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It is not easy to persuade him who suffers in one or other of these ways that he is not doomed to madness, or that he has not the mortal disease of brain which he fears he has. Notwithstanding that he has had previous attacks of the same kind from which he has recovered, he always declares the present attack to be different from and much worse than any former one and is sure he cannot possibly get well again. There is a feeling of eternity, no feeling of time, in relation to it. Of the worst grief at its worst there is always, when in health, a tacit or subconscious instinct of ending; but here an all-absorbing feeling of misery so usurps the being that there is no real succession of feelings and thoughts, no sense of time therefore, a sense only of an everlasting is and is to be [. . .]. To inspire a gleam of real hope in the gloom of melancholy is to initiate recovery; it is to plant a morrow in the midnight of its sorrow: to infix a distinct belief of recovery is almost to guarantee it. (Maudsley 1895/1979, 171–172).

Wyllie's paper is a very welcome addition to the phenomenological literature on depression. Or rather it is more than that—Wyllie demonstrates in his analysis of temporality how phenomenology has genuine value in terms of both clinical understanding and providing hypotheses for testing in empirical research. The therapeutic and research benefits that can potentially be garnered from Wyllie's paper demonstrate how much philosophy, and phenomenology more narrowly, can do for psychiatry.

In this gloss on Wyllie's paper, I briefly review the available information on the psychopathology of time in a variety of mental disorders, including depression. Second, I attempt to place Wyllie's hypotheses about lived experience and melancholia in the context of recent work from cognitive science on the perception of time. Last, I discuss how the philosophy of time in the twentieth century may be of utility to psychiatrists both in understanding their patients and in researching the disorders.

Psychopathology and Time

Although one often is struck by how a sense of time is distorted in patients with a variety of different mental illnesses, there has been little or no recent empirical work on these symptoms. There is a literature that relies on clinical anecdotes or case reports, but no clear data that either measure the frequency and prevalence of such symptoms in a given population, or any psychological data that seek to measure such distortions and relate them other elements of psychopathology. Wyllie offers a way of understanding melancholia holistically, rather than as a collection of atomistic symptoms and signs. That is, as a clinical entity cohered by the centrality of a disorder of the experience of lived time. Through an existence dominated by the present and past, the sufferer is experiencing a determinate future with a lack of hope of change, a disproportionate dwelling on the past and guilty recollections; thoughts of suicide may seem the only way to end such eternal anguish. From Wyllie's analysis, one could construct the hypothesis that factors such as hopelessness and suicidal ideation may correlate with, and be at least partially caused by, a change in lived time. Such a hypothesis is eminently testable and further, if found to be the case, could provide evidence that may be of great use to cognitive-behavioral therapists in designing and refining psychological interventions that may be efficacious in depression. That such data do not exist may indicate that with operationalized criteria there comes a risk that clinicians may forget to listen to how their patients describe how their symptoms "hang together" in a rational and understandable manner.

Cutting (1997) helpfully reviews the psychopathologic disorders of time. In addition to depressive illness, disorders in the sense of time can occur in dementia, delirium, schizophrenia, and mania (Cutting 1997). Cutting's own series of patients with depression demonstrated a slowing down of the passage of time, but also a disorientation for time and a speeding up of the passage of time (Cutting 1997).

> At the very least, one can conclude from the experimental studies that an average depressive, in estimating duration, experiences time as moving twice as slowly as normal. In extreme cases time "stood still" or was "idling" or was even going backwards, not, as in schizophrenia, because of a qualitative transformation in time, but because of a quantitative slowing to the point of extinction and reversal. (Cutting 1997, 218)

Patients with schizophrenia, by contrast, may suffer an alteration in time sense that differs from the psychopathology of mood disorders. Time may stop, repeat itself, or be subject to a less-than-smooth progression (Cutting 1997).

