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Independence and Connections of Pain and Suffering

Abstract: *Is a phenomenal pain a conscious primitive or composed of more primitive phenomenal states? Are pain experiences necessarily or only contingently unpleasant? Here, I sketch how to answer such questions concerning intra-phenomenal metaphysics using the example of pain and unpleasantness. Arguments for a symmetrical metaphysical independence of phenomenal pain and unpleasant affect are presented, rejecting a composite view like the IASP definition and dimensional views. The motivating intuition of these views is explained by common binding mechanisms in consciousness and characterized as fallacious if generalized. There are, however, underlying commonalities between pain perception and unpleasant affect, e.g. formal content or evolutionary ancestry.*

Keywords: Pain, unpleasantness, affect, suffering, IASP definition, evolution of pain, phenomenological argumentation, neurophenomenology

Target Question: Is Pain Primitive or Composed?

Is pain primitive? Or is pain a composite state? An affirmative answer to the first question clearly negates the second and *vice versa*. Here, I will neither focus on the *neural correlate* of pain, the *function* pain fulfils, the *concept* PAIN, nor the *expression* 'pain', but on the phenomenal experience of pain. According to prominent philosophers like Saul Kripke (1980, p. 151) it is essential for pain that it feels like

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something. I will not argue for or against this. Instead, I ask what the metaphysical status of a pain experience is, especially in relation to experiences of suffering. If pain is always conscious, I talk about all pains; if there are unconscious pains, I talk about a subset of all pains. The questions about the relations of pain might then be (a) whether the experience of pain is metaphysically *independent* of other experiences, i.e. whether painfulness is a quale which owns its qualitative feel intrinsically, or whether pain's existence relies on other states, like emotions; (b) whether pain experience is phenomenally unstructured, i.e. *in the way it is presented* we experience no parts fused together by phenomenal glue; or does pain expose a structure to the experiencer which can be analysed and decomposed introspectively? The latter is obviously a phenomenological claim. We might also be interested in, (c) whether the experience of pain is primitive, i.e. it does not consist of more primitive states, or whether pain experiences consist of parts which form a new phenomenally homogeneous whole which we experience as pain. This is a metaphysical claim about the mereological structure of this mental state.

Interpretations (b) and (c) are not identical. In consciousness, complex states may be experienced as homogenous and unstructured, but neurophenomenological case studies show that certain parts of these experiences can be selectively manipulated or lost. Consider the homogeneous flow of experience, the stream of consciousness or specious present, which was seen as a necessary feature of consciousness (James, 1890; Husserl, 1985; Andersen and Grush, 2009). Cases of motion blindness (akinetopsia), where patients only experience alternating snapshot moments, however, show that the experience of temporal homogeneity is not a necessary feature of experiencing time. The property of the experiential flow of time can be selectively lost (Zeki, 1991; Pelak and Hoyt, 2005). I will argue that our paradigmatic pain experiences are an example of phenomenal homogeneity without intra-mental metaphysical homogeneity. That is, our experienced homogeneity of pain does not map to the intra-mental mereology of pain.

This is not a conceptual issue: we might be able to *conceptually* fragment an experience and declare it as a composite; yet, even the sum of all the conceptualized elements plus the right relations need not give rise to the experiential whole. In this case, analysis of phenomenal concepts does not carve phenomenality at the joints. Consider face blindness (Grüter *et al.*, 2008): a face might be conceptually fragmented into eyes, ears, cheeks, brows, nose, mouth, and so forth, but putting all these pieces together into one experience and adding structural constraint (like: nose between eyes, mouth underneath nose, etc.) still

does not form a whole face experience. Instead, face experiences have a wholeness and homogeneity that is not encompassed by the conceptual scheme of facial parts.[1]

Why should we ask whether pain is primitive or composed, independent or dependent? Because it is directly related to the widely accepted definition of pain by the International Association for the Study of Pain (IASP), which states that pain 'is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage' (IASP, 1986). This may lead us to the conclusion that the composite parts of pain might be independently researched and manipulated — which has been the paradigm of pain science in the last decades. If pain is a primitive, however, then fragmenting it in this way is intellectually interesting, but futile in the end, as the conceptual analysis does not correspond to the nature of the phenomenon. This is in contrast to the IASP's definition: here, unpleasantness is part of pain, but cannot be separated from it.

The IASP definition takes unpleasantness as a necessary *component* of pain, and connects it (in the note following the definition) with subjective accessibility. An alternative view to this is to see unpleasantness as a *dimension* of pain, its 'affective dimension' (Price, 2000; Hofbauer *et al.*, 2001). Here, the intensity can go to extremes or be nearly zero. One of the advantages of the dimensional view is that it enables us to classify pathologies like pain asymbolia[2] as pains: in a metaphysical reading, the value on the affective dimension is zero in these cases, or — epistemically speaking — is so minimal that it is overseen by the introspecting subject. The dimensionality of pain does not imply having a value on this dimension: two-dimensional objects can be shown in a three-dimensional space. In this understanding, a square is an infinitely flat cuboid. Yet, if pain is truly primitive, it has no affective dimension: it either *is* an emotion or it *is not*. If pain had 'dimensions', it would be structured and dependent on other states, namely specific emotions.[3] Compare this again to the mathematical square: it might be alright to say that its third spatial dimension has a

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[1] Set theory may not be the adequate ontology for modelling phenomenality *tout court*. In most cases the relations between experiences are mereological: the fundamental relations are between parts and wholes, not between sets and members. In these cases, gaining knowledge by analysing phenomenal concepts is necessarily limited.

