

PCT50

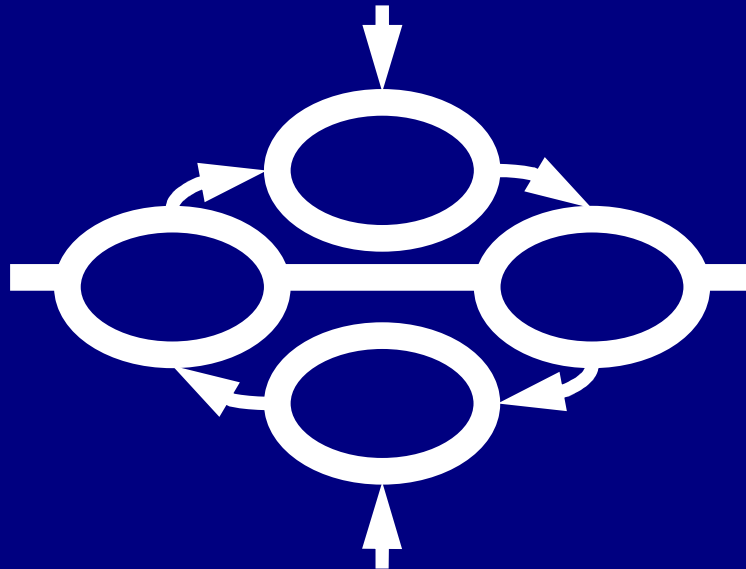
*50th Anniversary
of Perceptual
Control Theory*

Control Systems Group International Conference

Saturday 24th July 2010

9am – 5.30pm

**School of Psychological Sciences, Coupland One Building,
Oxford Road, University of Manchester, M21 8FT, UK**



In conjunction with

**Special Interest Group on Control Theory at the BABCP Conference
Tuesday 20th July – Friday 23rd July 2010**

**Emotion Regulation of Others and the Self (EROS)
ESRC Programme Grant**

PROGRAMME & ABSTRACT BOOK

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Introduction

PCT50 is a celebration of 50 years of what came to be known as Perceptual Control Theory (PCT). Prior to Bill Powers' highly cited 1973 book, *Behavior: The Control of Perception*, the theory was published in two brief, but detailed, papers in a 1960 issue of the journal *Perceptual and Motor Skills*. The full theory went beyond the cybernetics of Weiner and Ashby that had preceded it. The 1960 papers by Powers, Clark and McFarland included a hierarchical organization of control loops, specific modes of operation within these hierarchies and an exposition of learning through the trial-and-error reorganization of the properties of these control hierarchies. Today, 50 years on, these two articles still challenge the orthodox open loop assumptions of the vast majority of behavioural and cognitive accounts. They breathe fresh air into psychology, invigorating it with a combination of purposeful self-determination, mathematical rigour and mechanistic detail.

In November 2007, the University of Manchester played host to an International Control Systems Conference. In 2010, with the support of the BABCP Special Interest Group on Control Theory and the ESRC Emotion Regulation of the Self and Others Programme Grant, the conference returns to the cosmopolitan city that was at the centre of the industrial and computer revolution. Our goal is to illustrate how a psychological theory devised by a control engineer can contribute to a cybernetic movement that is yet to achieve its potential in the social sciences.

Prior to our Main Event on Saturday 24th July - the PCT50 conference – there are a series of events associated with the BABCP conference. On Tuesday, Tim Carey provides a full-day clinical workshop on Method of Levels. On the Thursday and Friday there are three separate two-hour symposia on control theory and its implications for clinical practice including cognitive behavioural therapy.

The full day of the PCT50 conference is devoted to new advances in PCT, including Bill Powers' new account of how the observation of classical conditioning can be modelled using the theory, and a range of presentations from international speakers on the role of PCT in social psychology, experimental psychology, animal biology, education, and clinical psychology.

We would also like to draw your attention to the informality and social highlights of the week in Manchester. Delegates at the BABCP conference are treated to a range of social events including a free live band night playing covers of pioneering Manchester bands such as *New Order*, *The Smiths*, *Happy Mondays*, *Oasis*, *Stone Roses* and *The Fall*. On Saturday evening we round off PCT50 with a contemporary Indian meal at *Zouk*. On Sunday 25th July, we continue the informalities with a time for discussion and chat at the *Kro Bar*.

We hope that you will enjoy your stay in Manchester and leave with a enlivened sense of purpose and a refreshing optimism for this new 'Decade of Control' in the psychological sciences...

Warren Mansell & Sara Tai, University of Manchester, UK
PCT50 Conference Organisers