Cognitive Science and the Perception of Time

The work of Edelman has been used by cognitive scientists to think about how the brain synchronizes a wide variety of experiences and time to a unified whole that is in turn synchronized to that of the environment (Dawson 2004). "Internal clocks" function to bind the subpersonal systems together with those of the outside world. For example, the suprachiasmatic nucleus of the hypothalamus is thought to mark 24-hour cycles, the frontal cortex expectations of the future, and the hippocampi the past (Dawson 2004). Further, Descartes' friend, the pineal gland may serve as "an integrative transduction system, responsible for transducing neuroelectrical information about light into hormonal signals" (Dawson 2004, 79).

The hormone melatonin, from the pineal, carries the information about the amount of darkness to the organism and the pineal synthesizes oscillations of hormones, motor activity, affect, and other elements with the light–dark cycle (Dawson 2004). Such a synthesis may generate a "linear" internal clock, which is supplemented by a more "cyclical clock" corresponding to body temperature. Dawson, working within a representationalist cognitivism, suggests a system existing in the brain that is necessary for consciousness and personhood, and is intimately involved in the perception of time:

> For events to have a coherent "flow" that is ordinarily ascribed to consciousness, there must be brain structures which generate an internal model of the external

world in terms of time. Indeed, such structures are the hippocampus, amygdala, hypothalamus, reticular activating system, and the epithalamus (commonly called the "pineal gland"). These regions presumably provide a kind of background for predicting events and preparing consciousness to interpret incoming sensory-perceptual experience. (Dawson 2004, 83)

In contrast to models that posit time sense as being a discrete function, Ivry and Spencer (2004) argue that internal timing is not a unitary function but rather task specific. Reviewing imaging findings, Lewis and Miall (2003) suggest that different brain areas are implicated in the measurement of time depending on the interval to be measured, whether movement is used to define time, and the predictability of the unfolding of events (Lewis and Miall 2003). Others go further and argue that there may not be any dedicated timing system in the brain (Nobre and O'Reilly 2004). Drawing on data from Coull et al. (2004), they suggest that other systems in which timing is important but not primary are recruited when temporal judgments are required.

Glicksohn (2001) criticizes dominant models from a "phenomenological" perspective. He acknowledges the intimate link between consciousness and the sense of time, but argues against the dominant models of "cognitive timers" and "internal clocks" in that they do not adequately capture the experience of time. Glicksohn (2001) emphasizes the strong interplay between attention, arousal, and time perception and seems to take as an assumption a modularization of cognitive functions and attention as a pool of resource that will be shared between cognitive timers and other cognitive modules; thus, the flow of time phenomenologically depends on attention level. Glicksohn writes:

Assuming a common pool of attention, there is a trade-off between externally oriented and internally oriented attention. The more absorbed the subject becomes in his or her subjective experience (due to a predisposition for high absorption and/or via an experimental technique such as introspection or concentrative meditation), the slower time appears to be. Internal events seem to be flowing by in slow motion, as fewer subjective time units are accumulated (hypoarousal), each of which is larger in extent (hypoarousal). (2001, 9)

He proposes that as arousal increases, the number of subjective time units increases and with an increase in externally oriented attention the size of the subjective units decreases. Apparent duration of time is based on a product of these two factors and is thus correlated with arousal and inversely correlated with externally oriented attention (and hence, positively correlated with internally oriented attention; Glicksohn 2001). The example of concentrative meditation is used as a possible exemplar of a state where increased internally oriented attention is coupled with reduction in arousal. Such a state should thus demonstrate a decrease in the number of subjective time units and an increase in the duration of each unit.

The flow of time thus becomes slower, and each "frame" can be inspected longer. Timelessness would then be the limiting case of a single extended frame packed with information. (Glicksohn 2001, 11)

Other examples of timeless states may include suffering and intense emotions, violence and danger, altered states of consciousness, and shock (Glicksohn 2001). Glicksohn's account is powerful and when read in parallel with Wyllie, one could add melancholia to Glicksohn's list of timeless states, where attention is focused "internally" on negative memories. Further, Glicksohn stresses how the experience of time is contingent on one's degree of immersion in the lived world.