[2] The most striking symptom of asymbolia is that sufferers experience a sensation which they identify as pain even though it is not intrinsically unpleasant (Grahek, 2007).

[3] The dimensions could be arbitrarily fused, like transferring the state of your fridge into a point in a vector space where the number of eggs, milk cartons, and amount of slices of ham comprise the dimensions. This example shows that dimensionality is trivial as there is no underlying metaphysical connection. I assume that Price wants to avoid triviality.

value of zero, but claiming that the square's dimension of being politically conservative is zero is unacceptable. Any arbitrary number of dimensions could be added on this basis. Is unpleasantness a similarly arbitrary addition to pain? The first goal of this paper is to provide arguments opposing the prominent view that pain is necessarily unpleasant. This does not entail that the combination of pain and unpleasantness is arbitrary. The second goal is, therefore, to explain the connections between pain, unpleasantness, and our folk-psychological concept of suffering. In the pain case the dimensional model can be applied even though the conceptual model is clearly wrong. This model lacks elegance as every contingent property of pain can be added as a dimension of pain in general with a possible value of zero: this pain is in no way pulsing/hot/toe-ish, but pulse/heat/toe-ishness still is a dimension of pain in general.

Let us assume that the view that pain has an 'affective dimension' is on the right track. If this is the case, then pain is not a quale. Qualia are classically understood as intrinsic properties of mental states, which entails that they have their specific qualitative feel independent of other states and also of other qualia (Lewis, 1929, pp. 124f.). If pain is not a primitive but has dimensions, it is a bad example of a paradigmatic state of consciousness as it is not *basic*. This affects the traditional view of pain in philosophy, exemplified by Hilary Putnam stating that 'the typical concern of a Philosopher of Mind might be represented by three questions: (1) How do we know that other people have pains? (2) Are pains brain states? (3) What is the analysis of the concept pain?' (Putnam, 1998, p. 27).[4]

Independence or Not: How Can We Decide?

How do we decide whether pain is primitive or composed? What should our methodology be to answer a question about intra-mental

[4] Four apparent features may explain the prominent role of pain in philosophy: (a) primitivity: in contrast to other sensory modalities, pain seems to have only one dimension — on/off, or more/less. Additional features like location, duration, or accompanying qualities (like throbbing, heat, stinginess) are not unique to pain and therefore do not suffice to distinguish pain from other experiences; (b) widely distributed: pain seems available to a wide range of sentient beings, making it more intelligible in counterfactual reasoning with, for example, aliens (Lewis, 1980); (c) moral impact: intuitively, pain raises ethical issues beyond human concerns, e.g. animal ethics (Bentham, 1996; Hoerster, 2004, pp. 81ff.; Rollin, 1989; Singer, 1993, pp. 57ff.); (d) tradition: Descartes, Wittgenstein (1984), and Smart (1959) used pain as an illustration, which was picked up by opponents, e.g. Putnam (1998), Kripke (1993), Lewis (1980), Levine (1983), and Chalmers (1996) amongst others.

metaphysics? As I have claimed above, conceptual analysis alone will not suffice to find an answer if we are interested in pain experience. We might head in the wrong direction, confusing conceptual composition with phenomenological composition, as was the case in the face recognition example. Introspection also fails, as we might wrongly infer from the homogeneity of our *own* pain experiences — the *ouch!* after axe blows, jerked arms, burned fingers, pricked earlobes, and so on — that pain is *always and in everybody* homogeneous. We would be guilty of making the assumption that the structure of our own experience is the structure of everyone's experience. Here, we confuse the appearance of homogeneity with the metaphysical status of the apparent homogeneous experience, as in the case of motion blindness. As our claims in intra-mental metaphysics range over the experiences of other individuals as well, introspecting our own experiences does not warrant the inference from *phenomenal* homogeneity and dependence to *metaphysical* homogeneity and dependence.

How do we then decide whether an experience like pain is primitive or composed? A starting point is a challenge brought into play by the IASP: mentioning patients who experience pain without any tissue damage. They state that if the patients 'regard their experience as pain and if they report it in the same ways as pain caused by tissue damage, it should be accepted as pain' (IASP, 1986). In short, the IASP states that if a competent speaker reports an experience coherently and reliably as pain, it should count as such. If we accept this as a methodology, a comparative analysis of pain reports might expose certain mentioned components as phenomenally unnecessary for pain — association with tissue damage being one mentioned by the IASP itself.

The methodology can be sketched in this way: given a decompositional analysis of pain, we can determine whether one of the mentioned components is absent in the pain experiences of a sufficiently large group of experiencers and competent reporters. If there is such a group, we have to discard this component because it is phenomenally unnecessary for an experience to be pain. If one of the components is common in all reported pain experiences, we can conclude that this part is the common denominator of (reportable) pain experiences. If this common part X is not decomposable, it is plausible that X is phenomenally homogeneous. If we externally manipulate and block X by any psychological or physical means in a sufficiently fine-grained manner, two results may occur: either pain ceases to exist or continues to exist. In the first case, it is plausible that X is metaphysically necessary for pain. In the second case, we can infer that X is only universally

present, yet not necessary for pain. Consider my chocolate experiences: my chocolate experiences have all been connected with sweetness. Then, I had my first bite of 99% pure chocolate at time *t*. Until *t*, sweetness was universally present with chocolate taste, yet this is not necessarily so. Only if chocolate taste ceased to exist along with the sweetness would sweetness be necessary for chocolate experiences.

