

ACTIVITY THEORY AND GENRE ECOLOGY: CONCEPTUAL TOOLS FOR UNDERSTANDING TECHNICAL COMMUNICATION

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This paper reports on a year-long project in an architectural technology department, which studied students' oral language development in plenary discussions in a first year History and Appreciation of Architecture course.

Data was obtained by videotaping classroom activities, and by interviewing the lecturer and students who were participants in the course. The data was analysed, using categories suggested by Activity Theory. The category of 'rules' was selected from the activity system for further analysis, using a Genre Ecology approach.

The findings of the study show how technical communication is managed within a classroom based activity system comprising lecturer and students, and graphic and verbal texts, in a context of learning. Learning, teaching, and expert discourses of the architectural review genre interact and are negotiated by participants. Through participation in plenary discussion, students from diverse backgrounds contribute to one another's experience of architectural design, and by valuing and responding to students' contributions, the lecturer facilitates students' understanding of the 'rules' of architectural communication, and enables students to access an expanded repertoire of the genre of architectural review.

INTRODUCTION

There has been very little descriptive qualitative analysis of language practices in technical higher education, and as a response to this gap, this paper analyses language practices in a technical context, and identifies opportunities to enable and enhance participation by students for whom English is not a first language. The research question addressed is: how do teaching and learning discourses interact with expert discourses for the purpose of building proficiency in architectural communication?

In this paper, I report on and map language practices in a first year History and Appreciation of Architecture (HAA1) class. Plenary reporting, in which students summarise small group discussion, was the main data source. The reason for the choice of an oral, rather than a written, focus for this research has to do with the importance of spoken interpretations of graphic texts in architectural communication generally (Medway, 1994; 1996), and in the review and critique of buildings in particular (Dannels, 2003). Written reviews of buildings appear in architectural books and journals, but architects-in-practice more frequently engage in the oral discussion of drawings, photographs, images, plans and elevations with clients,

colleagues, consultants and builders (Lewis, 1985/1998). Students, as architects-in-training, need to develop their ability to communicate architectural meaning to different audiences.

The research activities reported on comprise plenary interactions between students, and between students and their lecturer. Classroom interactions were videotaped and field notes were taken. The initial video data enabled the research group to develop an observation schedule, which was used in addition to, and sometimes in place of, video recording. Occasional post-observation interviews with participants were held and recorded. Due to limited funding, only selected video- and audio data were transcribed, although all video and audiotapes were listened to carefully several times. Communication-rich events were selected for detailed transcription and analysis. The research design was conceptualised through 'Activity Theory' (Engeström, 1987), a set of related approaches that view human-produced artefacts, such as utterances, texts, drawings, and equipment, as part of the activities that give rise to and use them. This approach is particularly relevant to researching language practices in technical contexts, since verbal data are analysed within the larger framework of spaces, contexts, artefacts, and the dynamics of human interaction. Because of the particular focus on language development, the verbal data were further analysed within the conceptual and methodological framework of Genre Ecology (Spinuzzi & Zachry, 2000), an approach which frames genre as a dynamic system within which a range of repertoires and practices are accommodated. Genre Ecology is useful in studies where there are wide textual ranges and variations – such as expert and non-expert texts in teaching and learning contexts.

ACTIVITY THEORY

Cultural Historical Activity Theory (abbreviated as CHAT or AT) is one of many social approaches to learning. It grew out of Vygotsky's (1978) socio-cognitive approach to learning, and was later developed by Leont'ev (1981) and many others – notably Engeström (1987), whose expanded model of AT is a tool for analysing human activity over time, and is a particularly useful heuristic for interrogating learning in terms of complex interactions of people and tools over time. The principles of AT, as explained by Cole (1996) are that human behaviour is social, and human activity is collective; that human activity is mediated by tools; and that human consciousness develops out of joint activities and shared tools.

AT assumes that 'individuals are active agents in their own development but do not act in settings entirely of their own choosing' (Cole, 1996: 104). Individual students learn, but they do so in environments that involve others, and by using tools which both enable and constrain their learning. Engeström thus expands Vygotsky's mediational triangle (subject-tool-object) to develop a theoretical tool for viewing complex activity (see Figure 1 below).

The expanded triangle does not provide answers, it raises useful questions; I drew on it, initially, in order to think through what was going on in HAA1 – in particular, how the overall learning activity introduces and acculturates students into the 'rules' of architectural communication.

