

Levels of activity



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Activity level	Building a house	Completing a software project	Carrying out research into a topic
Action level	Fixing the roof Transporting bricks by truck	Programming a module Arranging a meeting	Searching for references Participating in a conference Writing a report
Operation level	Hammering Changing gear when driving	Using operating system commands Selecting programming language constructs	Using logical syllogisms Selecting appropriate wording

Levels of activity



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**Kuutti /
Leontiev**

Linard

Lewis

**activity
level**



**intentional
level**



WHAT to do

**action
level**



**functional
level**



HOW to do it

**operation
level**



**operational
level**

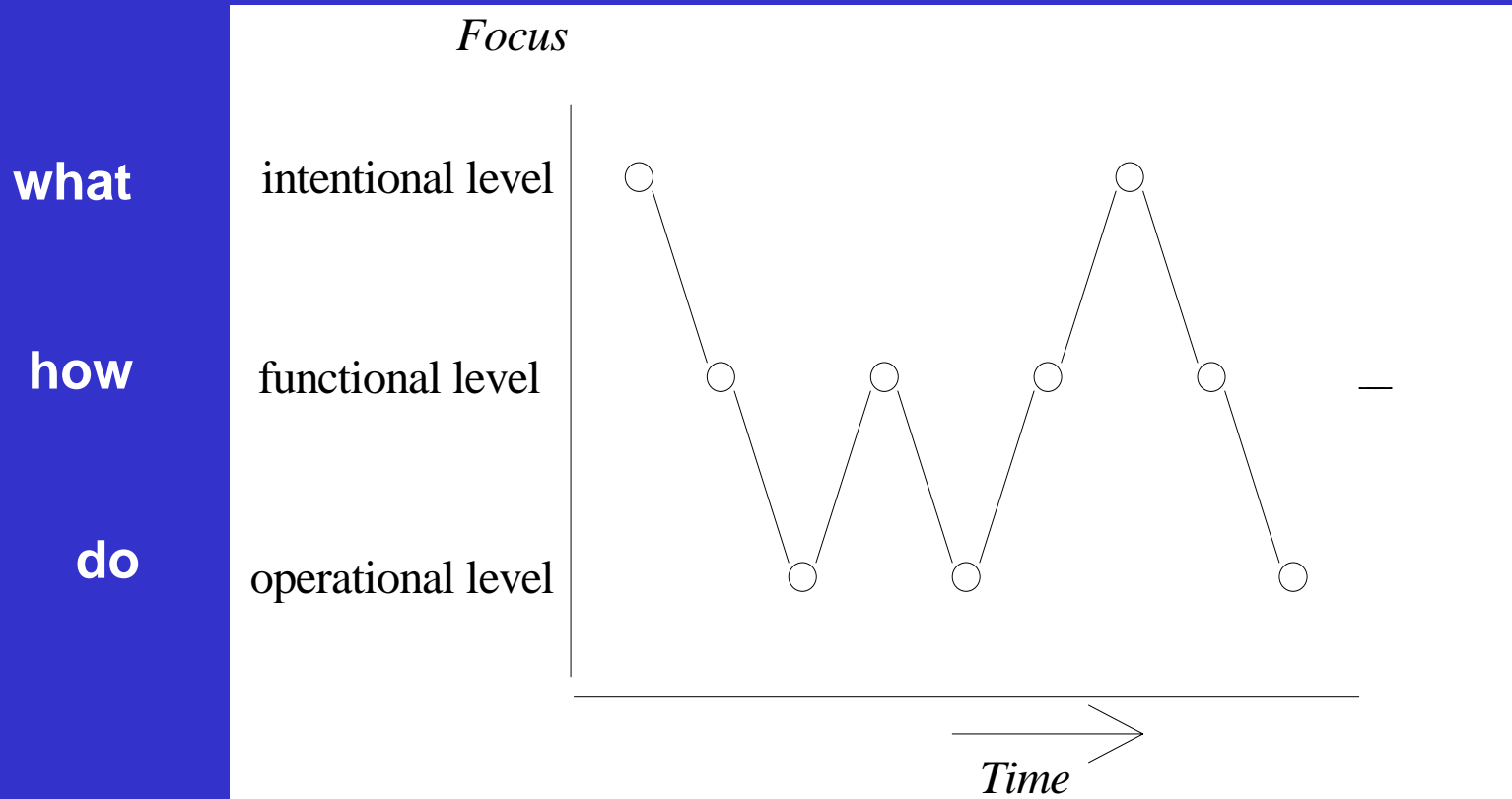


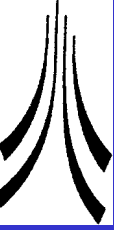
TRY and DO it

Stages of a task



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**Level of group
activity**