It is necessary for this methodology to incorporate pathologies and fringe experiences to distinguish between universality and necessity in experience, and to gain an insight into intra-phenomenal metaphysics, e.g. whether pain and unpleasant emotional affect are only universally linked or necessarily connected. In short, the consideration of neurophenomenological case studies and the conceptualizations of these patients are our best way to overcome defective introspective theorizing, the shortcomings of conceptual analysis, and phenomenological 'foot-stomping' (Kriegel, 2007). Theories about the nature of pain are testable in virtue of the reliable and coherent usage of the concept PAIN by competent speakers in extraordinary cases.

I will not argue in depth for this methodology as the main focus of this paper is on pain and emotional affect. But I want to explicitly mention two background assumptions. First, it is assumed that even if we do not share the phenomena itself, we at least share a conceptual scheme for the phenomena. An independent reason for this has been famously brought forward by Donald Davidson (1984), arguing that for anything to be considered as linguistic behaviour at all, it must be graspable inside the listener's own conceptual scheme. Clearly, patients' reports can be considered to be linguistic behaviour. There are further problems to consider in the case of reports about private experience, but at least independent reasons can be given for shared phenomenal concepts. Therefore, even if our phenomena might differ a little in their relations, these differences will be noticed in our reports as we share the same conceptual scheme. Second, it is assumed that we are able to grasp (at least in principle) the relations of phenomenal states linguistically. This does not mean that we have to have a concept for every experienceable phenomenon, but only that phenomenal affairs can be expressed linguistically. Therefore, Diana Raffman's problem of non-conceptualizable experiences does not arise (Raffman, 1995): even if there are *phenomenally* discriminable experiences like red(31) and red(32) which cannot be *conceptually* grasped or distinguished, at least their phenomenal difference can be expressed. Raffman therefore provides reason to distinguish between conceptual and phenomenal composition: if there are non-conceptualizable experiences whose relation to other experiences can be

expressed linguistically, then our concepts do not map one to one on our experiences. Again, conceptual analysis is insufficient to answer questions of intra-phenomenal metaphysics. Further work needs to be done to defend this methodology against other philosophical problems like Chase and Sanborn cases (Dennett, 1988), where we cannot distinguish a change in stance toward an experience from a change of the experience itself, but this may not concern us here. If we share the same conceptual scheme and if we can in principle conceptualize the relations amongst our unconceptualizable experience — for which there are good independent reasons — we may use this methodology to decide between pain as primitive and pain as composed.

The focus in the following is on the apparent necessity of the relationship between pain and unpleasant emotional affect. This maps to talk of the IASP definition as well as sensory and affective dimensions of pain (Price, 2000; Hofbauer *et al.*, 2001). I argue that this 'dependence view' is a false model of pain experiences: pain and unpleasant emotional affect are symmetrically independent, i.e. one can exist without the other and *vice versa*. This does not necessarily map to the atomic and molecular view: it may be that pain and unpleasantness are independent but are still composites. In analogy, a logical proof and *Tosca* are symmetrically independent, yet both are composites.

An assumed relation of pain and unpleasantness leads us also to normal language, where 'pain' and 'suffering' are often used synonymously. For example, we might say to a grieving person: 'I feel your pain!' — by which we rarely mean that we literally feel their heart aches or burning eyes. We also speak of non-sensory 'emotional pain'. The German author Jean Paul (1827) coined the word '*Weltschmerz*', which refers to suffering from the state of the world in general — a mental state so entrenched with values, beliefs, and cognition that its source is far from being sensory in any classical sense. On the other hand, the guardians of American language at Webster's Dictionary define pain as 'physical suffering'. The ambiguous usage of 'pain' and 'suffering' has spawned into scientific literature, where we read of psychic (Nesse, 1991) or social pains (Panksepp, 2003). Interestingly, Panksepp's 'social pains' do not incorporate any sensation at all: societies do not exist in the same sense as photons, so there can be no dedicated sense organ for social events like the retina is dedicated to photons. What then is the link between the word 'pain', which seems to have a strong sensory connotation, and 'suffering', which is seemingly more of an emotion? What underlies the synonymous use of these words in many contexts? The answer is unpleasantness.

Independence of Pain and Unpleasantness

Some independent observations suggest that our concepts PAIN and UNPLEASANTNESS are not co-extensional. As they refer to different states, we ought to favour the metaphysical independence of pain and unpleasantness over the dimensional or compositional views. Emotional affect is not a necessary part of pain experiences.

It is easy to simply nominally define that 'pain' is sensory and that 'unpleasantness' is emotional. This is not an arbitary characterization because this conceptual distinction is already accepted in the community of speakers. Coherent usage is an indicator of concept possession. And coherent distinction is an indicator of conceptual distinction entailing a distinction in extension. If you do not have the conceptual distinction between DRYPOINT and ETCHING, you will not be able to apply these concepts coherently and distinguish between a drypoint and an etching. However, amongst each other, art aficionados will rarely quarrel about a print being one or the other. My argument then is this: given that a sufficiently large group of competent speakers amongst us assents to one of these expressions but not the other and *vice versa* under certain circumstances, then this suggests a symmetrical independence of the underlying concepts. And, given that we want to express different facts if we assent to one proposition (*This experience is pain*) and not another (*This experience is unpleasant*), we can infer that pain and unpleasantness are symmetrically independent entities. That is, if there are cases where we accept 'pain', but not 'unpleasantness' or 'suffering', *and* if there are cases where we assent to 'unpleasantness' or 'suffering', but not to 'pain', then the relation between the two states is metaphysically contingent, and not necessary as the dimensional and composite views hold.

