



# Thoughts on Modelling Suppression

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# Presentation Outline



- This presentation will cover:
  - Some initial definitions
  - A parade of models
  - The question of whether they can be integrated
- As well as models of suppression, there are models of
  - Combat participation
  - Phenomena of social contagion
  - Group formation
  - Group collapse
  - Leadership
  - Courage

# Definition from STANAG 4513



- Definition of the term suppression

A soldier is suppressed when he is unable or unwilling to carry out his task effectively, because of the actual or perceived threat, or because of fear (in particular of being wounded).

The degree of suppression may be expressed in terms of a delay in the realisation, or a reduction in the quality of performance.

Two time intervals are essential to suppression: the first one, called delay, is the time from the first awareness of the suppressing mechanism to actual suppression, the second is the duration of suppression.

- This STANAG is currently under revision

## Similar Terms



- Pinned down (= suppression of movement)
- Neutralisation (= enduring suppression)
- German terms:
  - Niederhalten – pinning
  - Blinden – blinding
  - Niederkämpfen – beating down
- Russian terms:
  - Изнурение (harassment) – 10% cas, heads down
  - Поражение (suppression) – 30% cas, 1-2 hrs to reorg
  - Уничтожение (annihilation) – 60% cas or more

# Weapon Effect, or Target Response?



- Weapon Effect
  - suppression results from weapons fire falling nearby
- Target Response
  - I put my head down because I see my mate put his head down

# Marshall's Model



- Combat participation, the “ratio of fire”
  - Controversy over data collection methods
  - 25% figure perhaps too well-known (and in any case after Ardant du Picq)
- The world is divided into fighters and non-fighters
- Book: *Men Against Fire: The Problem of Battle Command in Future War*, Infantry Journal Press, 1947
- Article: *S L A Marshall and the Ratio of Fire*, Roger Spiller, RUSI Journal Winter 1988



S L A Marshall

## Moran's Model



- “Courage is a man’s capital, and he is always spending”
- Book: *The Anatomy of Courage*, Constable, 1945



Charles Wilson, Lord Moran

# Wigram's Model



- The world is divided into “gutful men”, sheep, and backsliders
- Letter: from Sicily to Brigadier Kenchington, in WO 231/14
- Book: *To Reason Why*, Sir Denis Forman, Abacus, 1991



Lionel Wigram

# Granovetter's Model



- Broadly applicable to phenomena of social contagion
- Uses hidden variables
- Paper: *Threshold Models of Collective Behaviour*, American Journal of Sociology, 83[6] May 1978

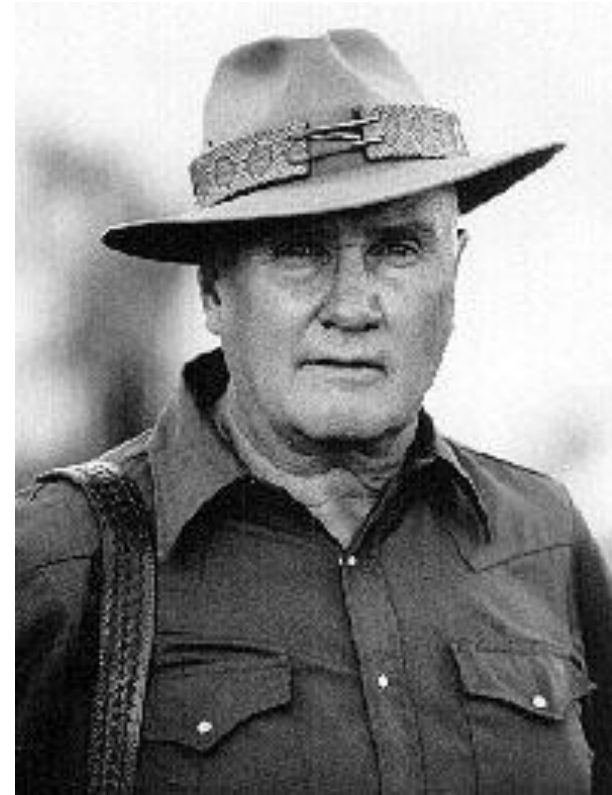


Mark Granovetter

# Cooper's Model



- Colour codes of states induced by stress of combat:
  - White
  - Yellow
  - Orange
  - Red
  - Black
- Book: *On Combat*, Dave Grossman and Loren Christensen, Warrior Science Publications, 2004



Jeff Cooper

## Marshall's Other Model



- Men in combat should not carry more than a mule (a quarter of their own bodyweight)
- Fear and fatigue are interchangeable
  - Frightened people tire more easily
  - Tired people frighten more easily
- Book: *The Soldier's Load and the Mobility of the Nation*, Marine Corps Association, 1980