Overview

Tue 20 th July	<p>FULL DAY CLINICAL WORKSHOP: <i>Patients in Control: Enhancing Recovery and Resilience with the Method of Levels</i> Tim Carey, Centre for Remote Health, Flinders University & Charles Darwin University, Australia</p>	<p><i>Cost £100-180 including lunch depending on member status & timing. Please register at www.babcpconference.com</i></p>
Wed 21 st July	<p>BABCP Conference <i>(no control theory stream)</i></p>	<p><i>The BABCP conference details are provided at www.babcpconference.com.</i></p>
Thu 22 nd July	<p>BABCP Conference including: 1.30 – 3.45pm SYMPOSIUM: <i>Utilising Control Theories in the Science and Practice of CBT</i> Chair: Warren Mansell, University of Manchester</p>	<p><i>The registration fee includes lunch and the social programme (not gala dinner) and ranges from £105 - £205 for a day, and £185 - £385 for the full conference,</i></p>
Fri 23 rd July	<p>BABCP Conference including:</p> <p>9.00 – 11.15am SYMPOSIUM: <i>Putting Theory into Practice – Clinical Research Applications of Perceptual Control Theory</i> Chair: Tim Carey, Flinders University & Charles Darwin University, Australia</p> <p>12.30am – 1.30pm: Control Theory SIG Meeting</p> <p>1.30 – 3.45pm PANEL DISCUSSION: <i>50 Years of Control Theory: How Does it Impact on Our Current Understanding and Practice?</i> Chair: Sara Tai, University of Manchester Speakers: Bill Powers, Rick Marken (videolink), Tim Carey, Warren Mansell</p>	<p><i>depending on timing and member status.</i></p>
Sat 24 th July	<p>PCT50: 50th Anniversary of Perceptual Control Theory International Conference See Page 13 for Full Programme. Speakers: Bill Powers, Kent McClelland, Rick Marken (videolink), Tim Carey, Fred Good, Sergio Pellis, Chris Spratt, Heather Bell</p> <p>PCT50 Evening Meal – Indian Restaurant, Central Manchester 8pm onwards</p>	<p><i>Free registration. Limited numbers and so registration requires a good quality and relevant abstract. Students are encouraged to apply. Meals to be paid for by delegates on the day.</i></p>
Sun 25 th July	<p>Informal Discussions on PCT Upstairs at the Kro Bar, 325 Oxford Road, Manchester 10am – 4pm</p>	<p><i>No limit on numbers.</i></p>

BABCP Abstracts

CLINICAL WORKSHOP

Patients in Control:

Enhancing Recovery and Resilience with the Method of Levels

9am – 5pm Tuesday 20th July

Tim Carey, Centre for Remote Health, Flinders University & Charles Darwin University, Alice Springs, Australia

The active participation by patients in therapy is an important component of patient recovery from psychological distress as well as one of the factors in building resilience with regard to further psychological problems. Furthermore, it is increasingly recognised that the change process in therapy does not necessarily follow a linear, gradual process but is more often characterized by sudden gains and improvements. These dramatic improvements in psychological state can occur at any stage throughout therapy but are often preceded by increases in emotional processing and some degree of turmoil.

The Method of Levels (MOL) is a cognitive therapy that harnesses and promotes the idiosyncratic change processes of individual patients. By focusing on the in-session experiences of the patient and emphasising process over content, clinicians are able to draw the patient's attention to those key aspects of the patient's problem which are likely to be pivotal in the successful amelioration of the psychological distress. MOL clinicians target fleeting verbal and nonverbal disruptions in the patients speech such as a pause, a smile, or a downward glance as signs of background thoughts and metacognitions. By asking questions about these disruptions clinicians help patients move their awareness to the salient aspects of their problems and also to gain a greater appreciation of their own thinking styles and reasoning processes.

MOL is based on Perceptual Control Theory (PCT). PCT provides a functional explanation for the well-recognised self-regulating propensities of individuals. From this theoretical perspective, MOL engages the resources of the patient to promote their own recovery in a way that is likely to be enduring and generative. By providing treatment from the patient's perspective, MOL takes a transdiagnostic approach and is well suited to complex cases as well as addressing some of the more difficult problems in therapy such as noncompliance, lack of engagement, and poor motivation.

Half-day MOL workshops were presented at the BABCP conference in Warwick (2006) and Exeter (2009) and a full day pre congress workshop was presented at the BABCP conference in Brighton (2007). These workshops are routinely evaluated very positively with participants providing feedback such as "Fascinating and interesting workshop"; "Practicality of skills taught"; "Very engaging speaker. Fun and thought provoking."; and "Balance of theory and practice". The workshop would be well suited to both beginning as well as experienced clinicians who work with adolescents and adults experiencing the range of problems normally seen in primary and secondary care settings. Clinicians working with patients for whom treatment is mandated or patients, such as children, who enter treatment at the request of a third party might not find this workshop particularly beneficial.

Learning Objectives:

By the end of the workshop the participants will have had opportunities to:

- Clarify the nature of control and its relevance to the manifestation of psychological distress as well as the organisation and delivery of psychological treatments.
- Learn techniques to promote the participation and engagement of patients
- Explore the problem solving process of reorganisation and how best to promote it
- Discuss important aspects of the change process and their implications for psychological treatments
- Trouble-shoot ways of addressing and overcoming common problems in therapy such as poor engagement and motivation

Training modalities:

- Didactic
- Group Discussion
- Role play
- Experiential

Implications for everyday clinical practice:

- Improved understanding of the nature of patient's psychological distress
- Greater service efficiency leading to improved access to services for patients and increased capacity for therapists
- Enhanced patient satisfaction through increased control over treatment decisions
- Increased therapist effectiveness through an expanded theoretical framework
- Greater cohesiveness between therapeutic approaches through the recognition of fundamental commonalities

About the workshop leader:

Tim Carey PhD is an Associate Professor and has been course convenor of the postgraduate clinical training program at the University of Canberra for two and a half years. He is a clinician, teacher, and researcher who has been developing and evaluating MOL in clinical settings in Australia and the UK since the late 1990's. He is a well-received international conference and workshop presenter. He uses MOL in his clinical practice and supervises others in the use of MOL.

