This document is a collaborative document for the discussion of themes and ideas as presented at the LCT roundtable on Thursday the 3rd September 4pm Sydney time - 7am London time.

Please complete the taking part table below, you do not need to use your real name but if you want to you can. This is just for us to be sure everyone is in the google doc.

If you have any questions or comments, please pop them into the questions and comments section.

For our presentation
- You will need pencil and paper.
- You may also wish to try for yourself the Teleporting Robot Magic Jigsaw Trick activity (download / print / cut it out NOW if so). If not we will show an online version.


<table>
<thead>
<tr>
<th>Initials (or anonymised)</th>
<th>Name (if you would like to share)</th>
<th>Brief intro</th>
<th>If you would like to follow others pop your twitter is or other contact here</th>
</tr>
</thead>
<tbody>
<tr>
<td>JLW</td>
<td>Jane Waite</td>
<td>Project Manager, associate lecturer, PhD Student at Queen Mary University of London. My area of study is studying teachers who teach programming to learners who are 5 to 11 years old. I am interested in how semantic waves can help us to teach computer science to learners of all ages :)</td>
<td>@janewaite 1</td>
</tr>
<tr>
<td>PC</td>
<td>Paul Curzon</td>
<td>Professor of Computer Science at Queen Mary University of London, Founder of cs4fn and Teaching London Computing! I am interested in semantic waves in teaching people to program and computational thinking more generally also how to teach my undergrads to write and how to help teachers</td>
<td>@cs4fn 2</td>
</tr>
<tr>
<td>MQ</td>
<td>Mauricio Quilpatay</td>
<td>PhD student at Sydney Uni - what is your area of study? How lawyer-intellectuals made Chile’s 1980 constitution under the orders of a right wing conservative military dictatorship. I am doing a cluster analysis of how legal (epistemological) and the political (axiological) mix up in making a constitution (and law) JLW: How does LCT get mixed in further :) - it’s about how their arguments are legal (epistemological -&gt; knowledge codes) but have axiological motivations underpinning them (knower codes), and viceversa. So law as a mixture of these two codes, but they try to pass it as epistemological!</td>
<td>@quilpatay 3</td>
</tr>
<tr>
<td>SDP</td>
<td>Sarah</td>
<td>Lecturer in Education and Doctoral student attempting to use semantic profiling as an assessment tool (initial teacher education) JLW Hi sarah that’s a great idea - we have been getting teachers in continuing professional development to draw semantic profiles… they seem to like the idea! Yes, very helpful to unpack assignment tasks (make them visible) but also profiling their</td>
<td>@SarahinDarwin 4</td>
</tr>
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assignments appears to be more objective than our (subjective) use of rubrics. I think it is because of the affordance of the profile to be more aligned with the subject knowledge.

JLW Do you distinguish between who packs and repacks the knowledge on the profile? Great question. I’ve been talking to Karl about this. I feel that this is the tricky bit: using the profile to represent student knowledge. I think it can be versatile.

JLW I’m really keen to distinguish between who is packing and repacking. In our talk Paul will show you how we have represented this on our profiles for our last paper.

SDP Yes, I thought you have explained how the content knowledge has been unpacked (course, vs student representation). Is this right?

We’ll have to continue this conversation!

JLW Yes, yes great idea :) j.l.waite@qmul.ac.uk

KM – Could use, for example, different colours on profiles for different agents.