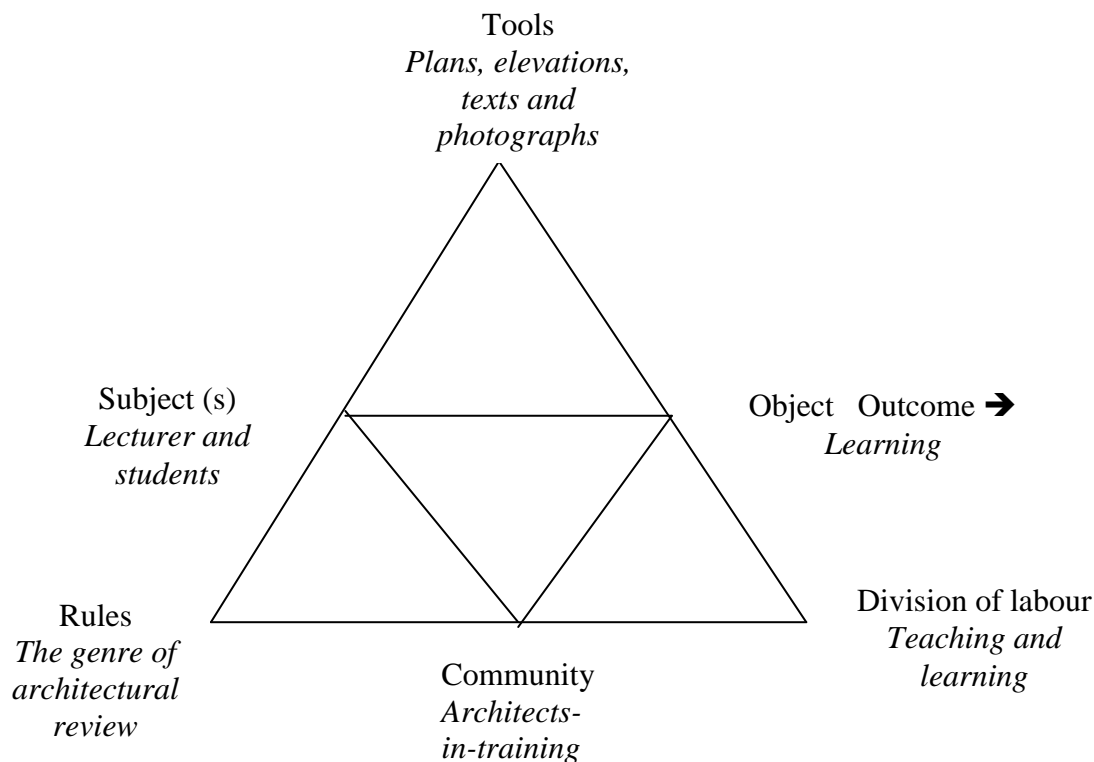


Figure 1: The activity system of HAA1, based on Engeström's (1987) expanded mediational triangle.

Subjects

The subjects in this study comprise a group of first year architectural technology students and their lecturer, who is an architect with a particular interest in architectural education. The lecturer is English speaking, with a good working knowledge of Afrikaans, but virtually no understanding of Xhosa. The students in this particular activity setting come from different economic and educational backgrounds, and have different home languages. There are sixty students in the class, the majority (40%) speak Afrikaans as a home language, about 30% speak Xhosa as a home language and the remainder speak English, Sotho, and other Southern African languages. Many of the Afrikaans speakers, and a few of the Xhosa speakers considered themselves to be Afrikaans/English or Xhosa/English bilingual. A pass mark in English as a First Language is a prerequisite for acceptance into the architectural programme, although some students have been identified by a diagnostic test (administered by Student Counselling Services) as having low English proficiency levels.

Tools

Typically in HAA1, students are required to study buildings through photographs, plans, elevations, and technical drawings, and are then required to discuss the building in terms of its functionality, and how its functionality is realised in the architect's manipulation of space and shape, the intention of the architect and whether the intention was achieved, how the building relates to its site and larger context, the symbolic meaning it might have for users, and so on.

In preparation for the task, the students are provided with a set of ‘tools’: photographs of the building to be studied, a set of drawings (plans, elevations and technical details), and descriptive piece of writing on the building, photocopied from national and international journals or books. When practical, a site visit to the building might precede or follow the class discussion.

In AT, the class discussion itself, the teaching and learning aids, and the languages used in the discussion are considered to be mediating tools.

Object

The use of the activity system is intended to contribute to a particular aspect of the training of architects. The course is expected to provide the students with a historical overview of the evolution of architectural styles (both in South Africa and in the world), as well as to develop their understanding and appreciation of architectural space, shape, form and technical detail as a response to contextual and user needs (see van Graan & Winberg, 2003). Each of the classes in the HAA1 is intended to further this overall objective. Classes are approximately two hours long. Typically, in a class, the lecturer sets three tasks for the students 1) a small group discussion, followed by a plenary report-back on the symbolic meaning of a building (students would have been provided with photographs and drawings for this task); 2) lecturer input, followed by a plenary discussion on the plans and elevations of the building; and 3) a small group task focussing on a particular aspect of the building, such as a construction detail or finish, followed by a plenary discussion on this. At the end of the class, there is usually an informal evaluation, as well as planning for the following week.