Key references:

- Carey, T. A. (2008). *Hold that thought! Two steps to effective counseling and psychotherapy with the Method of Levels*. Chapel Hill, NC: newview Publications.
- Carey, T. A., Carey, M., Mullan, R. J., Spratt, C. G., & Spratt, M. B. (2009). Assessing the statistical and personal significance of the Method of Levels. *Behavioural and Cognitive Psychotherapy*, 37, 311-324.
- Mansell, W., & Carey, T. A. (2009). A century of psychology and psychotherapy is an understanding of 'control' the missing link between theory, research and practice? *Psychology and Psychotherapy: Theory, Research, and Practice*, 82, 337-353.

SYMPOSIA

Using Control Theories in the Science and Practice of CBT

Thursday 22nd July 2010 1.30pm – 3.45pm

Convenor and Chair: Warren Mansell, University of Manchester

Depression and anxiety in relation to goal coherence and goal conflict in adolescents' personal goal systems

Joanne M. Dickson, University of Liverpool

Nicholas J. Moberly, Mood Disorders Centre, University of Exeter

Control theories posit that psychological distress is due to unresolved conflict between personal goals (Mansell, 2005; Powers, 2005). In the present study we investigated whether symptoms of anxiety and depression are independently associated with conflict and reduced facilitation within personal goal systems. The sample comprised a non-clinical adolescent school sample ($N = 119$). Participants listed their personal goals and rated the extent to which each goal inhibited or facilitated every other goal. Anxious and depressive symptoms were both found to be associated with reduced levels of goal facilitation, although regression analyses revealed that depressive symptoms but not anxious symptoms independently predicted reduced levels of goal facilitation. Similarly, ratings of distress and repetitive thinking associated with participants' most conflictual goals were independently associated with depressive symptoms but not anxious symptoms. There was no association between the number of goals listed and anxious and depressive symptoms. Conflict is thought to be a normal consequence of pursuing a variety of goals. Our preliminary data, suggest that both anxious and depressive symptoms are associated with reduced goal coherence. However, only symptoms specific to depression, but not symptoms specific to anxiety, are independently predictive of reduced coherence in personal goal systems and a negative preoccupation with conflicting goals. The present findings further contribute to our understanding of the nature of anxious symptomatology and depressive symptomatology from a goal-motivational perspective in adolescence. However, future research would benefit from the use of additional measures of depression and particularly anxiety to study whether these findings are replicable.

Ruminative thinking and goal strivings: Conflict, difficulty, ambivalence and avoidance

Nicholas J. Moberly, Mood Disorders Centre, University of Exeter

Joanne M. Dickson, University of Liverpool

Ruminative thinking is a common phenomenon in depression and anxiety and has been identified as a transdiagnostic process in psychopathology. Control theory perspectives suggest that ruminative thinking is instigated by unsatisfactory rates of progress towards important goals and an inability to disengage from unobtainable goals. Maladaptive features of the structure and content of personal goal hierarchies may disrupt self-regulation and thereby increase ruminative thinking. In a cross-sectional study, a non-clinical sample of 210 undergraduates completed a personal strivings assessment in which they listed ten goal strivings before rating each on several dimensions including conflict, difficulty and ambivalence. Participants also completed various self-report measures of ruminative thinking and depressive/anxious symptoms. Ruminative thinking was predicted to be independently associated with perceptions of greater goal conflict, difficulty and ambivalence, and a greater proportion of avoidance goals. Results are discussed in terms of control theory and relevance for clinical conditions.

Self-regulation processes in reactive depression: partial engagement with over-valued goals

Stephen Barton, Institute of Neuroscience, Newcastle University

This paper presents part of a self-regulation framework for conceptualising reactive depression (Barton, Armstrong, Freeston & Twaddle, 2008) and it reports the results of two analogue studies seeking to test a key aspect of the model. A central claim of the model is depression can be maintained by dysregulation of goal engagement systems such that, contrary to stereotype, some

depressed people remain engaged in highly valued activity regulated by goals that have become unattainable (or have a very low probability of attainment). This creates the setting conditions for frustration-based depression in which lack of progress towards an overvalued goal is taken as the input for goal re-engagement. Over time, iteration through positive feedback cycles maintains goal overvaluation, increases frustration, dysphoria and makes regulatory control “reluctant” to disengage and pursue alternative goals. Evidence from two analogue studies is presented using an anagram task in which the anagrams become increasingly difficult to solve in the time available. In spite of the explicit option to disengage from the task at any point, most participants continue to pursue their goal for the task and experience intensifying frustration and dysphoric mood. The strongest associate of dysphoric mood was partial engagement; that is, having a moderately low level of hope in the goal when task difficulty increases; the hope level was not high enough to engage strongly with the task to achieve the goal, but neither was it low enough to disengage from the task and engage with more rewarding alternatives. Partial engagement with highly valued goals is discussed as a potential maintenance process in major depression.

Dynamic Hierarchies in Exposure Therapies

Alec Brady, Keresforth Centre, Barnsley PCT

Control theories posit that it is the control of percepts – conceptualised as internal states caused by external stimuli – that determines the function of behaviour. Alec Brady uses this notion to develop the concept of Dynamic Hierarchies in Exposure Therapies (Brady and Raines, 2009). By structuring the hierarchy in terms of moment-to-moment control of the state of arousal (which plays the role of the percept in this formulation) the therapist enables the client to integrate exposure work into their daily activities in a much more organic way. The method also makes use of experimental results which show how safety behaviours can be made a part of the hierarchy, rather than being seen as inimical to it (Milosevic and Radomsky, 2008). This talk will explain the basic approach, and will explicate the hypothesised function of cognitive dissonance and appraisals in determining what counts as sensitising and desensitising exposure.