Alterations in time sense may be causally responsible in some cases of depression, or at least in the maintenance of the disorder. It may be worth reminding ourselves that there are efficacious treatments where we seek to trick a patients' "cognitive timer" or "internal clock." Both light boxes and sleep deprivation are potent ways to elevate a patient's mood, and in someone with a bipolar illness may serve as a trigger to a manic episode. Thus, therapy provides some support for the hypothesis that an organism's sense of time may be of causal importance in the pathophysiology of depression.

The Relationship Between Phenomenology and Cognitive (Neuro)Science

Traditionally, cognitive science has been linked with the philosophical position of functionalism and has acted independently of the physical level, namely the particular object in which cognition is instantiated. Mental states are thus multiply realizable and are identified in terms of causal or functional role in mediating between sensations and behavior (Bechtel, Abrahamsen, and Graham 1998; Flanagan 1991). With the advent of connectionism and cognitive neuroscience, functionally relevant neural circuits began to be discussed and in philosophy the advent of eliminative materialism may have had a role in the undermining of a material–neutral cognitive science (Bechtel et al. 1998). For cognitive science to be successful, it may required to be constrained by biology. Hence, contemporary cognitive neuroscience can be viewed as being constrained by the alleged truths of folk psychology from above and by truths about the nervous system from below.

However, if one considers Wyllie's use of Husserl and Merleau-Ponty and the utility of phenomenology in understanding mental illness, in parallel with the dominance of biological psychiatry, one can ask what phenomenology can add to, or how does it differ from, a fleshed-out cognitive neuroscience? It could be considered that "neurophenomenology" (Varela 1998) is a subtype of cognitive neuroscience, a field where cognition is studied as being constrained by data from neuroscience but the constraining data from psychology is that provided by phenomenology, and in particular the phenomenological reduction (Varela 1998). He puts it thus:

> The Working Hypothesis of Neurophenomenology: Phenomenological accounts of the structure of experience and their counterparts in cognitive science relate to each other through reciprocal constraints. (Varela 1998, 351)

Thus, for Varela, there is an explicit assumption that phenomenological data do a better job as a "top-down" explanatory constraint, rather than other types of psychological data. The accounts that Varela seeks to use are not equivalent to natural experience—he states that discipline and training are required to be able to generate and report phenomenological data. Such data may be descriptions of "aspects of experience that were not available before" (Varela 1998, 354). This may be fine for a neurophenomenology of normal experience, but for a neurophenomenology of psychopathology this would require our patients to be phenomenologists to be able to describe their experiences to the interviewer adequately and allow access to such data. If this were even practicable, would such data be generalizable to the nonphenomenologist cases clinicians more commonly encounter?

Van Gelder (1999) and Varela (1999) both offer accounts of a naturalized phenomenology of temporality. There are similarities, but also differences. Van Gelder offers an account of time through cognitive science, independent of the medium in which such mechanisms may be instantiated, whereas Varela explicitly relates his account back to the nervous system. Both, however, agree that classical computationalist accounts are insufficient to explain the phenomenological data and use dynamical or connectionist models.

For Van Gelder, protention is conceptualized as "current, intending, future stages as future to some degree, as a continuous 'manifold', as finite and direct" (1999, 263). Van Gelder's account is compelling. Although it lacks a biological framework, it is based on a close and thoughtful reading of Husserl coupled with clarity and a model from which predictions can be drawn and hypotheses tested. Van Gelder suggests that his account of how temporality may be exhibited by dynamic systems is strikingly similar to Husserl's accounts of time consciousness—the difference lies in that whereas Husserl's time consciousness requires an almost direct perception of past and future, Van Gelder's dynamical model can intend, but not perceive, the past and future.

Time and Twentieth-Century Philosophy

Wyllie's excellent paper demonstrates how fruitful the work of Husserl and Merleau-Ponty

can be in the study of psychopathology, and in particular the perception of time in melancholia. Given the clear utility of phenomenology, are other traditions in twentieth-century philosophy as useful in thinking of our patients and their disorders of time?

