

The challenge of representing emotional colouring

Roddy Cowie

My aim:

A. To outline the way I see research in an area that I have been involved with for ~15 years

- in a way lets us compare notes

C. To flag relevant sources

there is a lot of material, but it

Structure

Introducing the issue

The representational issues

Conclusion

Introducing the issue

Distinguishing problems

Motives for engaging with this one

The work I have been directly involved with

Sources

Distinguishing problems

To me, the single biggest challenge seems

to keep attention focused on a problem

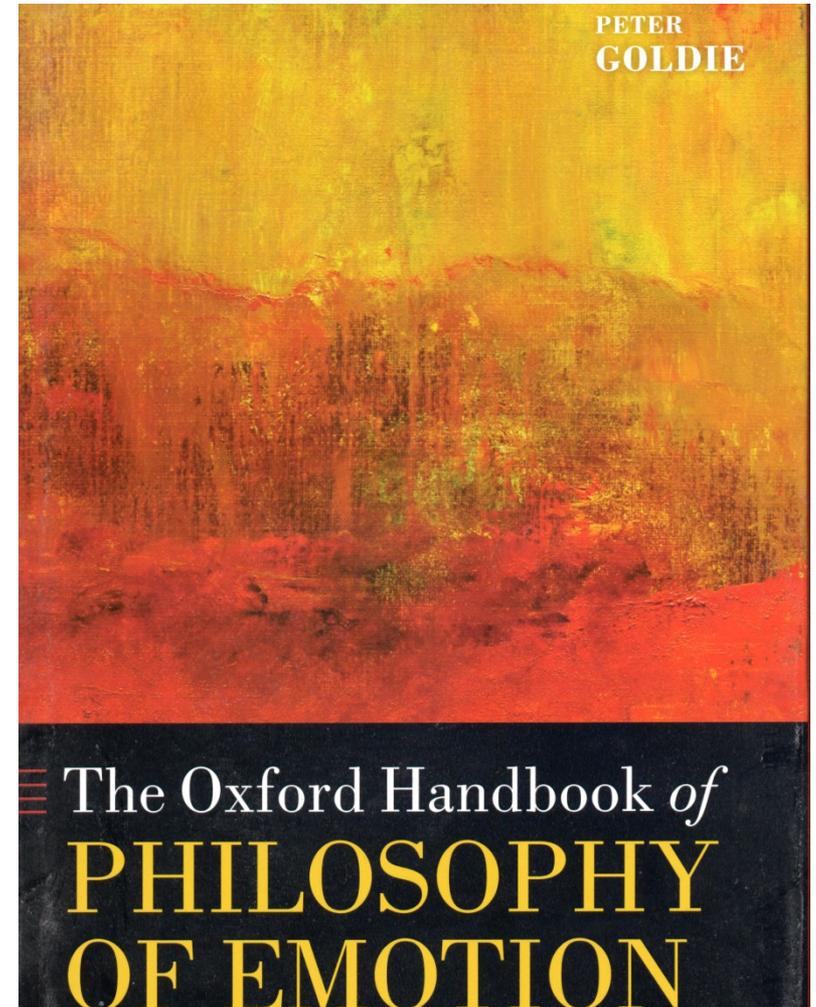
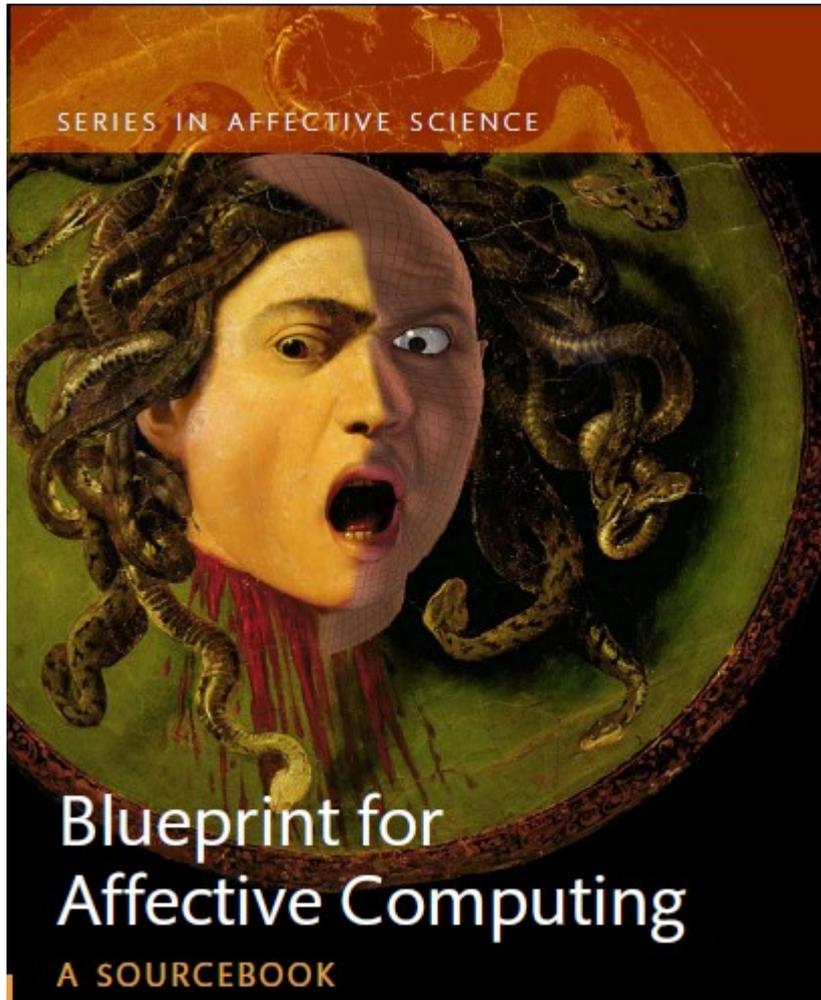
that is subtle,