References: Brady, A. & Raines, D. (2009). Dynamic hierarchies: a control system paradigm for exposure therapy *The Cognitive Behaviour Therapist*, 2, 51–62. Milosevic I, & Radomsky, A. S. (2008). Safety behaviour does not necessarily interfere with exposure therapy. *Behaviour Research and Therapy*, 46, 1111-1118.

Working with goals, self-discrepancies and executive deficits following brain injury: can control theories help?

Fergus Gracey, Oliver Zangwill Centre, Ely, Cambridgeshire

Emotional difficulties are common following acquired brain injury (ABI), anxiety and depression being most common, with both prevalence and lifetime incidence at about 30%. Cognitive impairments in executive functions (self regulation of mood, behaviour and cognition), attention and aspects of memory are also very common and can impact significantly on ability to function independently and to engage in psychological therapy. A key focus of rehabilitation is to support individuals to improve and maintain their social participation through the collaborative setting of personally meaningful goals. Control theories highlight the detection and management of discrepancies between current state and the desired or aspired to goal state as central to self-regulation. They have been drawn upon in the literature to help understand specific aspects of rehabilitation, such as collaborative goal setting, and understanding emotional adjustment. Research into interventions for emotional problems following brain injury suggests that goal setting is helpful for improving mood in rehabilitation soon after injury. In longer term adjustment, individuals experience social discrepancies (negative subjective experiences in previously familiar social contexts such as family, friends, the workplace) and personal discrepancies (feeling at odds with themselves now compared to how they used to be pre-injury). Extent of personal discrepancy may underpin extent of adjustment-related emotional distress. Executive functions are also commonly impaired following brain injury resulting in reduced ability to self-monitor progress towards practical goals and self-regulate accordingly. In this presentation we argue that control theories provide a helpful conceptual framework for integrating ideas across diverse

areas of rehabilitation practice, understanding post-injury emotional adjustment in terms of self-discrepancy and executive control, and informing the practice of cognitive therapies with people with brain injury. Our ideas will be illustrated with reference to clinical material in which behaviour appears driven by non-conscious 'hot goals' which serve a function of reducing self-discrepancy in the short term at the cost of achieving practical, day-to-day intentions and long term good emotional adjustment.

Putting Theory into Practice – Clinical Research Applications of Perceptual Control Theory

Friday 23rd July 9am – 11.15am

Convenor & Chair: Tim Carey, Centre for Remote Health, Flinders University & Charles Darwin University, Australia

Method of Levels in Primary Care: Investigating Predictors of Outcome

Marijke Lansbergen, University of Manchester, UK

Method of Levels (MOL) is a form of psychotherapy based on the principles of Perceptual Control Theory (PCT). PCT understands psychological distress to arise when an individual is unable to control their experiences due to conflict between higher-order goals (e.g., "I want a promotion at work" vs "I want to remain loyal to my colleagues"). The MOL therapist asks the client questions about their experiences in order to direct their present-moment attention to their conflicting personal goals, thus allowing it to be identified and 'reorganised'.

Recent studies of MOL therapy have found significant differences in symptoms of psychological distress from pre to post therapy (e.g., Carey & Mullan, 2007, 2008; Carey et al., 2009). The current study uses a longitudinal within-group design incorporating regression analyses to identify predictors of outcome following MOL therapy. The study was conducted in a primary care mental health service with clients presenting with a range of problems including anxiety and depression. The current design overcomes limitations of previous uncontrolled studies by ascertaining the relative contributions of a number of variables (number of therapy sessions, MOL adherence, working alliance, level of reorganisation and client readiness to actively solve their problems) on therapeutic outcomes, thus allowing further exploration of the therapeutic mechanism of change. A total of 60 participants were sought.

It was predicted that 1) clients would experience an improvement in wellbeing; 2) MOL would be associated with a strong positive therapeutic alliance; 3) sessions which were more MOL adherent would promote better client outcomes; 4) high levels of reorganisation and client readiness to actively solve their own problems would predict a positive outcome. The main dependent variable consisted of a composite score calculated from measures of anxiety and depression.

Can a control model approach assist case formulation in psychotherapy?

Chris Spratt, Levenmouth Mental Health Team, Fife, UK

This is a presentation of a paper which looks at issues regarding case formulation in psychotherapy. Case formulation is well recognized as being helpful in the conceptualizing of psychological problems and as a useful tool in the practice of cognitive therapy. Control, as opposed to behaviour, is increasingly being seen as that human process most relevant to psychopathology. We look at the diagnosis and treatment of a small number of people, treated in a naturalistic setting, who were selected without any specific criteria other than being people whose problems were treated using the Method of Levels, a form of cognitive therapy based on the principles of Perceptual Control Theory, and who completed both pre- and post-treatment questionnaires. We then consider how the problems these people presented with, and their treatment, might be formulated as a result of taking this approach.