S L A Marshall

# Tuckman's Model



- Steps in group formation
  - Forming
  - Storming
  - Norming
  - Performing
  - (Adjourning)
  - (Mourning)
- Papers: *Developmental Sequence in Small Groups*, Psychological Bulletin 63, 1965: *Stages of Small Group Development Revisited*, (with M A C Jensen), Group and Organization Studies 2[4],1977

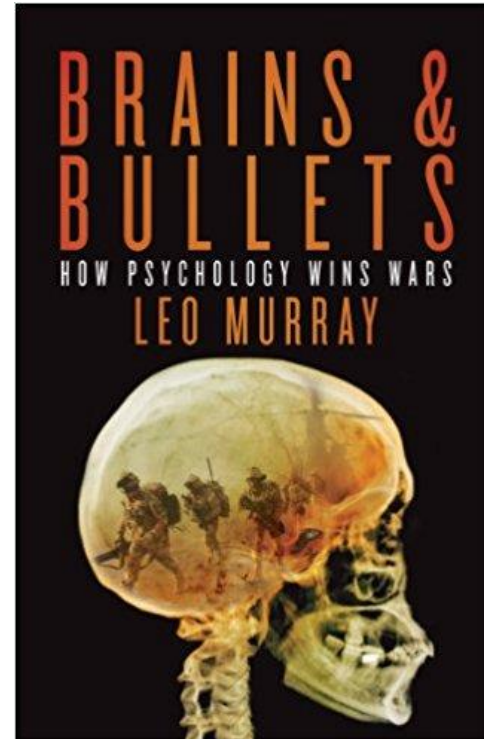


Bruce Tuckman

# Murray's Model



- Ethological model of actions under stress:
  - Fight
  - Flee
  - Freeze
  - Faff
- Book: *Brains and Bullets*, Biteback Publishing, 2013



Leo Murray is a pseudonym

# DePuy's Model



- “You can’t see an infantry squad – it is an idea that exists only when jointly held by its members”
- Paper: *11 Men 1 Mind* (1958) in *Selected Papers of General William E DePuy*, Combat Studies Institute, 1995.

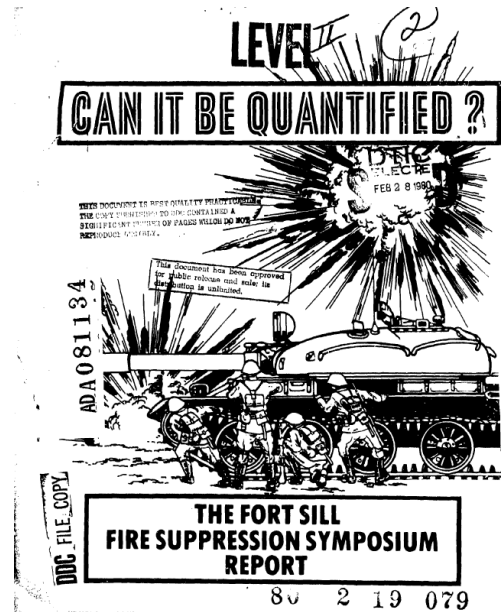
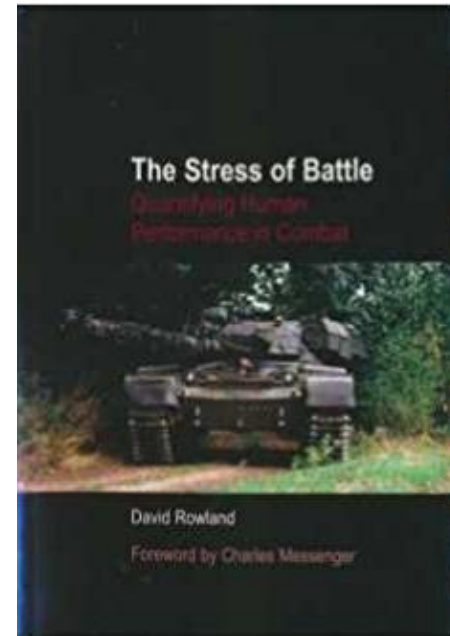