**Equivocality /uncertainty
in group tasks**

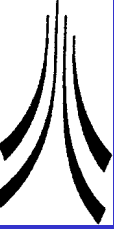
intentional level

high

functional level

operational level

low

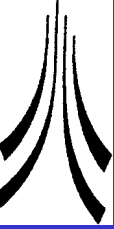


Tasks and communication

Community tasks may be characterised as involving both a particular degree of uncertainty (information is missing) and equivocality (information may be interpreted in different ways).

Two key tasks:

- reduction of uncertainty: transmission of a sufficient amount of information;**
- reduction of equivocality: developing shared understandings, of external factors and frameworks of reference.**



Media richness

Interactivity (speed of feedback). Rich media provide the opportunity for immediate feedback so that participants may adjust their messages

Multiple cues. Rich media allow a full range of verbal, paralinguistic, intonation and kinetic cues

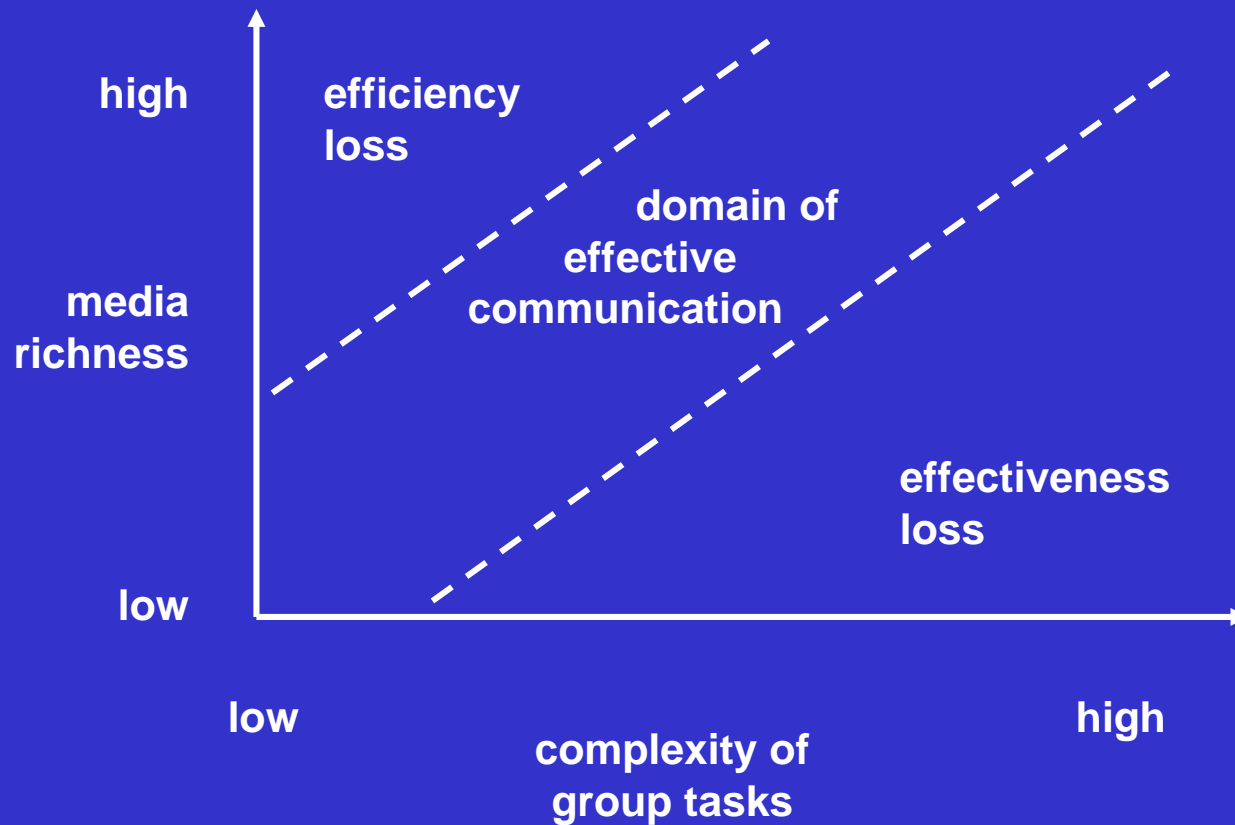
Language variety. Rich media have a the range of meanings that language symbols may convey