but affects a huge part of human life

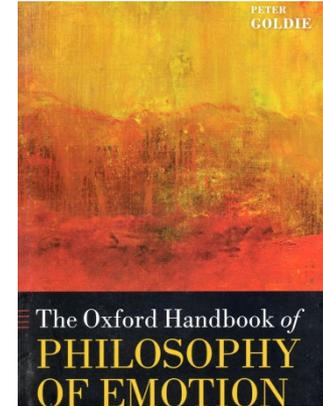
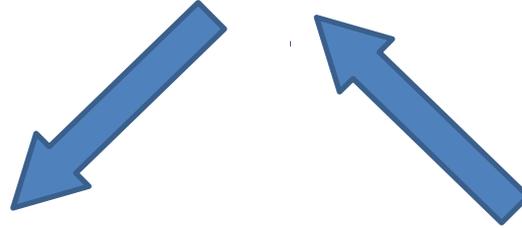
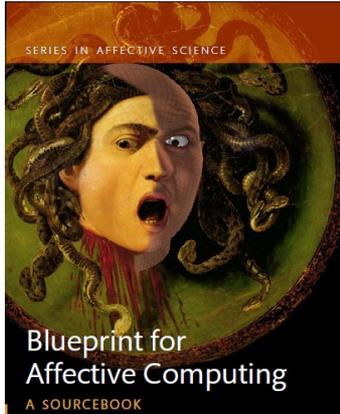
in ways that matter to technology

Instead of being captured by a

A tale of two handbooks



“emotion”



discrete episodes
intense experience
clear signs
synchronised

subjective colouring
of perceived world
shaping choices &
values

My intuition:

Technology has clear motives
to engage with the emotional colouring
that shapes people's choices and
values

most of the time:

how they feel about things

If you want to engage with the other,
do

Motives for engaging 1: frequency

Table 3.1 Prevalence of generic emotion-related conditions in an ambulatory study