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<p>| XGZ | Xiangang Zhang | Zhang Xiangang is an Associate Professor in the School of Foreign Languages at East China University of Science and Technology. He received his PhD in linguistics from Shanghai Jiao Tong University with a focus on Systemic Functional Linguistics (SFL). His research interests include genre theory &amp; pedagogy in SFL, discourse analysis of academic writing. He is the executive editor of Collected Works of J. R. Martin (SJTU Press 2012). JLW Hi XGZ, What topics are included in the academic writing? I have researched into abstracts of academic paper in my PhD project. | 5 |
| CSS | Claire Simpson-Smit | PhD student at University of South Australia, studying engineering writing. I have used semantic waves previously in research, and regularly in teaching. <a href="mailto:simcs003@mymail.unisa.edu.au">simcs003@mymail.unisa.edu.au</a> | @Claire_SS2 |
| LR | Lalini Reddy | Phd Biotechnology, HOD Biotech and Consumer Science dept at CPUT. Used LCT with James Garraway in a paper on WIL Assessment. Supervising a Phd where we would like to use LCT in analysing WIL practice in Environmental Health developing JWL What is WIL? | 7 |
| SB | Suzy Bowdler | PhD Student University of Wollongong, Australia. School of Nursing | 8 |
| WN | Wendy Nielsen | Science educator at the University of Wollongong, based in the School of Education | 9 |
| ZM | Zao May | PhD student in University of Malaya, Malaysia. My research is about systemic functional linguistics (referential cohesion) and mental health. | 10 |
| RK | Retha Knoetze | PhD student at Rhodes University. My research is about the cumulative knower building in an English literature curriculum. | 11 |
| YM | Yusuf Motara | Computer Scientist, Rhodes University. Research is about functional programming and increasing the accessibility of the functional paradigm. As part of that, I need to figure out how to teach with some solid theoretical basis under it. On the way there, I need to figure out how to teach others to teach, which seems to involve modeling or increasing the accessibility of that somehow.... | 12 |
| DS | Dominique Steggink | Master’s student at the University of the Witwatersrand. School of Education. | 13 |
| JW | Jack Walton | Presently affiliated with the QLD Conservatorium (Griffith University) and the University of Queensland in Australia. Most specific interests have to do with educational assessment practices and the building of expertise in higher education, particularly in the context of complex and/or creative work. My main disciplinary home is with music. | 14 |
| BT | Brian Tweed | Senior Lecturer in the Institute of Education, Te Kunenga ki Pōheuru/Massey University, Papamoia/Palmerston North, Aotearoa/New Zealand | 15 |
| JM | Janét West | Lecturer at the University of Johannesburg, PhD student at Rhodes University and member of LCT@Wits. My proposed study is on developing the Knower in a knowledge code field like Accounting | 16 |
| MT | Mathew Toll | PhD Candidate, University of Sydney. Looking at Climate change denial on the blogosphere. MQ: Do you deny climate, Matt? MT: I accept that the climate exists. MQ: Good. | @MGHToll |</p>
<table>
<thead>
<tr>
<th>Name</th>
<th>Institution/Role</th>
<th>Description</th>
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<tbody>
<tr>
<td>JLW</td>
<td></td>
<td>I'd like to deny an increase in drizzle :)</td>
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<tr>
<td>MT</td>
<td></td>
<td>:)</td>
</tr>
<tr>
<td>KM</td>
<td>Karl Maton</td>
<td>Professor, Uni of Sydney. @LCTCentre (not me, but do link to it)</td>
</tr>
<tr>
<td>VA</td>
<td>Vicky Ariza</td>
<td>Teacher Researcher in a Public University in Mexico. I’m interested in Academic writing. @aricaz</td>
</tr>
<tr>
<td>IRL</td>
<td>Iise</td>
<td>Academic development, Science, Stellenbosch South Africa</td>
</tr>
<tr>
<td>YJD</td>
<td>Yaegan Doran</td>
<td>The University of Sydney</td>
</tr>
<tr>
<td>HG</td>
<td>Helen Georgiou</td>
<td>Science Ed lecturer at the University of Wollongong. Using mainly Semantics. Some Specialization and Autonomy.</td>
</tr>
<tr>
<td>ZY</td>
<td>Zhigang Yu</td>
<td>PhD candidate, Tongji University, China/University of Sydney. My project is about knowledge-building of chemistry in secondary school textbooks.</td>
</tr>
<tr>
<td>JF</td>
<td>Janet Francis</td>
<td>Staffordshire University doctoral student, Education using autonomy - also Computer Science Lecturer @Janetsfrancis</td>
</tr>
<tr>
<td>NN</td>
<td>Nora Nagy</td>
<td>Language teacher and materials developer at University of Fine Arts, Budapest / PhD Candidate (Applied Linguistics, topic: multimodal literacy, social semiotics, genre-based pedagogy, museum education, arts integration), University of Pécs, Hungary</td>
</tr>
<tr>
<td>TM</td>
<td>Tshegofatso Moabelo</td>
<td>Science Education Honours student at Wits University South Africa. Research focus: Using Semantic Waves to compare online and contact teaching of grade 10 Chemical Bonding.</td>
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<tr>
<td>MH</td>
<td>Michael Hobson</td>
<td>Lecturer in Physical Education and Youth Sport, St Mary’s University, London and PhD student.</td>
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<tr>
<td>HJA</td>
<td>Hanelie Adendorff</td>
<td>Stellenbosch University. Academic Advisor</td>
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<tr>
<td>EE</td>
<td>Emmanuel Esambe</td>
<td>Academic Literacy lecturer at CPUT and PhD candidate in education technology and literacy studies at CPUT.</td>
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<tr>
<td>AT</td>
<td>Annette Turney</td>
<td>PhD candidate at the University of Wollongong.</td>
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<tr>
<td>MM</td>
<td>Marnel Mouton</td>
<td>Lecturer - (Science) University of Stellenbosch</td>
</tr>
<tr>
<td>DHL</td>
<td>Dale Langsford</td>
<td>PhD candidate, Wits University @DTaylorTeacher</td>
</tr>
<tr>
<td>SK</td>
<td>Steve Kirk</td>
<td>Head of Academic Development for Students, Centre for Academic Development, Durham University @stivkirk</td>
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Questions and comments