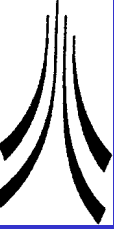
Social-emotional cues (related to 'social presence'). Rich media is media which permits communicators to have personal feelings and emotions infuse the communication.

Media and complexity



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Turning to work and learning

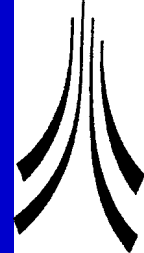
It is noticeable that two areas of research have not had sufficient interchange. These are:

**Computer-supported collaborative working
and**

Computer-supported cooperative learning

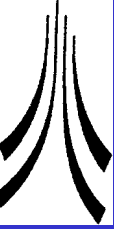
How do working and learning differ?

Gaining knowledge through working and learning



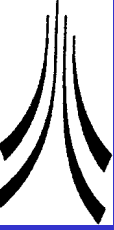
development	constructivist	—	behavioural
environment	contextual (pragmatic)	—	abstract (theoretical)
knowledge gain	'serendipidal' (experiential) (situational)	—	intentional (didactical) (transferable)
knowledge 'type'	informal (tacit)	—	formal (conscious)
mental models	tools for thinking	—	structured content
social process	collaborative	—	cooperative
goals	shared	—	individual

Why learn together when goals are individual?



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- passing exams and getting a good degree/diploma;
- working as little as possible without 'failing'
- enjoying social interaction with peers;
- impressing peers and tutors;
- learning something and becoming more competent;
- simply the joy of learning.



But, a tutor might be convinced that peers learning supports the process of knowledge co-construction.

"Peer collaboration . . . should create an engagement rich in mutual discovery, reciprocal feedback, and frequent sharing of ideas. Aspects of collaboration that are expected to be conducive to learning are: using the partner as a resource, knowledge negotiation, argumentation, and mutual explanations, in a manner analogue to self-explanations."

A new role for universities?

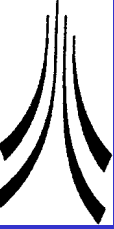


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Content and process

Classically, universities have been centres for the creation and diffusion of knowledge through their prime functions as institutions for research and teaching.

However, it is becoming necessary to review that role, and particularly the processes involved, as the way in which 'knowledge' is viewed is changing and new forms of knowledge become tradable commodities.

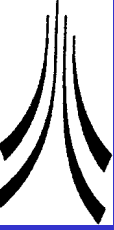


And

.... an equally important form of knowledge, is that which is grounded in practice and professional activity.

It is often informal, tacit and is developing continually in all working communities through the experience and the exchange of information among professionals.

University staff have no exclusive or even particular insight into such knowledge but they can have a role to play to facilitate the process of the exchange of this knowledge as well as more formalised knowledge.

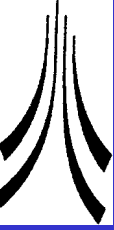


Returning to learning

Capitalising on ICT.

by the creation of *discussion networks* between academic and professional tutors or workers in industry (linked perhaps to collaborative research or practicum programmes) which existing students could observe as a way to become 'legitimate peripheral' participants;

to create *explicit 'courses'* which engage students in action-research projects with facilitate initial contacts with enterprises making the shift from academic to work cultures smoother.



and perhaps most important

to provide a context for those seeking continuing learning to set the agenda for 'learning' in such a way that learning becomes predominantly a process of knowledge exchange with peers (tutors providing process rather than content contributions);