Are Everyday Emotions and Behaviours More Important Than People Think? An Analogue Study to Explore the Role of Arbitrary Control in Psychological Distress

Rebecca Kelly, University of Manchester, UK

This research aimed to investigate whether the goals underlying avoidance and suppression relate to overall well-being, and to problems in three different domains of emotion regulation (anger, anxiety and excitement) and three different domains of behaviour (eating, drinking alcohol and shopping).

According to Perceptual Control Theory (Powers, 1973), the dysfunctional consequences of avoidance and suppression result from *arbitrary control* (Mansell, 2005; Powers, 1973). This occurs when one attempt to control an experience conflicts with other important goals that also regulate that experience. Thus, avoidance involves (1) having important reasons (higher order goals) for avoidance or suppression, and also (2) placing low importance on the normal function of an emotion or behaviour. For example, one might suppress anxiety in order to feel completely safe and also because one is not aware of the importance of feeling anxious occasionally as a normal emotion that helps one to be prepared when facing a threat.

The present study assessed both aspects of avoidance in all six domains. A sample of 192 undergraduates rated the overall importance of their reasons for doing or expressing each behaviour and emotion, and their reasons for *not* allowing themselves to do so. They also rated the extent to which they had problems managing each behaviour or emotion, and completed self-report measures of well-being and psychological symptoms.

Evidence was found to suggest both aspects of avoidance are problematic. Self-reported difficulties managing each emotion or behaviour, along with lower well-being and symptoms of distress, were associated with both (1) highly important suppression or avoidance goals, and also (2) with low ratings of the importance of allowing oneself to express an emotion or behaviour, relative to the mean importance ratings of the sample as a whole. The latter was seen to indicate a relative lack of awareness of the normal functionality of certain behaviours and emotions.

The implications and limitations of this research will be discussed. Clinically, these and related findings suggest that it may be helpful for clients to explore the conflicting higher level goals in relation to their emotions and behaviour. It may also be important to help the client weigh up and test both the dysfunctionality and functionality of their emotions and emotion regulation strategies.

Method of Levels: Rolling with the Punches

Tim Carey, Centre for Remote Health, Flinders University & Charles Darwin University, Australia

MOL is a flexible and adaptive form of cognitive therapy that focuses on the experiences and perceptions of the client as they are reported by the client. MOL begins with the client's perception of the problem and seeks to help the client reach a successful resolution to the difficulties they are experiencing. The case study presented in this workshop describes the use of MOL with a young man who had a long history of contact with mental health services. He displayed what would be described as chronic and complex difficulties including anger issues and substance abuse problems. He was initially quite suspicious and pessimistic about embarking on yet another course of therapy. From the first session, however, he remarked that this particular therapy seemed to be different from what he had previously experienced. He commented that he found it helpful and interesting to be examining his beliefs and attitudes in this way. This presentation describes the way in which the client was able to determine many of the parameters of the treatment such as the timing of the appointments and even the length of the sessions. Also described is the way in which a variety of sources of data were used to monitor the progress of the client. It is suggested that MOL might be a useful intervention to use with clients who are difficult to engage with or who have difficulty to define problems.

50 Years of Control Theory: How Does it Impact on Our Current Understanding and Practice?

Friday 23rd July 1.30pm – 3.45pm

Convenor & Chair: Sara Tai, University of Manchester

A Balance of Forces

Bill Powers, Lafayette, Colorado, USA

The enormous change that the concept of negative feedback control implies has yet to penetrate the understanding of neuroscientists, biologists, psychologists, and most others in the life sciences. There are great forces at work, on the one hand urging a scientific revolution, and on the other hand pushing on to ever more astonishing feats of biochemistry and genetic detective work. We can symbolize these opposing forces with a pair of rubber bands knotted together. With one hand, I pull one end to the left; with the other hand, I pull the other end to the right. And you will notice that as I do this, the knot in the middle remains in about the same place. Of course it does, you may say. The two rubber bands are equal in strength; the knot has to stay halfway between them. The forces are in balance. That is how a neuroscientist would reason, along with most other kinds of scientists. Control theory tells us that, with this little demonstration, I have just shown that in fact the opposite is the truth: the position of the knot is the cause of the balance of forces. How that can possibly be true is the subject of this talk.

Perceptual Control Theory through the 1980s

Rick Marken, University of California, USA

I discovered PCT in 1974, just after getting my PhD and before leaving to start my first teaching job as a Professor of Psychology at Augsburg College in Minneapolis, Minnesota. I will talk about the series of events that led to my becoming actively involved in doing PCT research starting in 1979. I will also talk about my experience with resistance to PCT from the Psychological "establishment", learning about the phenomenon of "pseudo" PCT, efforts to develop a group with a common interest in PCT (the CSG, starting in 1985) and the start of the internet discussion group CSGNet at the end of the 1980 (I believe it actually started in 1990).