- How do I ask questions or make a comment (PC)?
  - By adding a bullet point here (JW).
  - Add answers or responses as sub bullet points (PC)
  - ANYONE CAN ANSWER OR RESPOND (Anon)!
  - I like using this form of comments as lots of people can take part in online discussions and it means more people can collaborate (JW)

1. Is it useful to teach in separate semantic waves?

   ![Semantic Waves Diagram]

   - [PC] I suspect both good but linking them together I'd guess is better in general making links from one thing to another. You definitely do the latter within activities.
   - KM: There is no universally good semantic wave profile. It depends on what you are teaching, to whom, when, where and how. Every profile may be useful for something.

2. I am a newbaby in LCT, and still trying to understand the concept. So if you can just maybe explain the difference between semantics and semantic waves/profile, semantic gravity/density.

   - YD semantic gravity (SG) explores the context-dependence of meaning and semantic density (SD) explores the complexity of meaning. Semantics is the dimension in which both SG and SD occur, so in some sense is a cover term for them. The semantic profile is a map of changes in semantic gravity or semantic density through time, such as through a text or a class or unit of study etc. Semantic waves are particular semantic profiles where there are shifts between stronger and weaker semantic gravity and/or semantic density.
   - @Tshegofatso, Semantic Density = how complex a concept/practice is; Semantic Gravity = how tied the concept or practice is to a specific context

3. Does the depth of the wave reflect the perceived need of the audience. Are there different levels of concrete/everyday?

   - Yes, there are many different degrees
   - KM = How many we distinguish depends on what we're doing or need to do - LCT is not about labelling the world but using the tools to distinguish things in order to understand and change
the world. So, we may need to distinguish many levels at the bottom, right down to pointing or something very physical.

- RK Question 3 relates to issues of epistemological access for me. Morrow argues that epistemological access cannot be 'done to' a student, it requires engagement from both the teacher and the student. However, I think we need to figure out the best teaching conditions/lesson structures that can facilitate epistemological access.

- 4 RK In terms of Specialisation, could one say that following an algorithm would require strong Epistemic Relations and extremely weak Social Relations?
- - KM: it sounds to me like it: procedures that, if you follow them, anyone can succeed with.
  - Thanks, this is what I was thinking.
- 5 RK Does the learner participation necessarily mean a weakening of semantic gravity? (I see that you have moved up on the graph each time you mention learner participation.)
  - not necessarily, they could be doing something very physical and embodied and singular
- 6 Can semantic waves be about interpersonal meaning as well as or instead of field meaning?
  - Axiological SG/SD - yes.
  - RK: it would be interesting to plot ESD and ESG as well as ASG and ASD for the same lesson
  - KM: yes, it could be.
- PC, have you tried applying this to other levels of CS? Or just 1st-year CS? [YM] JLW here - the magic trick? YM Nope, the LCT ideas / semantic waves in general … the whole approach. I ask because I started at 1st-year and retain a strong interest in it, but due to time constraints, I’m now basically pinned into 3rd-year. JLW We have been writing resources for teachers who are teaching students from the age of 5 upwards. Paul has profiled in detail activities that are used with pupils, students and teh general public. So the teleporting robot is used for many age groups. If you look at our webpage - we have the different resources we have made on semantic waves. YM Have you thought of actually making a modeling tool or something like that, to help people along with the semantic waves / LCT-in-general approach? (heheh, the CS imperative to automate all the things shows itself in me, I think….)
Teleporting Robot Activity 1

Do the teleporting robot trick physically yourself if you downloaded and printed it the Teleporting Robot Magic Jigsaw Trick (or watch it online on the slides)

Follow these steps to make the magic work...

1. Build the jigsaw with the smaller pieces of the top two rows on the left.
2. Count the robots and remember how many there are
3. Mix up the pieces
4. Rebuild the jigsaw with the smaller pieces of the top two rows on the right.
5. Count the robots

A robot has disappeared
SDP: I plotted what Paul said, using Paul’s “teacher talk” as SG and reference to the puzzle as SG.