An interpretation of Activity Theory



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Human activity is composed of:

subject, object, actions and operations

A subject: is an individual or group engaged in an activity

An object (in the sense of 'objective'):

is held by a subject and motivates activity

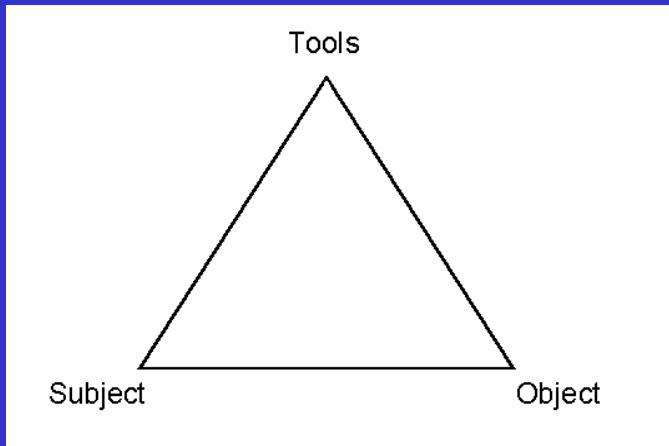
Actions: are goal-directed processes which the subject undertakes in line with the object

Operations:

involve routinised / unconscious behaviours



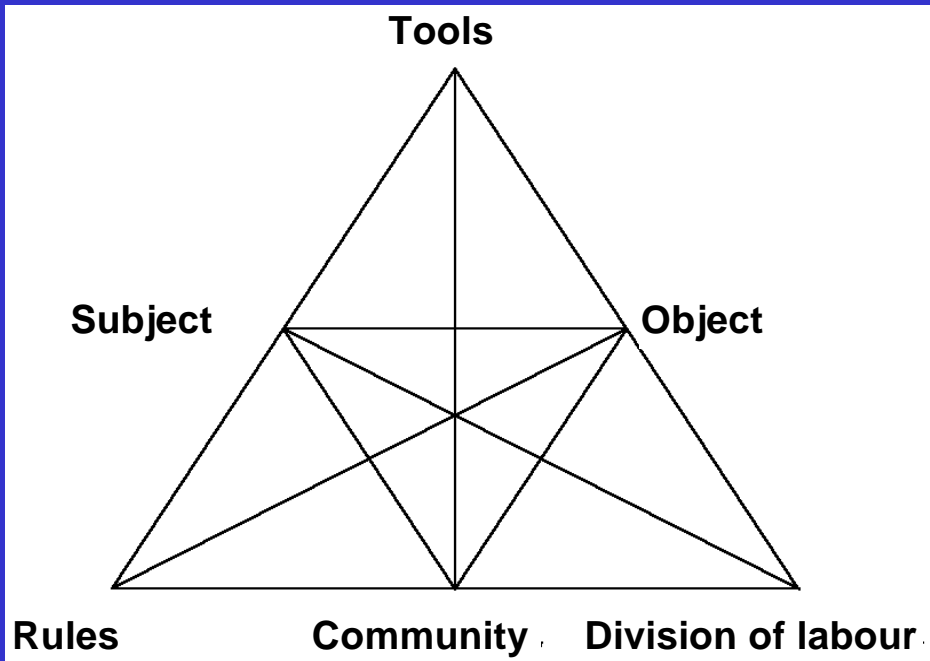
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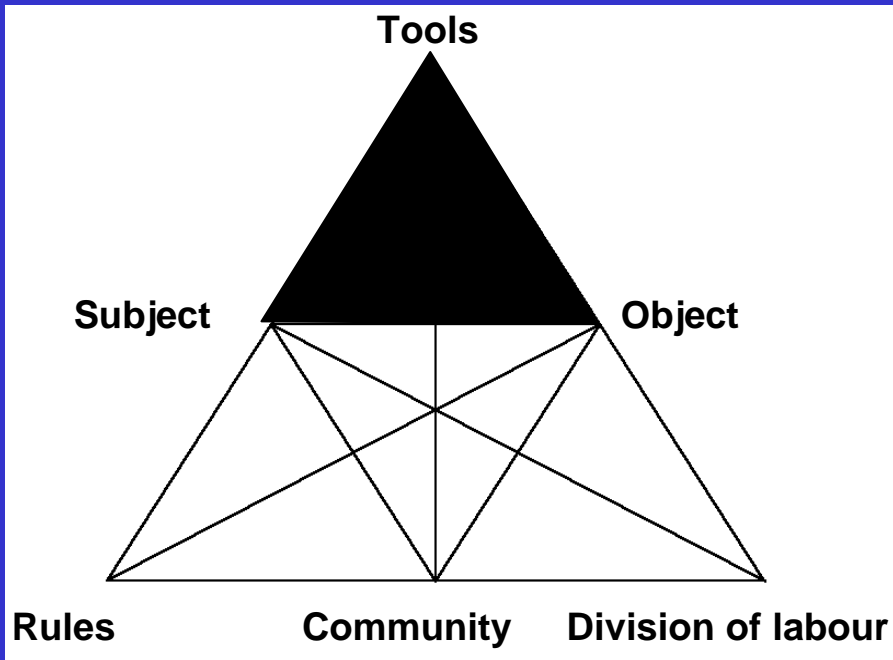
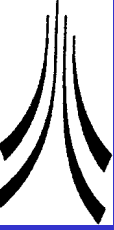
**An individual may select and use tools to
achieve an objective**