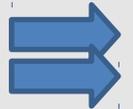
Condition	%
Established emotion	0.9%
Emergent emotion (suppressed)	1.7%
Emergent emotion (full-blown)	1.5%
Mood/Emergent emotion oscillation	1.5%
Mood	36.1%
Stance towards object/situation	25.6%
Interpersonal stances	2.4%
Interpersonal bonds	4.1%
Altered state of arousal	21.9%
Altered state of control	3.9%
Altered state of engagement	0.4%
Emotionless	0.0%
None of the above	0.0%

+/- positive

Feeling twds &
inclination to behave

+/- active

Alert neutrality



Given that, representational challenges follow

The things that are easy to describe
are rare

complete neutrality (never found)

emergent emotion (15 mins/ day)

The things that predominate are hard
to describe

Non-neutral moods (6 hours/day)

Non-neutral states of arousal (21/

Motives for engaging 2: applications

The root task is understanding how the other feels about significant issues.

That plays a key part in

Oral/aural communication (particularly dialogue)

Understanding other's agenda

Being understood

Do solutions 'fall out' of work with emergent emotions?

Evidence has been building that they
do not.

Tools oriented to emergent emotion do
not transfer simply to applications
involving emotional colouring

Batliner 2003

Devillers et al 2006

Cowie et al 2009

So what have we done?

Core problem:

Collecting databases that show significant kinds of emotional colouring

And generating labellings that capture core features of the way the people in them seem to be feeling

In conjunction with teams working on recognition

Key databases

The databases shape our understanding of what is needed

Our own

Belfast Naturalistic Database *

Castaway database *

Green persuasive database **

HUMAINE database **

Sources/publications

Overviews of areas

R Cowie (2010) Describing the forms of emotional colouring that pervade everyday life In P.Goldie (ed) Oxford Handbook of Philosophy of Emotion

R Cowie (2009) Perception of emotion: towards a realistic understanding of the task. Phil. Trans. R. Soc. B

Comparing notes

It seems this is the kind of material that EmotionML also intends to deal with.

How steadily is the representation oriented towards it?

How does it relate to databases?

Structure

Background information

The representational issues

category words

components

definiteness

timing

linkages

Category words

Major efforts have gone into lists of emergent emotions

often hierarchies rather than lists, from Augustine to Ortony

these are well represented -

I am not quite sure of the rationale

Can we develop list that specifically

Category words: theory driven

e.g. Baron-Cohen et al, el Kaliouby

Epistemic – affective states

- *agreeing*
- *concentrating*
- *disagreeing*
- *interested*
- *thinking*

Category words: usage driven

thoughtful lists of emotion-related words or stock phrases on the web include

<http://www.angelfire.com/in/awareness/feelinglist.html>

<http://www.searchingwithin.com/journal/abptb/feel.html>

<http://lightisreal.com/positiveemotionlist.html>

http://en2.wikipedia.org/wiki/List_of_emotions

<http://www.umpi.maine.edu/~petress/feelinga.pdf>

<http://www.psychpage.com/learning/library/assess/feelings.html>

<http://eqi.org/fw.htm>

www.preciousheart.net/empathy/Feeling-Words.htm

Category words: usage driven

A huge resource – but how to use it?

Selection by consensus

280 occur in four sources or more
listed in HUMAINE handbook

Selection by frequency in print

Category words: data driven

HUMAINE list (Cowie & Cornelius, 2003)

from samples oriented to emergent emotion

Emphatic **Enthusiastic** **Happy** **Argumentative** **Surprised**
Adamant **Sincere** **Amused** **Sceptical** **Curious**
Certain **~Bored** **Friendly** **Unconvinced** **Thoughtful**
Convinced **~Distracted** **Attentive** **Guilty** **Uncertain**
Earnest **Absorbed** **Upset**
 Agreeing

Comparing notes

I applaud mix of breadth & order in EmotionML

but I'd like to collaborate on extending

Even then, I'm sceptical about the real power of category descriptions

What do we expect them to do for us?