The first datum in favour of the independence thesis is an observation of our usage of 'pain' and 'unpleasantness'. When do we assent to 'unpleasantness' without assenting to 'pain'? One example where unpleasantness in the absence of pain is obvious is itchiness. In such cases we will rarely assent to feeling *pain*, even though we might conceivably say that 'this itchiness is a pain'. But this is not enough for my argument. It is clearly the case that unpleasantness can be experienced without pain. It seems counter-intuitive that there can be pains that are not unpleasant.

Fortunately for proponents of the independence thesis, there are circumstances where humans assent to feeling pain that lacks the unpleasant component. Such is the case in the pathological condition

pain asymbolia,[5] which was first thoroughly described in 1948 by Rubins and Friedman: 'Asymbolia for pain denotes the inability to recognise the unpleasant or disagreeable component of a painful or threatening stimulus, with the result that little or no defence reaction is produced, although the noxious stimulus itself is perceived' (Rubins and Friedman, 1948, p. 554). Consider the description of Patient 1 (Berthier *et al.*, 1988, p. 42): 'In spite of apparently normal perception of superficial and deep pain, the patient showed a total lack of withdrawal responses. He tolerated prolonged pinprick or soft-tissue pinching in all four limbs without adequate grimacing or defensive movements of his limbs… On occasion, the patient willingly offered his hands for pain testing and laughed during stimulation.' As another vivid illustration of the independence of these components, Brand and Yancey recalled a surgeon who performed a lobotomy on a woman suffering under extreme vaginal cramps. Years after this operation, the surgeon revisited his patient during a trip to her home country India. She greeted him warmly, smiled and offered tea. In response to being asked what it is like to finally live without pain, the woman answered: '"Oh, yes, it [the pain] is still there. I just don't worry about it anymore." She smiled sweetly and chuckled to herself. "In fact, it's still agonizing. But I don't mind."' (Brand and Yancey, 1997, pp. 210–1).

It is not that these patients simply *do not feel any pain*. In fact, they can distinguish different pains, like pricks, heat, or pinching, as well as rate its intensity and location (Berthier *et al.*, 1988). These are tasks a true analgesic, someone who feels no pain, cannot master. They are also not rationally impaired: once they realize that permanent damage might occur due to a painful stimulus, they can retract. But it is not the feeling of pain that elicits this reaction. It is an additional cognitive evaluation. Perhaps the appropriate explanation is that pain asymbolics are emotionally impaired. This is illustrated by their own evaluation and their diminished reaction to threat. This empirical evidence suggests that the pain experience of asymbolics has lost its emotional charge and is nothing more than a sensation similar to hearing B-flat to the musical layperson: '…while all could recognize pain, none of them reported any unpleasant feelings' (Berthier *et al.*, 1988, p. 43).

This double dissociation of assent over individuals and contexts in itchiness and asymbolia suggests that pain experiences are not only different from, but also independent of, unpleasant experiences and

[5] A thorough philosophical investigation of the phenomenology of pain asymbolics has been conducted by Nikola Grahek (2007) in his remarkable book *Feeling Pain and Being in Pain*.

vice versa. As a consequence, it seems safe to suggest that pain can be experienced independently of unpleasant emotional affect.

That this is even a possible experience puzzles most people: an unpleasant pain? The fact is that our own paradigmatic pain experiences are ones where sensation and emotion are coupled in such a way that their distinctness is introspectively impenetrable. We bind these two parts together into one phenomenal *Gestalt* which we might be tempted to take as primitive — emotionally soaked pain is phenomenally atomic in the average experience. Pain asymbolia, however, shows that such an introspective judgment is false if generalized: pain and unpleasantness can come apart — emotionally soaked pain is not *metaphysically* atomic. This conclusion does not rest on pathological examples, like asymbolia, alone. Similar experiences of pain without unpleasantness have been also reported by meditators (Ryusuke *et al.*, 2005; Perlman *et al.*, 2010) and those in a hypnotic trance, e.g. during dentistry (Rainville and Marc, 2009). This leads to the conclusion that even though pain and unpleasantness might be bound to one phenomenally homogeneous experience in some instances, this homogeneity is only contingent: pain and emotional affect are metaphysically distinct and independent states.

Let me give you a further reason to accept the independence thesis: once we open our eyes to the possiblity that pain can be dissociated from unpleasantness, we are able to trace their independence in our own experience. The best example may be our fondness for hot food. Spicy hotness is caused by capsaicin ($C_{18}H_{27}NO_3$) which docks to our nociceptors, the dedicated receptors for noxious stimuli. The resulting sensation feels painful and hot. Interestingly enough, it is often misattributed introspectively to the sense of taste — another reason to be critical towards our introspective authority in all cases. If you are still unconvinced that capsaicin on your tongue is painful, imagine preparing chilli-chocolate. After tasting the cane sugar, you rub your eye — with no effect; but rubbing your eye after putting some freshly cut chilli in your mouth, you start feeling a burning sensation which you will not hesitate to call painful. Comparing the feeling in your mouth and the feeling in your eye, an identical quality is felt. So either you call none of them pain, or both. Clearly, my goal is to push you to accept 'spicy hotness' as a pinch of pain in your diet. Certainly, those millions who love spicy cuisine are not all masochists, pathological cases, or irrational. Instead, we experience a pleasant pain — a concept already known from other (more carnal) areas of human social life. This newly achieved ability to phenomenally imagine pain and unpleasantness

independently in one's own consciousness underlines their independent metaphysical status.