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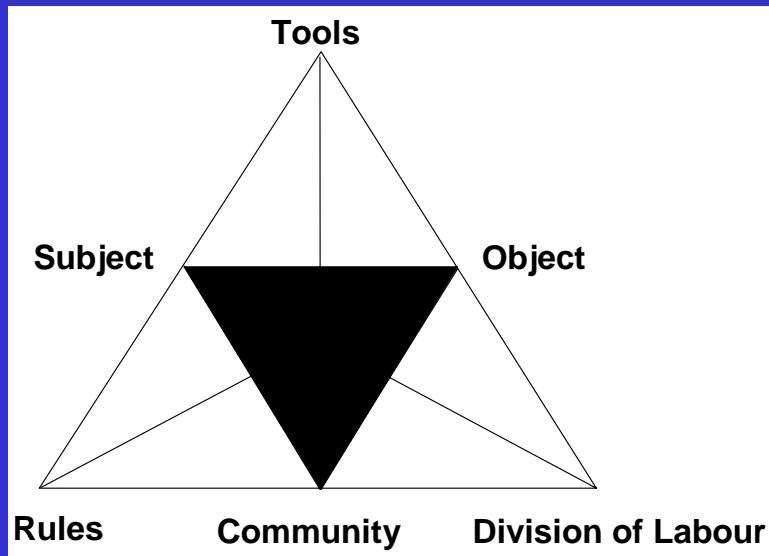


In a community an individual works with different tools and contributes to the social dimension of the community



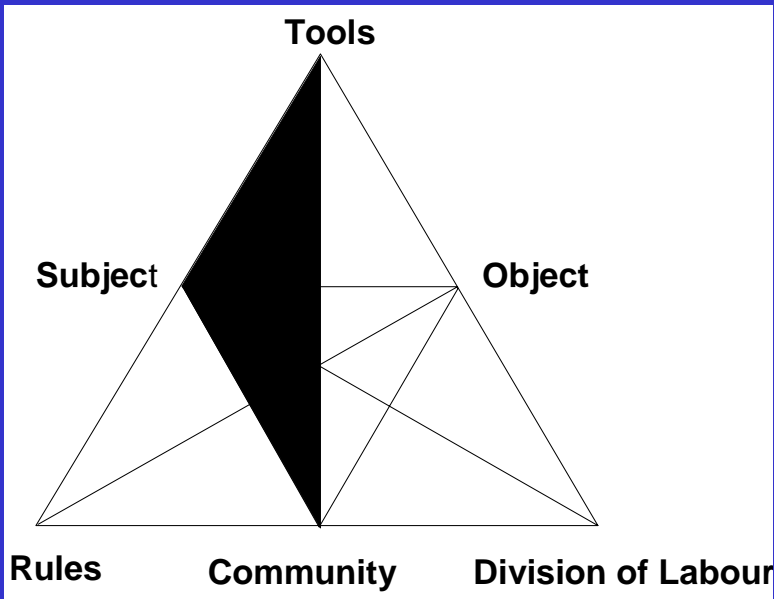
A panel during ICCE99 discussed verbal and visual tools (Okamoto, 1999).