William E DePuy

# Artillery Models



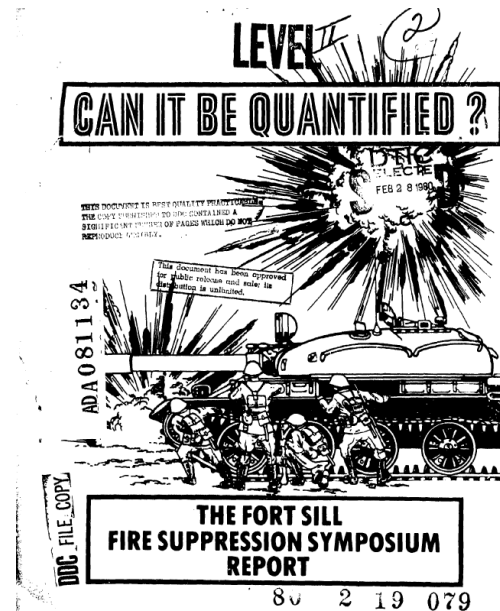
- Shephard?
- Gran
- Rowland



# Miss-distance Models



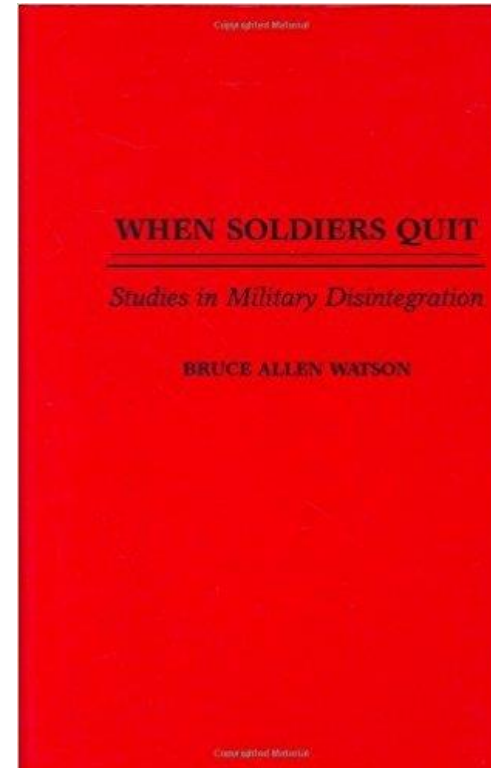
- WO 291/471
- Kubala and Warnick
- Kushnick and Duffy
- Jaya-Ratnam
- Daniau



# Watson's Model



- When soldiers quit, it is because of:
  - Powerlessness
  - Meaninglessness
  - Normlessness
  - Isolation
- Book: *When Soldiers Quit*, Praeger, 1997



# Reynolds' Model



- Boids
  - Drives represented by vectors
  - Movement by the resolution of vectors
- Paper: *Flocks, Herds, and Schools: A Distributed Behavioral Model*, Proceedings of SIGGRAPH '87 in *Computer Graphics* 21(4), July 1987



Craig Reynolds

# Adair's Model



- Leaders pay attention to
  - Task needs
  - Group needs
  - Individual needs
- Book: *Action-Centred Leadership*, McGraw-Hill, 1973



John Adair

# Lappi's Model



- Soldiers modelled as state machines
  - Fighting
  - Taking cover
  - Giving first aid
  - Wounded
- Paper: *Computational Methods for Tactical Simulations*, PhD thesis, National Defence University, Helsinki 2102



Esa Lappi

# What's Missing?



- Hard numbers
- Influence of terrain
- Time to recover from suppression

# Are there any contradictions between these models?



- There seems to be little actual disagreement between all these models:
  - Marshall uses three categories of motivation, Wigram three
  - Murray claims activity marking these categories depends on external influences
  - Lappi acknowledges three non-casualty activity states, Murray four
  - Some miss-distance models include misses short, some don't
- Rather, each model seems to capture one aspect of the psychosocial influences on the combat performance of soldiers:
  - Stress response to weapon effects
  - Individual motivation
  - Leadership/supervision
  - Social cohesion of the primary group
- It therefore seems possible that a unified model might be created subsuming all of these aspects

# Is there any correspondence between these models?



- I suggest that there is a correspondence between Tuckman's model of group formation and Watson's model of group collapse
  - Forming – initial formation of social circuits
  - Storming – disputes establishing the meaning of the group, what it is for
  - Norming – establishment of agreed norms
  - Performing – exercise of group power (ability to do work over time)
- Group collapse can be seen as the reverse process
  - Loss of power – inability of the group to perform its task
  - Loss of norms – individuals violate group norms by failing to participate
  - Loss of meaning – purpose of group considered meaningless
  - Loss of social support – dissolution of social circuits leaves individuals isolated

## Any other correspondences?



- I suggest that there is a correspondence between Tuckman's model of group formation and Adair's model of situational leadership
  - Group needs – the leader must nourish social circuits and maintain group norms (we are all part of the group, and this is how we do things)
  - Individual needs – the leader must convince the individual that their participation is meaningful and that the task is possible (this is worth doing, and we can do it)

## What next?



- Given the apparent lack of disagreement between all these models, one suspects that a model might be constructed subsuming all, or most, of their important insights
- Such a model would reflect both “weapons effect” and “target response” models
- It would also acknowledge the group (section, squad, fireteam, brick), rather than the individual, as the target



## Questions?

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## **Thoughts on modelling suppression (Presentation)**

**Salt, John D.**

**2017-07-18**

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