Further support for the independence thesis comes from the fact that pain and unpleasantness must fulfil different functions, if pain can be decoupled from emotion. For this we need to ask to which class of mental states pain and unpleasantness belong. In paradigmatic cases, pain is felt due to activation in dedicated transducers, the nociceptors. This suggests that pain is best grouped amongst other perceptions, like seeing, hearing, proprioception, and so on. Perceptions do not necessarily elicit actions in humans. We can perceive green without acting upon it. Additionally, those areas on which pain perception supervene and the motor areas eliciting action are not identical. There is room for subtle modulation between the two. In comparison, unpleasantness initiates either bodily or mental action, as the lack of reaction in pain asymbolia underlines. As unpleasantness is the motivating component of paradigmatic pain, it is best subsumed under the label emotion. While pain can be conceived as a representation of the status of our bodies in the world at the moment of perception, unpleasantness can be thought of as an elicitor to act upon this representation.[6] Pain and unpleasantness are therefore also functionally distinct. This emphasizes their independent metaphysical status.

A fifth argument for their symmetrical metaphysical independence comes from neuroscience. Here, we compare the neural supervenience bases of the two states.[7] Tania Singer's group (2004) has shown that compassion — emotional attachment to the pain and suffering of others — elicits part of the neural pain matrix, but only non-sensory components. Comparing activation during pain attributed to oneself and seeing or knowing that pain is attributed to one's partner, they detected activation in the rostral anterior cingulate cortex and the bilateral anterior insular. These correlate with the affective component of pain, and their activation can be decoupled from the sensory components of the pain matrix in those conditions where pain is elicited in the partner. The suggested conclusion is that compassion involves an unpleasant affect which might be described as feeling another person's suffering. Whatever the interpretation of this evidence it is clear that the observer does not share the other's pain perception. Similarly, the group of Antoine Lutz has shown, in a group of

[6] This may explain why suffering can be caused by non-perceptive mental states, like violations of moral code or religious world-view.

[7] This argument, however, only holds if pain and suffering do not fulfil an identical function. In this case, distinct supervenience bases might simply be two realizations of the same function. I have already argued against this claim above.

meditators, that pain experience can be decoupled from the emotional parts of the brain (Perlman *et al.*, 2010). As the functional supervenience bases of pain and unpleasantness are distinct, so are the supervening states, given the constraint of different functions.

In summary, I have provided some facts in support of the thesis that pain and emotional affect are not only distinct but symmetrically independent. First, there is a range of contexts (itchiness, hot food) in which we assent to one but not the other. A difference in assent to expressions given the same context suggests a difference in what they refer to. Second, pain asymbolia, meditation, and preference for spicy hotness on the one hand, and itchiness and compassion on the other, show that the emotional and sensory parts of paradigmatic pain can be dissociated phenomenally in some cases. Third, as pain and emotional affect are grouped into different classes, the function of pain and unpleasantness differs. This is supported by the behavioural description of pain asymbolia patients. Fourth, pain asymbolia and neuroimaging studies of compassion and meditation suggest that the supervenience bases of pain and unpleasantness differ and can thereby be selectively triggered or lost. All this supports the claim for symmetrical independence of pain and unpleasantness both intra- and extra-mentally. In conclusion, pain and unpleasantness are metaphysically distinct. Our best bet is to abandon both the component and dimensional views of pain.

Connecting Pain, Unpleasantness, and Suffering

If pain and unpleasantness or suffering are metaphysically distinct,[8] why do we experience them as *one experience* in most cases? Clearly, the phenomenon of paradigmatic pain, where both form an experiential *Gestalt*, is the fuel for the component and multi-dimensional view. Yet, this ought not to surprise us: binding mechanisms are prevalent in consciousness. Intra-phenomenally, we can experience the binding of independent objects into one experience in, for example, the rubber hand illusion (Botvinick and Cohen, 1998). Although we know that the rubber hand and the real hand are extra-phenomenally distinct it does not alter the experience. Here, subjects integrate an external rubber hand into their own self-model, if the visual input of strokes to the rubber hand matches the tactile input of strokes to one's own hand.[9] Apparently, stable co-occurrence of distinct phenomenal experiences

[8] I intend to use 'unpleasantness' in scientific contexts and 'suffering' in folk-psychological contexts in this paragraph.

[9] For a more expansive theory of self-models, especially those concerning higher-order beliefs and phenomenal selfhood, see Thomas Metzinger's *Being No One* (2005).

is part of how phenomenal *Gestalts* are formed. This is obviously the case in pain experiences, where emotions and perceptions occur in one phenomenal moment. Reference to prevalent binding mechanisms in consciousness may suffice to explain the apparent emotional and perceptual 'dimensionality' of our paradigmatic pain experiences despite the lack of a common origin for these dimensions.

This leaves our inclination to accept the interchangeability of expressions in certain contexts. Concerning our usage of expressions, I mentioned that 'pain' and 'suffering' are interchangeable in some contexts because of their relationship to unpleasantness, e.g. 'I feel your pain' or 'Losing you causes me great pain, darling'. Yet, if pain is independent of unpleasantness, then we need to explain why the words 'pain' and 'suffering' are often used synonymously. Besides referring to the common contingent *Gestalt*, let me discuss a further option: metaphorical or loose talk.

