub-vocal tremor of the larynx' is a little extravagant, the idea that specifically *human* thought is internalised speech is one very widely entertained by psychologists.

[34] TYPE-TOKEN STRUCTURE: as advanced by Peirce, a structure which contrasts the difference between a category and an individual member of that category.