Turetzky (1998) presents an account of philosophy's study of time. For the twentieth century, he suggests we can view philosophy as being divided into three distinct, but not necessarily isolated, strands. These he terms the *analytic, phenomenological,* and *distaff*. The distaff includes the work of Bergson and Deleuze. Analytic philosophy is very much centered around the legacy of the British idealist, McTaggart, and the contrast between static time and temporal becoming.

McTaggart notoriously claimed that time was unreal and that nothing that exists can have the property of being in time (McTaggart 1908/1993; Turetzky 1998). Much of the Anglo-American metaphysics of time in the twentieth century has been devoted to exploring and criticizing this argument. However, for our purposes, we need not go into the esoterica of such arguments (but see Loux [2001] and Le Poidevin [2003] as good, clear introductions) but can focus on McTaggart's anticommonsensical conclusion. Presumably McTaggart did not act on his unusual belief, or else kept it to the philosophy study; however, some of our patients do. Patients with a severe depressive psychosis may develop Cotard's syndrome, that as well as hypochondriacal delusions, may also contain nihilistic beliefs about the existence (or rather, the nonexistence) of certain things. Such patients may describe, as Wyllie's sufferer of melancholia, a determinate, static, almost crystalline structure of time where there is no change. Others may state that they have no date of birth, have never been born, and will always "be." Such an existence is almost divine—eternal and unchanging, "pure being" (Wyllie 2005). In addition to a closing off of protention, such patients may also demonstrate a paucity of retention—the past is denied, and the horror of the now, eternal, ever-present, and never-changing is all that there is. Such a patient may demonstrate a subtype of Cotard's, which we can perhaps christen as McTaggart's syndrome, where they do deny the existence of time and of change, and hold according delusional beliefs. Such a delusion can radically affect a patients' rationality, and in contrast with others who may still be able to enter a discourse within normative bounds yet be psychotic (Broome 2004; Campbell 2001), such patients are almost impossible to interview. The very process of undertaking a psychiatric assessment, of eliciting a *history*, is rendered problematic. The experience is so very alien to the interviewer that shared systems of belief are inaccessible or simply not present.

The proposition that has most concerned twentieth-century analytic philosophy would only be believed by someone, McTaggart aside, with a very severe, typically depressive, psychosis. An illness that included such bizarre beliefs would likely render communication with the patient, and phenomenological description of their symptoms, almost impossible. This contrasts with the more subtle problems of time and temporality that have preoccupied the phenomenological and distaff traditions.

Heidegger and Levinas on Husserl's Account of Time

Husserl's *The Phenomenology of Internal Time-Consciousness* (Husserl 1928/1999) is an influential phenomenological account of temporality. Husserl has two goals—to offer an account of the subjective passage of time but also to account for how we can encounter objects as temporal. However, this account was relatively early in Husserl's own career, being based on an amended lecture course from 1905 compiled by Edith Stein, and published by Martin Heidegger in 1928 (Bernet, Kern, and Marbeck 1993; Dostal 1993). Other views on these problems by Husserl are present in his unpublished writings (Bernet et al. 1993; Zahavi 2003). With this proviso in mind, there have been two equally prominent views of temporality in the phenomenological literature: these are the accounts of Heidegger (1927/1962, 1979/1985; Dostal 1993) and Levinas (1947/1989; Bernet 2002). Heidegger's account of temporality in *Being and Time* is well-known and Husserl viewed it as altogether too

anthropological and relativistic. Dostal (1993) goes so far to suggest that Husserl encouraged the publication of his 1905 lecture by Stein and Heidegger in 1928 to remind the latter of his thinking on the topic after the publication of *Being and Time*.

Wyllie's use of Merleau-Ponty brings in Heideggerian notions that it is through practical engaged activity in the world that temporality and its disorders are made manifest. Levinas takes this a little further and explicitly links temporality with sociality. Husserl uses as his phenomenological data the experience of listening to music; however, the lived social world in all its chaos and confusion may not be so amenable to Husserlian analysis. Thus, for Levinas, we do not expect every futural event (Hutchens 2004), and cannot be open to all the indeterminacy of the future. Levinas' focuses his account of "diachrony" through the lack of access one has to the memories of another and the unpredictability of their future. This is added to by what Levinas terms *anachrony,* the effect the dead, the unborn, and the distant, have on one's temporality.