Both the acceptance and usage of metaphors and loose talk is constrained. According to Lakoff and Johnson (1980), metaphors rely on a structural identity between the two compared sections of reality. On an externalist perspective, this structural identity exists in these sections themselves. The structural similarities, nonetheless, need to have a specific saliency to us, the concept users, to be accepted in the community; some metaphors, even if intended as such, are rejected. When I describe pigeons as 'the squirrels of the sky', would you understand my point? Probably not. Yet if I use the phrase 'the rats of the sky', you immediately understand. Even if squirrels and rats can both be pests, pest-ness is much more salient in rats. If the property of being bad is what makes pigeon-metaphors acceptable in this context, then 'the cancer of the sky' should also be acceptable. According to Sperber and Wilson (1985/86), loose talk rests on resemblances of possible salient inferences. The speaker wants to communicate a certain set of propositions P1, P2… Pn which follow naturally from Q, but the speaker does not believe Q. However, the most efficient way to communicate P1, P2… Pn is to communicate Q. I, for example, live three houses removed on the other side from a famous movie star. Technically, it is false if I say that she and I are neighbours. But saying so will make you draw the right inferences, namely that it is highly probable that you will see her if you hang out at my place, and that you might run into problems with bodyguards if you look suspicious when entering my house. Saying something false is pragmatically my best bet.

If our interchangeable usage of 'pain' and 'suffering' is based on their relationship to unpleasantness, then it is possible to cash this relationship out in terms of contingency and metaphor. Pain is typically

unpleasant and unpleasantness often leads to suffering, but the relationship of pain to suffering may also be metaphorical. If the structural identity between pain and suffering is based on loose talk, what are the implications we want to convey? Let me first focus on metaphorical usage, and be aware that most of the argument rests on paradigmatic pain experiences.

First, typical pain and suffering share a common associated feature: attention attraction. In paradigmatic pain experiences, we are immediately aware that we are feeling a pain. We cannot ignore the hot coffee mug burning our fingers, but we can ignore the mug's blueness. Unlike smell, sound, colour, or proprioception, paradigmatic pain has an immediate saliency which is above the saliency in other sensory modalities. Among non-sensory states, this is mirrored in suffering: the impact of its attention attraction is outstanding amongst the emotions, as not every emotion needs to be attended to immediately and with force; we may even feel angry but not experience it until somebody makes us aware that we are a bit testy today. Suffering, in comparison, enslaves our attention: simulating the past, repeating over and over what might happen. To fight suffering, some meditative practices focus on attention control: suffering ceases to exist if we do not attend to it. Phenomenally, paradigmatic pain and suffering share this powerful attraction of attention.

Second, pain and suffering share a certain kind of representational content. How can this be if one is a sensation and the other an emotion? One easy way to answer is to commit to Jesse Prinz's embodied appraisal theory of emotions, in which emotions are sensations of bodily reactions to the environment (Prinz, 2004). This commitment, however elegant, is unnecessary as pain and suffering also share content on a more abstract level. Kenny (1963) introduced the notion of a formal object of representation. While the particular object of a representation is its momentary elicitor, the formal object is the property in virtue of which the representation is elicited. Think of your watch representation. A sundial, a wristwatch, a watchtower, or a digital clock are able to elicit these representations, however different they may appear. Yet, all of them share the abstract property of changing uniformly and cyclically during time.

Pain, if understood representationally, also must have a formal object. What do axe blows to the leg, headaches, stomach cramps, and labour pains — in other words particulars — have in common? In all cases, these pains are elicited by a threat or damage to one's *bodily* integrity. We have to distinguish between threat and damage, as both are represented by different pains and result in different neuronal

activation, i.e. they are paradigmatically elicited by different kinds of dedicated transducers. Imagine yourself searching for a needle in a haystack. By chance, you immediately prick yourself on the needle. Your first pain will be sharp and immediate. This is due to the Ad-fibres firing. Their myelination allows them to transport activation to the central nervous system at 20m/s. However, your skin does not need to be penetrated to feel this pain — there need not be any damage. Ad-pain is a quick warning signal to prevent the worst. If there is actual damage to the system, the (philosophically infamous) C-fibres will start to fire. Compared to the myelinated Ad-highway, these unmyelinated fibres (with slow 2 m/s conduction) elicit a dull long-lasting pain. These two different kinds of dedicated transducers are triggered by the physical events that threaten or damage the body, and the damage itself. Certainly, transducer activation need not result in conscious pain experiences, but it is obvious that their activation is reliably caused by damaging influences in either the external (like the pricking pain in the example above) or the internal (stomach ache, for example) environments. This takes evolutionary function into account: avoid damaging environments. Ad-activation then represents threat or potential damage, while C-activation represents actual damage at the level of transducers. As pain is more or less reliably caused by nociceptor activation in human and non-human animals, we can see pain as the conscious equivalent to damage- and threat-representation at the transducer level. Even if there are exceptions like psychogenic pains, they do not challenge this analysis, as misrepresentations are clearly allowed in a Dretskian model of representation (Dretske, 1981): I can have a dollar representation elicited by a dud and it still is a dollar representation. Therefore, I can also have the representation of bodily damage without there being bodily damage.