Which leads to:

Components

It is not practical to work with 2,943 categories

but given 8 dimensions with 3 levels each

default, higher, lower

we could generate twice that number of cells

and obtain similarity metrics

Widely recognised components

EmotionML has a sophisticated
selection - close to Cowie 2010

Summary dimensions

Classical 'PAD'

Fonteyn et al Valence, Activation,
Potency, Unpredictability

Appraisal constructs (after Scherer

Comparing notes,

I applaud, but might perhaps extend in some ways:

Feeling

intensity (may be known apart from quality)

engagement / caring

Expression tendencies

Tearful / laughing (may also be known

Timing

It matters to know the temporal profile of an emotional state

steady, rising, declining, oscillating

for interaction or for synthesis

‘Traces’ have been used

most often with dimensions, but in principle with any descriptor

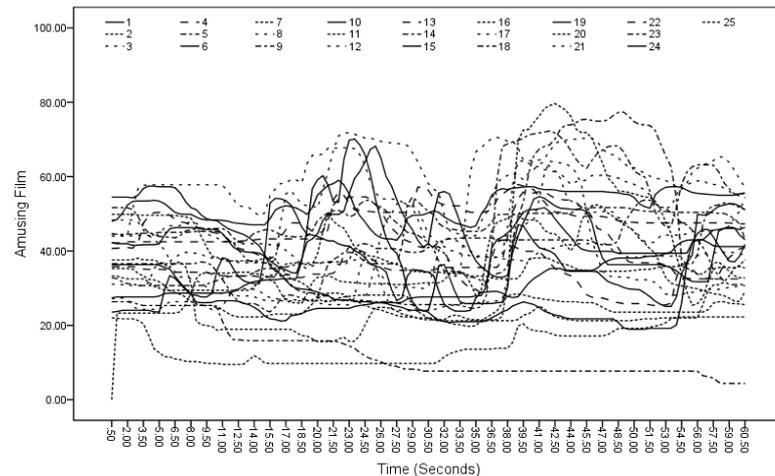
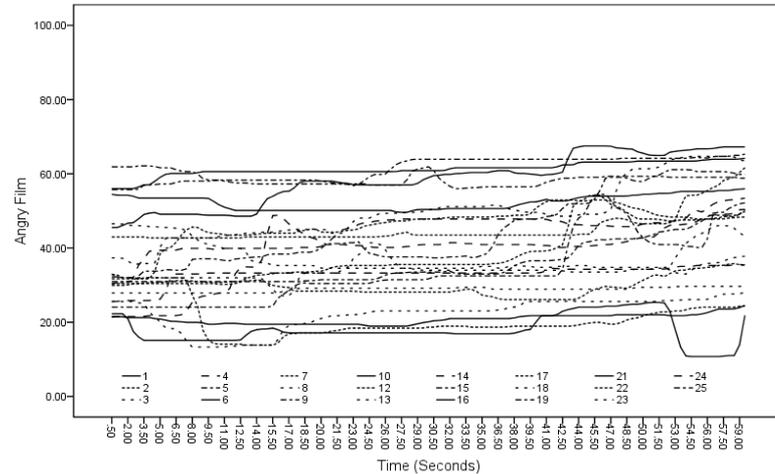
What traces show

Intensity of emotion as people watch

a) an angry film,

b) an amusing one

Emotions have



Definiteness

A common test of usefulness is reliability – if people don't agree on a parameter, don't use it.