Method of Levels: A Methodical and Systematic Beginning

Timothy Carey, Centre for Remote Health, Flinders University & Charles Darwin University, Australia

The theoretical and conceptual underpinnings of the Method of Levels (MOL) have been available since at least the early 1970s. Efforts to implement MOL in a systematic and comprehensive way, however, did not occur until the beginning of the 21st century. Early positive results from a case study encouraged the more widespread use of the technique. Initially, this began with one clinician working in the Adult Primary Care service of the National Health Service in Scotland. The results achieved by this clinician encouraged other clinicians to become involved. At each stage of development the application of MOL was evaluated before further developments were planned. While the evaluations were being conducted it became apparent that the principles of PCT could be used to inform not only the type of therapy that was delivered but also the way in which it was delivered. It was discovered that organizing services such that patients were able to schedule their own appointments led to dramatic improvements in access to services. Waiting lists and waiting times diminished and service capacity increased. Paradoxically, when patients were able to make as many appointments as they wanted, they made fewer appointments than when clinicians scheduled appointments for them. This feature of MOL alone should be of interest to service managers and policy makers, however, MOL also achieves positive clinical outcomes. Patients, generally, find their own solutions to problems and many patients report beginning to question themselves in the same way outside of therapy that the MOL clinician questions them within therapy. This suggests that MOL might fulfil an important relapse prevention function as well as helping people with their current distress. During the implementation of MOL a collaboration was formed with a clinical researcher at the University of Manchester. As a result of this collaboration, further research has begun through the University of Manchester. Beginning with studies conducted in naturalistic settings involving one therapist, then two, then four, the research at

the University of Manchester is continuing to increase the research demands and further explore the applicability of MOL. To date, a growing number of publications have become available describing the results of using MOL and a special interest group has been formed within the BABCP. Also, a Special Issue of the journal *The Cognitive Behaviour Therapist* devoted to MOL was published in 2009. Interest in MOL is steadily expanding with training being conducted in the UK, Australia, Canada, and the US. Initial findings indicate that MOL is an efficient and effective form of therapy that invites a transdiagnostic approach to the formulation of psychological problems making it especially useful with issues of complexity and comorbidity. Importantly, MOL enables patients to assume control of their mental health service delivery and, in this way, reflects important NHS policy initiatives.

Perceptual Control Theory and Cognitive Behavioural Therapy

Warren Mansell, University of Manchester, UK

In the last decade or so, cognitive behavioural therapies have been developing in a variety of ways. Their evidence base has been burgeoning, they are becoming increasingly adopted by the clinical services, and they are diverging into a 'family' of related approaches with somewhat diverse influences, such as mindfulness, attachment theory and metacognition. Nevertheless, there remain a range of challenges concerning, for example, the degree to which CBT can be said to have a clear, coherent link between its theory and its practice, and issues over how it is provided in an accessible way to a wide range of client groups (Mansell, 2008). The term CBT itself belies an uneasy alliance between cognitive theory and behavioural theory, which use different terminology and make different assumptions about the importance of internal mental states and observable behaviour. I came across control theory initially through the work of Carver and Scheier (1982), which influenced the development of the cognitive model of social phobia (Clark & Wells, 1995), among others. However, it was only later that I accessed the original work on control theory that Carver and Scheier utilised – Bill Powers (1973, 2005) book *Behavior: The Control of Perception*. This provided a full and detailed mechanistic, biological, mathematical and philosophical expansion of the theory which came to be known as Perceptual Control Theory (PCT). The theory provided a breath of fresh air to me in terms of what 'theory' really means within psychology, and it appeared to resolve the strain between cognitive and behavioural accounts in the literature. The theory is both familiar and radical; it makes the uncontroversial claim that behaviour is goal-directed; yet in specifying the exact mechanisms for this to occur, reveals an architecture of the mind that is unique and highly versatile. In the last decade, the relevance of PCT has expanded, including a role of control theory in several approaches to CBT (e.g. Brady & Raines, 2009; Watkins, 2008;), a special issue of *The Cognitive Behaviour Therapist* on the topic, a new SIG of the BABCP, and a research programme focused on evaluating and exploring the mechanisms of change of Method of Levels, a person-centred cognitive therapy based on PCT (Carey et al., 2009). I will also summarise a recent paper in *Clinical Psychology Review* which integrates the mechanism of change across a diverse range of psychotherapies using PCT (Higginson, Mansell, & Wood, in press).

PCT50

Control Systems Group International Conference

Saturday 24th July 2010

- 9am Tea/coffee
- 9.30-9.45 **Introduction** by Warren Mansell & Sara Tai, University of Manchester, UK
- 9.45-10.15 **Round robin:** Delegates speak briefly on how they use PCT & why they have come to the conference.
- 10.15-11 *Bill Powers, Lafayette, Colorado, USA*
“How reorganization relates to classical conditioning: a new link between PCT and neuroscience” - Discussion session on paper distributed prior to conference
- 11-11.30 BREAK – including **Poster Presentation** session
- 11.30-12 *Rick Marken (talk via Skype), Independent Consultant, California, USA*
“Perceptual control in the psychology experiment”
- 12-12.20 *Sergio Pellis, University of Lethbridge, Canada*
“Combat: Targets as controlled variables, tactics as compensatory actions”
- 12.20-12.40 *Heather Bell, University of Lethbridge, Canada*
“Back off - get your own sandwich! Distance regulation in a defensive action by rats”
- 12.40-1.40 LUNCH (Upstairs in the Kro bar on Oxford Road)
- 1.40-2.10 *Tim Carey, Flinders University & Charles Darwin University, Australia*
“PCT: A right turn for researchers” – Small group discussion
- 2.10-2.40 *Kent McClelland, Grinnell College, Iowa, USA*
“Control-Theory simulation of buying and selling behaviour in a market”
- 2.40-3.00 *Chris Spratt, Levenmouth Mental Health Team, Fife, UK*
“Controlling our way to a better diet”
- 3.00–3.20 *Fred Good, Chapel Hill, USA*
“Evaluating teaching Perceptual Control Theory in schools”
- 3.20-3.50 BREAK – including **Poster Presentation** session
- 3.50-4.30 **Discussion session** of poster and papers (related to posters presented or one of five specific papers sent round in advance)
- 4.30-5.30 **Discussion session** (Discussion to be themed around 1) What are we agreed on in terms of the details of PCT? & 2) How do we take PCT forward?)