Suffering must also have a formal object, if it represents. Given that emotions represent (for example, my relation to the world, as Prinz claims) and can cause action, it is safe to assume that this is the case.[10] Yet, the elicitors of suffering are even more diverse than those of pain:

[10] If suffering represents something, then the motivational force I ascribed to suffering when discussing its function might be undermined. As one of my reviewers mentioned: if suffering has representational as well as motivational components, then we are not forced to accept that it could not fulfil both functional roles of pain and suffering. I disagree for two reasons. First, a representation is not necessarily a function. The weird images produced at the end of a film role fulfil no function, but they represent the ratio of the film chemicals involved in the process. Similarly, in good old-fashioned computer functionalism, we can say that a function takes representations as its arguments, or that a function, e.g. an intra-mental one, can be a mapping of one representation to another. This does not entail that the representations themselves need to be functions. In the case of pain, then, I would be inclined to say that suffering is a representation like pain, but their difference is that

all the bodily causes of suffering (pain, nausea, prolonged tickling) plus social, psychological, and moral events. What may the grief of losing a loved one and self-pity have in common? Why does seeing a pig being slaughtered cause suffering in one, but not in another, human? I hold that all of these are instances of damage to one's integrity. Our minds allow us to form conceptions of self beyond the physical. Besides having a phenomenal first-person perspective and seeing our bodies distinct from the world we act in, we may experience ourselves as social beings, owners of a coherent belief system or individuals who obey a moral code. These cognitive self-conceptions may be violated by certain events. Bullies may threaten our social rank, while a lost loved one threatens our conception of being a partner. The outrage some religious people feel when hearing agnostic and atheistic arguments (and the suffering some go through when they accept them as valid) are signs of damage to one's conception as a believer of a certain religious dogma. Suffering from seeing a pig being slaughtered can only arise in those that see the prohibition of this deed as part of their own moral code. In conclusion, the more conceptions of self we have, the larger the group of events that can make us suffer; in this, it becomes true that ignorance is bliss! The formal object of suffering is the damage or threat to one's integrity *in general*. As such, the formal object of pain is encompassed by the formal object of suffering. That is why pain often elicits suffering, while suffering does not elicit pain. In summary, what explains the metaphorical usage of 'pain' and 'suffering' are the structural identities in attention attraction, in representational content, and being bound into one experiential *Gestalt* in paradigmatic pain experiences.

Does this also allow an analysis of loose talk in the sense of Sperber and Wilson (1985/86)? No, as their model is based on the drawing of inferences and not structural identities. To explain the interchangeable usage of 'pain' and 'suffering' as loose talk, we need to find common inferences. Let us consider animals once more. Most social animals like birds and mammals have a distress call. Beside warning signals, there are signals that seem to be calls for help. Nearly all mammals, birds, and some reptiles produce sounds when they are in pain as well as other pain behaviours. There is an evolutionary history of vocal pain

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only the representational content of suffering can be picked up as an input for the function of action elicitation. I do not necessarily subscribe to this argument, but merely want to point out that there is no necessary tension between pointing out probable representational and functional roles of pain suffering. Second, if there really is a tension between representation and function, this does not put my argument of the independence of pain and suffering experiences into danger, as other evidence still holds.

signals. We might consider the use of 'pain' in cases of suffering as a descendent of these distress calls. What I want to convey is: help me, care for me, stay by my side, etc. Even if the analogy to distress calls fails, the inferences I want you to draw when I use 'pain' are clear. And sometimes, these are just the one's I want you to draw when I suffer.

One further connection exists between pain and suffering: it can be argued that pain and suffering share a common evolutionary ancestor. Nociceptors are amongst the oldest sensory neurons, traceable back to nematodes like *caenorhabditis elegans*. In these early stages of evolution, nociceptors were directly coupled with muscle tissue (Tobin and Bargmann, 2004). Therefore, any action potential in these neurons lead to muscular activation: any nociception leads to an action. With the ascent of a central nervous system, this direct sensory-motor link was replaced by a chain of circuits, each synapse being able to diminish or increase the chance of muscle activation. This meant that nociception became a perception, and an additional mechanism became necessary to act upon this perception. Classically, emotions are seen as the motivating and moving force of our mental life, so the implementation of an emotion leads to a pain being acted upon. Obviously, there was a tight connection between these two systems, as only immediate responses to pain ensure the least damage, which has a high evolutionary priority. There must have been, however, the possibility of suppressing this strong linkage to allow utilitarian reasoning. For example, how much damage is the system willing to endure in order to achieve a goal? Imagine a squirrel seeing a luscious berry hidden behind some thorns. If there were still a tight sensory-motor link, the first prick would necessarily lead to the retraction of the paw. Also, the first hit in mating fights would determine the winner. Animals with suppression mechanisms had an advantage: they were able to tolerate and endure noxious stimuli for the higher goal of survival, sweetness, and sex. As a side effect, the connected emotional mechanisms leading to action became available for other mental influences. With the unfolding of our mental life, the emotion once so tightly linked to pain became triggerable by social representations, beliefs, higher-order thoughts, and so on. Higher evolutionary fitness for the individual came with a terrible price to pay. In conclusion, the strong link between pain and suffering is not only in content, but also due to their ancestry. This, however, does not allow us to infer that pain, unpleasantness, and suffering are necessarily connected. The independence thesis holds even in the light of linguistics and evolution.

Ailments, Animals, and Other Areas Affected

I have argued that pain and unpleasantness or suffering are metaphysically independent mental phenomena, although they are similar in structure, formal object, and tied together by evolutionary ancestry. All this was in support of the claim that 'pain' refers solely to a perception, and 'unpleasantness' or 'suffering' exclusively to emotions as they are the mental states eliciting action. As pain and unpleasantness can come apart in experiences which are labelled 'pain', both the IASP definition and the dimensional model of Price are inadequate. By these, unpleasantness is a necessary part of all pain experiences, in contrast to the view presented here, where unpleasantness is part of only a large subset of all pain states, namely those that we see as paradigmatic. Both the definition and the dimensional view are unnecessarily complex models that tie pain to a structure which is only contingent.