JLW: oo that was so quick!

SDP: Not very accurate, but I’m fast at typing!

JLW: I like the down arrows up arrows on the text and the colour change.

SDP: I’d really like to develop a plotter that can reflect segmentation. => we REALLY could use a plotter!

JLW: I suppose we could have a voice to text translator to do the captioning (like you tube captioning), but then it would have to identify the vocabulary and the context…

SDP: Yes, I’ve “plotted” the language of Australia’s favourite Maths teacher: Eddie Woo. He waves brilliantly.

https://www.youtube.com/watch?v=C9_H33HWNkA

JLW: Have you been able to plot one or more students experience? Do they wave with him or hit wave barriers? Or lag? I wonder if its the lag…mmm

SDP: I have been plotting Pre-service teacher assignments (explaining their pedagogical choices) in terms of how they “wave” to an audience (reader). I have taken the position that a teacher is automatically meaningful (relevant/ engaging) IF they wave. Lucy McNaught attempted to plot concurrent waves between teacher and student.

JLW: If we could teach children to be aware of their own waving, we could maybe plot what is going on too… anyone done that? I suppose you are getting this with your student teachers as the participants and we are too in our CPD.

SDP: Not that I know of, but that’s where I’m heading. I’m up to explicitly mentioning (signposting) to students. WHEN I am going up and down. JLW - I now do a hand movement - almost without thinking about it. hahaha

SDP: that must be a Primary teacher thing - me too! JLW - for sure!!

SDP: Interesting that the profile (of Paul’s talk) I attempted did not look like Paul’s synopsis. This may be because we had different coding and I focused on language.

JLW: I think we should compare!!! I like your detailed vocab review.
Teleporting Robot Activity 2

In your own bullet point below, explain what is meant by an algorithm.

- [PC] An algorithm is …
- Instruction fed into a system to execute
- YM  A set of instructions, blindly followed, and it must “work”.
- MQ: A set of independent instructions to have a processor execute a process, with no outside elements. Also, Instagram listening to my conversations
- SB: Giving a precise set of instructions that can be followed and will be guaranteed to work every time.
- CSS An algorithm is a set of precise instructions which, when followed exactly, will get the same result for anyone who follows them. For example, if you follow the instructions on a colour-by-numbers picture, you should end up with the same picture as anyone else.
Teleporting Robot Activity 3

Draw the wave and (if you have the technology) cut and paste to share it here.

YM

I found it to be like this because it seemed to start off really simply, really easily. But then the magic trick was introduced and I saw that it worked, but had no idea of why, and that was confusing. Then the formal definition of algorithm was presented and I had some trouble linking that back to what we did - robots? Is/was it important that they're mechanical rule-followers? What does it mean for it to "work", for a computer? Why is the precise ordering important, it didn't seem important for the jigsaw? That all become conceptually hard pretty quickly. (and then … is it OK if I didn't get all of “algorithm”’s formal definition? Is it all important, or are the important bits actually the parts that I picked up from the robots?)

I probably missed something, which is why I got the wave I drew above!
Can you give an example of how you repack or unpack an activity | Who does it?
--- | ---
JLW Summarising what you know about a concept by verbally describing to a partner before you start (unpack) | Student

To add a new row go to the very last cell here ^ and press your TAB key
How important are different routes in moving up and down waves?
What matters most? What different ways are there?
- Going round each side of the quadrant separately?
- Ladders jumping from side to side in the quadrant?
- Separate density and gravity passes? Alternated?
- Waves within waves?
- Moving through layers with a wave at each layer?
- Something else?
To add a new row go to the very last cell here ^
and press your TAB key
Links and next steps

Our slides from this session, plus links to our research, book chapters, blogs and other presentations are on the Teaching London Computing Website. We have gathered this together onto a page for the roundtable https://bit.ly/LCTSeptWebPage

Here is a note for Jane about how to get to the session!

6:45 Thursday 3rd Sept
Today's meeting
https://uni-sydney.zoom.us/j/99752153223
<https://eur01.safelinks.protection.outlook.com/?url=https%3A%2F%2Funi-sydney.zoom.us%2Fj%2F99752153223&data=02%7C01%7C%7C22e24e76485d41f7225208d84d40c37c%7C569df091b01340e386eebd9cb9e25814%7C0%7C1%7C637344287874641386&sdata=iNm4SUh150ys%2FngyBFuFf17q9WgJg7ce0nhdCVRs3D&reserved=0>

*Password: *lctcor2020

*or* download the app Zoom and add the

*Meeting ID:*997 5215 3223

*Password: *lctcor2020