Posters will be available all day – displayed in the conference room

Abstracts for PCT50

How Reorganization Relates to Classical Conditioning:

A New Link between PCT and Neuroscience

Bill Powers, Lafayette, Colorado, USA

Hebbian learning theory proposes a process whereby a strong signal at an existing synapse following a signal entering another but weaker synapse on the same neuron strengthens the weaker synapse. As unlikely as it seems, this can be shown to have an effect that is very similar to the effect of 'E. coli reorganization' in Perceptual Control Theory (Marken & Powers, 1989), and it offers a possible PCT explanation of classical conditioning.

Reference: Marken, R. S., & Powers, W. T. (1989). Random-walk chemotaxis: Trial and error as a control process. *Behavioral Neuroscience*, 103, 1348-1355.

Perceptual Control in the Psychology Experiment

Richard S. Marken, Independent Consultant

Scientific psychology uses experimental methods based on an open-loop causal model of the organisms under study. In the typical psychology experiment, some aspect of the organism's environment (the independent variable, IV) is manipulated under controlled conditions to determine the nature of its effect on behavior (the dependent variable, DV). Perceptual control theory (PCT) shows that this approach to research produces misleading results when it is used to study closed-loop control systems, whose input is simultaneously a cause and result of their output. Since the sensory input to organisms always depends on what they are doing (output), it is likely that all organisms are closed-loop systems. Nevertheless, the open-loop approach to research persists because the behavior observed in psychology experiments appears to be open-loop; there is no obvious effect of the organism's output on input and input (in the form of the IV) appears to be the cause, even if only statistically, of output (DV). In this talk I will show that the behavior of organisms in psychology experiments – just like their behavior outside of them – is closed loop. I will show that what is typically ignored in psychology experiments is the perception that the organism is trying to control: the *controlled variable*. I will show how a behavioral illusion – the illusion that the IV is the cause of the DV – is created by ignoring controlled variables. Finally, I will describe the PCT approach to experimental psychology, which aims to determine the nature of the perceptual variables that organisms control.

Combat: Targets as Controlled Variables, Tactics as Compensatory Actions

Sergio M. Pellis, Vivien C. Pellis, & Heather C. Bell, Department of Neuroscience, University of Lethbridge, Alberta, Canada

A commonly used approach in studying the combat of animals is to score the occurrence of pre-defined behaviour patterns and then statistically evaluate their frequency and associations (i.e., which are paired more or less than expected). Such an approach aims to expunge 'intention', but in doing so, artificially carves up the behavioural stream in an arbitrary manner. A different approach to studying combat, is to view animals as attacking and defending particular body targets, with the actions performed being used to overcome the actions of the opponent. Viewed in this way, some so-called behaviour patterns emerge as stabilities in the interaction where the actions of one animal are nullified by the actions of the other. For example, during combat, male Madagascan hissing cockroaches adopt both head-to-head butting and butting of the side of the body. These are typically distinguished as two separate behaviour patterns. By tracking the correlated movements of the two opponents, the attacker orients to lunge at the flank, and, as it does so, the defender turns to face catching the attack head-on. While pushing each others' heads, if an opportunity to break free arises, then one cockroach can manoeuvre to attack its opponent's flank. The flank thus serves as a target for competition and the head-to-head butting is a byproduct of the combined attack and defense behaviour of the opponents.

Moreover, once the controlled perception is identified, the absence of so-called behaviour patterns can be understood. A defender that turns to flee, rather than turn to face, produces an interaction that never contains “head-to-head” butting.

Back Off - Get Your Own Sandwich! Distance Regulation in a Defensive Action by Rats

Heather C. Bell & Sergio M. Pellis, Department of Neuroscience, University of Lethbridge, Alberta, Canada

In rats, an individual (dodger) will evade attempts by another individual (robber) to obtain food that it possesses by dodging laterally away from the robber. Previously, it had been shown that the magnitude of the dodge angle depends on the type of food being eaten – foods that take longer to eat result in larger dodges than foods that take less time to consume (Whishaw & Gorny, 1994). These authors’ interpretation includes the assumption that rats behave according to cognitive algorithms that, once initiated, follows a similar trajectory every time. On the other hand, Perceptual Control Theory (PCT) specifies that organisms behave because they are controlling perceptual inputs, and that the particular behaviours used change with the circumstances under which they occur. The specific perceptual variable of interest in this system is the distance between the robber and dodger (as identified by The Test). If behaviour were algorithmic, the magnitudes of the dodges with respect to food type would be relatively constant, whereas the distances between the robber and dodger would be variable. If, however, the distances between the robber and dodger remain constant while the dodge magnitudes vary, then the PCT-derived controlled variable would better explain the behaviour. In order to test these competing predictions, the movements used by rats engaging in dodging behaviour were digitized, enabling accurate measurement of variability in dodge angle magnitude and between-rat distance. The results of the experiment support a PCT interpretation of dodging behaviour in rats.