That pain and emotional affect are independent, and only contingently tied, should be reflected in our approaches to alleviating pain. Pain asymbolia, hypnosis, and our fondness for hot food are indicators that the priority ought to be on the emotions that are connected to the sensation, not with the sensation. In fact, pain sensation is an important diagnostic sign and ought to be left intact whenever possible. The cold pain test is one of the most important tools in dentistry, for example. Relief can come in two ways. First, the attention attracting capacities of pain could be brought under cognitive control, ensuring that the patient has capacities available for other tasks, resulting in a higher quality of life. Second, emotionality ought to be decoupled or dampened in instances of prolonged pain. Meditative techniques or pharmacology may be of help here. Both leave the warning aspect of pain perception intact but still allow rational decision making without further emotional pressure in chronic cases. Remember that some of the early chronic pain patients were willing to undergo lobotomy performed with nothing but a wire and a drill, as exemplified by the Indian woman mentioned by Brand and Yancey.

The proposed evolutionary account of the independence of pain and unpleasantness allows us to examine which animals are able to suffer, an issue of prime importance in animal ethics and animal welfare. Now we are able to look beyond pure nociception or behavioural data. One prominent debate has been on the question whether fish can feel pain (Rose, 2002; Braithwaite, 2010).[11] Rose claims that pain can only be felt by entities with thalamo-cortical loops. Since fish have

[11] See also Sneddon (this volume).

nociceptors but no cortex, Rose argues, they cannot have thalamocortical loops and therefore never feel pain. Clearly, this rests on the assumption that pain and consciousness are reliant solely on specific coarse-grained brain *anatomy* and are not multi-realizable in differently structured brains like those of avians, fish, or higher molluscs like encephalopodes — an assumption that many reject intuitively. Braithwaite (2010) sketches a more detailed picture, distinguishing between different levels of nociception and pain experience. Nonetheless, she holds that conscious pain experience is tied to emotionality — a claim which is falsified by the independence thesis. The picture presented here is that the link between nociception and action can be modulated (i.e. it is not direct, but open to inhibitory and excitatory influences from non-nociceptive, sensory, and non-sensory areas of the system). This reflects the evolutionary advantage that may be gained from suppressing the unpleasant emotional affect of pain: an animal need not act upon a pain perception or can act with a diverse range of responses. The concrete instantiation of a criterion for sufferability is the lack of a direct non-modulatable link between nociception and action. As the nociceptive pathways of fish are open to modulation, we should assume that they have the capacity to experience pain which is unpleasant and are able to suffer, which make them moral objects.

In conclusion, the independence thesis is well supported by phenomenal, linguistic, and neuroscientific evidence. Its acceptance affects the range of sciences which contribute to our understanding of pain, and it opens concrete ways of fighting the hurt of pain: 'Pain is inevitable, suffering is optional' (Murakami, 2008, p. vii).

What does this tell us for consciousness studies in general? The methods used in this paper are an illustration of how to arrive at an intra-phenomenal metaphysics which is beyond introspection or phenomenological foot-stomping. Introspective reports need to be examined critically. First-person methods may easily overlook an actual distinction, which is why they are an unreliable guide to the metaphysics of phenomenality. Inherent binding mechanisms blur mereological boundaries and introspection leads us to believe mistaken atomistic conceptions of phenomenal states. The alluring fallacy in first-person methodology is mistaking generality (all my known experiences were F) for necessity (all experiences were F). But if a sufficiently large, rational, and conceptually unimpaired population — and pain asymbolics make up such a group — coherently label an experience as x, even though it misses a feature F we see as necessary for x

from a first-person standpoint, then we need to embrace x without F as an experiential possibility. Our own experience leads us astray.

The response that the IASP's definition is still adequate because asymbolics misconceptualize their experiences as pain is short-sighted. Our actual conceptual usage ought to guide our definitions, not *vice versa*. The IASP embrace this explicitly: 'If they *regard their experience as pain* and if they report it in the same ways as pain caused by tissue damage, it should be accepted as pain' (IASP, 1986, p. 346, my emphasis), but this statement is not part of the definition. Clearly, this fits the asymbolia case. To claim in this light that pain asymbolics feel no pain goes against the spirit of the IASP definition, if not its explicit content. Usage ought to define meaning, not definition normatively restrict natural usage.[12]

The sensation of pain and the emotional affect of unpleasantness are as distinct as hue and saturation in colour — and are similarly overlooked by laypeople. The inherent defect of first-person methodology is one's limits of experience: certain possible metaphysical distinctions between states may only be available for conceptualization once specific experiences have been made, for example a pleasant pain. Therefore, we ought to be especially careful when we claim necessity on the basis of our own experiences. Taking a wider range of reports into account minimizes this risk, and yet, great care needs to be taken in evaluating the reports of others, as laypeople may lack adequate concepts and therefore rely on metaphors or loose talk. Training subjects in making conceptual distinctions may facilitate enquiry and evaluation of their narratives, providing a proper instrument for mapping the realm of possibilities for phenomenal experiences.

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[12] For more on the interpretation of the IASP's definition of pain see Wright (this volume).

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