> Objective time is always being broken up by the anachrony of lived time, recuperated by memory and expectation. That is, our most basic experience of time comes in the form of social arrangements whose temporality is mostly forbidden to us and, thus, objective time is merely the self's effort to impose its own time on all time, to reduce the Other to the Same. Time lacks the merely formal nature of the concept of objective time because diachrony is a rupture and continuity of time on many anachronous levels. The anachronous disjunction between synchrony and diachrony, the time of the self and the time of the other person, is the very meaning of discontinuity. The time of lived experience is anachronous, not synchronous, because of the social arrangements that shape our experience. (Hutchens 2004, 74)

The importance of Levinas' account lies in that fact that normal temporal experience is not synchronous. It may be so in certain isolated cases, such as when exercising one's aesthetic sense or perhaps when one is mentally ill. As Wyllie observes, in melancholia one's affective stance to the world is altered and we know that in mood disorder sufferers' perceive the affect of others' differently (Surguladze, Keedwell, and Phillips 2003). Thus, could it be that in melancholia the radical alterity of the other (to lapse into Levinasese) is minimized? The other can be more easily rendered the same. The futural events become more predictable, a Levinasian temporality becomes Husserlian, with the possibility of a foreclosure of protention and a static, determinate future. By this account, one could see Husserl's aseptic account as a step to pathology, already a withdrawal from the world.

Conclusion

The experience of alteration in time in mood disorders is a powerful and illuminating way into studying depression. Wyllie's analysis offers insights that can both help clinically and with empirical research. Further, such insights are important in helping us to appreciate the neuroscience data. The work outlined herein largely supports Wyllie's own conclusions—Glicksohn (2001) in particular offers his own phenomenological account of time sense, an account that attempts to deal with issues that preoccupied Heidegger, Merleau-Ponty, and Levinas, namely how our sense of time and temporality is contingent upon our immersion in the lived world and our experiences of being with others. Further, the phenomenological accounts of Husserl can be amenable to contemporary accounts in the language of connectionist models.

A contemporary of Henry Maudsley's, and self-described psychologist, offers his own thought experiment when considering time:

> *The heaviest weight*.—What if some day or night a demon were to steal into your loneliest loneliness and say to you: "This life as you now live it and have lived it you will have to live once again and innumerable times again; and there will be nothing new in it, but every pain and every joy and every thought and sigh and everything unspeakably small or great in your life must return to you, all in the same succession and sequence—even this spider and this moonlight between the trees, and even this moment and I myself." The eternal hourglass of existence is turned over again and again, and you with it, speck of dust! Would you not throw yourself down and gnash your teeth and curse the demon who spoke thus? Or have you once experienced a tremendous moment when you would have answered him: "You are a god, and never have I

heard anything more divine." If this thought gained power over you, as you are it would transform and possibly crush you; the question in each and every thing, "Do you want this again and innumerable times again?" would lie on your actions as the heaviest weight! Or how well disposed would you have to become to yourself and to life *to long for nothing more fervently* than for this ultimate eternal confirmation and seal? (Nietzsche 1887/2001, 341, 194–195)

For Nietzsche, if one is able to think this thought through, "one will either throw yourself down and gnash your teeth and curse the demon who spoke thus?", or if one is "superman" potential "would have answered him: 'You are a god, and never have I heard anything more divine.' " For the past and the present to be enough would be as much a mark of psychopathology as the opposite. The lack of future (or eternal recurrence) is present in both and what determines how one answers Nietzsche's demon may be how one judges one's present and past and thus be heavily colored by one's affect at the time. If melancholic time distortion, Cotard's and McTaggart's syndrome are the consequence of severe depression, then Superman syndrome may be the affective corollary in the heights of grandiosity and mania. As Levinas reminds us, protention, or the lack thereof, can go either way. Eternal torment and eternal divinity may be two aspects of the same temporal phenomenon.

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