PCT: A Right Turn for Researchers

Timothy A. Carey, Flinders University & Charles Darwin University, Australia

In this presentation, the applicability of the principles of PCT in research settings is explored. PCT explains the natural phenomenon of control. While the explanation of the way in which control occurs is a theoretical proposition the existence of control in nature is considered to be a fact of living. Applications of the principles of PCT are now reflected in programs addressing areas of management, school discipline, and psychological disorders. Important and rigorous research has been conducted into the basic principles of PCT but research consistent with the principles of PCT regarding more complex situations and events has been slower to develop. Given the programs now being used in schools and with people experiencing psychological problems, there are growing opportunities to ask and answer questions from a control perspective. But what questions to ask? PCT suggests control invokes circular rather than linear causality. This creates problems for conventional research which is organized linearly in the form of independent variable – dependent variable research. Research, for example, that seeks to find the predictors of various behaviours would seem to be at odds with the principles of living control. The principles of PCT appear to have implications not only for what is researched but also the way in which it is researched. Runkel (1990) describes two broad methods of investigation which he suggests are important in the life sciences. The net casting methodology is useful for investigating the rates and proportions with which various events occur in a population. The testing specimen methodology is important for understand how a living creature functions. In PCT the Test for the Controlled Variable has been the dominant methodology for testing specimens. Marken (2002) has conducted rigorous and elegant investigations using this methodology. These methods, however, are not easily applicable to abstract constructs such as principles and systems concepts. Inferential statistics is problematic from a PCT perspective because inferential statistics is designed to infer characteristics and parameters of populations from data collected from samples (Blampied, 2001). PCT, however, is interested in learning about the functioning of individuals. This suggests that case study methodology as well as qualitative methodologies may be appropriate for investigations concerning aspects of living control. In this presentation, participants will be invited to discuss possible areas of research and to generate research questions and methodologies that would lead to

programs of investigation which will further explore the phenomenon of control and thereby enhance our understanding of different aspects of the process of living.

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Control-Theory Simulation of Buying and Selling Behavior in a Market

Kent McClelland and Grant Worthington, Grinnell College, Grinnell, Iowa, USA

This modeling project offers an alternative to conventional rational-choice perspectives of economists concerning the behavior of individual investors in markets trading in commodities or securities. Offering a PCT perspective on such behavior, we ask, "What perceptions are investors attempting to control?" We construct simulated actors, who are modeled as having control systems for buying or selling a traded commodity, and report the behavioral patterns of several simulated actors with differing profiles of parameters when confronted with simulated bear or bull markets, where random downward or upward fluctuations in the price of the commodity are taken as disturbances to the perceptions that the actors are modeled as seeking to control. The presentation concludes with a description of the differences between a PCT approach and more conventional models of market behavior and an assessment of the advantages and difficulties of taking a PCT approach.

Controlling Our Way to a Better Diet

Chris Spratt, Levenmouth Mental Health Team, Fife, UK

The exercise of control is often seen as a dysfunctional symptom of those thought to be suffering eating disorders (EDs). In direct conflict with this approach, perceptual control theory (PCT) views control as being both completely normal and indeed all that we, as living organisms, do. It might be difficult to see, therefore, how PCT could possibly help understand or treat those with ED diagnoses. However there is an approach to the treatment of EDs which recognises a far greater degree of normality in the apparent behaviour of this patient group than has previously been recognised. This presentation looks at these areas of normality as identified by others working in this field and asks whether a control theory approach might therefore be specifically helpful in both the understanding and treatment of those patients so diagnosed.

Evaluating Teaching Perceptual Control Theory in Schools

Fred Good, Chapel Hill, USA

Preliminary studies indicate that teaching the basic concepts of Perceptual Control Theory and the principles and implications derived from the theory to K-12 teachers, counselors and administrators has a significant impact on improving school culture, teacher satisfaction and student achievement. Designing appropriate models for evaluating the impact of such teaching requires more than just statistical approaches which measure outcomes that can be quantified such as discipline referrals and grades. Qualitative measurements that indicate improvement in school culture, student and teacher satisfaction with the school environment and impact on individuals' self-concept and ability to deal with personal circumstances, requires qualitative and individualized measures.

Requests for Posters and Open Papers for PCT50

We have a limit to numbers for PCT50 and we want all our delegates to be involved on the day. Therefore, all delegates to PCT50 will be expected to provide their own poster for the day of the conference, or a 4-page paper for the month prior to the conference. We will offer the places to the best submissions, should the applications exceed our limits.

Warren Mansell and Sara Tai will need to receive 250-word poster abstracts & paper abstracts by **31st May**. Five papers will be selected for discussion and circulated a month in advance. The remaining posters will be displayed throughout the conference room. The required poster dimensions for PCT50 are A1 Portrait. This is relatively small for a conference poster, but designed so that it is easy to display posters around the seminar room.

Accommodation

The City of Manchester has a wide range of accommodation available for all price ranges. We do not have a conference hotel associated with PCT50, but encourage delegates to liaise to make their own arrangements. The accommodation can be booked via the BABCP conference at:

<https://www.conferencebookings.co.uk/delegate/MNCBABCP2010>

Alternatively, *Visit Manchester* also manages the following website to find accommodation for the nights you need:

<http://www.visitmanchester.com/where-to-stay-home.aspx>

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Control Systems Group website	www.perceptualcontroltheory.org
Living Control Systems Publishing	www.livingcontrolsystems.com
NewView Publishing	www.newviewpublications.com

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