Also, major sections of that conference were devoted to topics such as agents, intelligent support, web resources and interactive learning environments all of which are in effect simply tools to support a subject to attain a (learning) object.



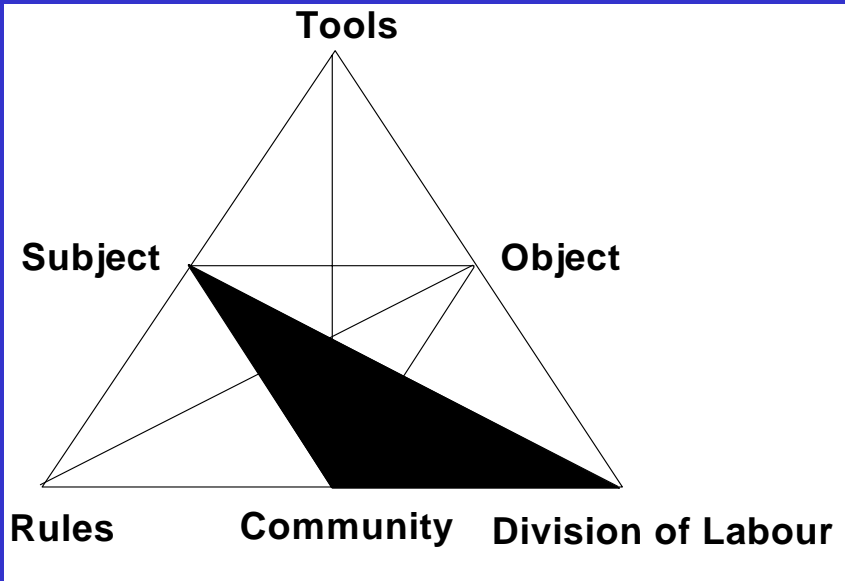
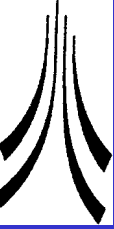
This triad focuses on how ‘subjects’ reconcile personal goals so that these lead to actions to support a community. Can a common goal become established?

Watabe and Yuze (1999), with students working on projects as individuals or in small groups, report:
"In collaborative learning, the subjects could hit upon such new ideas as they would never reach if they thought by themselves. . . ."



This triad is concerned with how tools are selected in order that they support, equally, all members of a community.

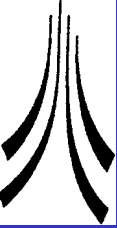
Ogata and colleagues (Ogata *et al.*, 1999, p. 277) experimented with an agent which made links between groups of students working on collective tasks. They reported that “*a matchmaker agent took the burden of the work instead of the teacher.*”



This triad focuses on how a division of labour is established and maintained in order to be effective.

Ang and colleagues consider this area in their conceptual framework: "Cooperative work is accomplished by the division of labour among participants. Members have different talents and skills. For example, some members may be better at web page design, while others may be better in content knowledge."

And so on -- there are more detailed examples in my earlier papers:

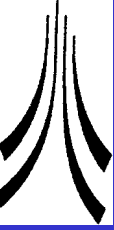


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An Activity Theory framework to explore distributed communities. *Journal of Computer Assisted Learning*, 13, 4, 210-218 (1997)

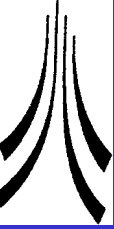
Apprendre conjointement; une analyse, quelques expériences et un cadre de travail. *Hypermédiat et Apprentissages* 4. 11-28. INRP et EPI, Paris. (1998)

Human activity in learning societies. Invited paper in *Proceedings of ICCE 2000*, Taiwan.



There is no single theory or framework to cover the complexity of human activity.

However, I suggest that Activity Theory is a valuable tool to help us talk about many of the issues and to share experiences.



Resumé

**Learning and working together are complex systems.
More overlap is needed in research in the two contexts:**

- **intention learning in ‘institutions’; and**
- **tacit learning through experience.**

**Universities need to focus their attention to become
process-oriented rather than content-focused as in the
past (and in fact still today).**

Questions???

I hope so . . .