Some work suggests very few descriptors pass that test -

Devillers et al (2006) show low kappas for both everyday category labels and appraisal labels

Don't forget the Mona Lisa

Uncertainty is part
of the picture
because of
mixed feelings
unfamiliar feelings
concealment
poor
communication
compounded by



Comparing notes

Timing & uncertainty present issues that EmotionML is aware of, and has taken steps to engage with;

There is room for a lot of work (joint) to understand what the issues mean in practice

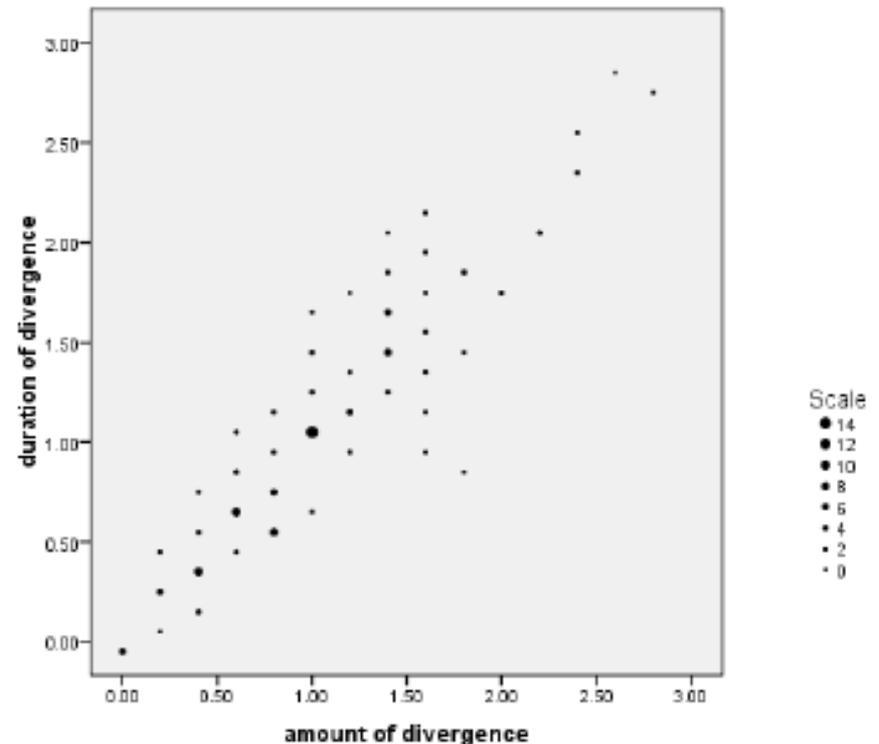
But there are also more challenging

Linkages

In a normal (therefore complex) situation,
What do we feel positive/negative about?

Often different things -
And the different channels
often reflect feelings
about different things

Hence divergence is
the norm, not exceptional



Linkages: polyvalence

Colouring applies neatly – different colours for different



Linkages to multiple landscapes and mindscapes



Dynamics

Not timing, but what the feelings are doing -

How long is this state likely to last? What might change it?

Does this feeling affect other feelings (core of affect as information)

Does person A's feeling drive person B's up or down? (align or oppose)

Conclusion

Framing a satisfying description of emotional colouring is a huge challenge

We have made enormous progress in a decade

And not least of the results is to throw unresolved issues into sharper relief.

Key references

Baron-Cohen, S., Golan, O., Wheelwright, S. & Hill, J. J. 2004 Mind reading: the interactive guide to emotions. London, UK: Jessica Kingsley Publishers

Batliner, A., Fischer, K., Huber, R., Spilker, J. & Noeth, E. 2003 How to find trouble in communication. *Speech Commun.* 40, 117–143. (doi:10.1016/S0167-6393(02)00079-1)

Carroll, J. M. & Russell, J. A. 1997 Facial expressions in Hollywood's portrayal of emotion.

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Douglas-Cowie, E., Campbell, N., Cowie, R. & Roach, P. 2003 Emotional speech: towards a new generation of databases. *Speech Commun.* 40, 33–60. (doi:10.1016/S0167-6393(02)00070-5)

Fontaine, J., Scherer, K., Roesch, E. & Ellsworth, P. 2007 The world of emotions is not two-dimensional. *Psychol. Sci.* 18, 1050–1057. (doi:10.1111/j.1467-9280.2007.02024.x)