The examples chosen to illustrate the research findings are largely taken from a class on the *Guga S’Thebe* Arts, Culture and Heritage Village, a multi-purpose centre for the arts, culture and heritage in the Western Cape. Students were expected to study photographs, drawings, and written texts on *Guga S’Thebe* in order to develop their understanding of the building as growing out of historical African traditions in architecture, while responding to contemporary needs, contexts and users. The hoped for outcome is *learning*, that is, that the students begin to develop ways of interpreting, responding to and discussing architectural form and detail.

Division of labour

The division of labour in a classroom is largely dependent on the lecturer’s pedagogical choices: whether he decides to assume a facilitating, guiding, mentoring, directing, or informing role – or various combinations of these. Classroom interactions between lecturer and students, and students and peers can take many forms. The lecturer’s architectural knowledge is in advance of the students’ knowledge, and he is, therefore, in a more powerful position than they are. The lecturer is in a position to provide architectural information and to guide students’ interpretations. The lecturer sets the agenda and asks the questions that start the activity system. The lecturer’s questions, in the example selected, tend to be ‘thinking questions’ which require students to think aloud. These questions relate back to the object of the activity, and are intended to engage students with the task and to stimulate discussion, such as following:

How do you feel when you look at these images? ... I want to hear your voice and what you think is important...not some kind of perfect answer ... what sorts of images do you see?...what shapes, images, range of things you see?...what does it remind you of? (Lecturer, 18-03-04).

The students respond to questions and instructions by offering interpretations, supporting their interpretations, extending their interpretations, disagreeing with the interpretations of others, interrupting others, contributing to the discussion by providing additional background, experiential or contextual information, such as in the following example:

These cones...every time I pass that building there is no enthusiasm inside me...it makes the township into an industrial place...it sticks out too much...it's too bright...the architect should have made the colours a little closer to the surroundings (Student XM01, 18-03-04).

If any of the plenary discussion was in Afrikaans or Xhosa, the student, or a volunteer, translated this into English, as in the example below:

He says that...to some extent...he sees that Xhosa...Xhosa...maybe traditional Xhosa...how it relates to culture and heritage...but a lot of ceramics...which is not in Xhosa culture...there...would be rocks...or stones...or some slight decoration...it would be more natural...these ceramics they catch the sun and make the building shine...and these pictures are not like Xhosa culture (Student XM01's translation of Student XM02 in Xhosa, 18-03-04).

Students tended to speak their first language in small groups. They would often start their contribution to the plenary in English, but switch into either Afrikaans or Xhosa, if they struggled to express a concept or opinion in English. The students' role in plenary discussion was to summarise the group's position, and to make individual contributions, based on their experience of a building (if it was a local one), or to express their opinions on its form, space and decoration.

The lecturer's role is to guide the discussion, to challenge students to critically re-think their positions, and to contribute additional ideas and information on the building discussed.

Community

In order to achieve a collective goal, a 'community of practice' (Lave & Wenger, 1991) must be built. In building such a community, knowledge is embedded in performance, rather than a separable commodity, and this in turn implies that such knowledge is situated knowledge, that is, context dependent and distributed across different subjects. In a learning community, such as one characterised by architects-in-training, Lave and Wenger argue that

changing the person is not the central motive of the enterprise in which learning takes place [...]. The effectiveness of the circulation of information among peers suggests, to the contrary, that engaging in practice, rather than being its object, may well be the condition for the effectiveness of learning (Lave & Wenger, 1991: 93).

The level of participation in HAA1 was high in all tasks: small group discussion tasks, plenary discussion, and interaction with the lecturer. The architectural class developed into a community of practice with the common goal of finding ways to describe and critique architectural form, shape, space and detail. Membership of the community of practice in the architectural class was varied, with some contributors clearly at the margins (or what Lave and Wenger term 'legitimate peripheral participation') and others playing more central or key roles. Participation in the community was largely dependent on the students' understanding and use of 'rules'.

Rules

Russell (1997) uses the term 'genre system' to describe how rules function in activity systems. In Russell's view, genre systems are at play in activity systems; they mediate activities, they enable communication between people, they encourage reflection on activities, they play a role in inducting new members into activities, they bring different meanings and approaches to bear on a problem simultaneously, and they encompass informal as well as formal genres. In other words genres such as notes, think aloud protocols, and oral discussion play roles in the genre system that are as important as formal, published texts.

We also need to account for the multiple activity systems which students and lecturers participate in. Different activity systems will have different social motivations and different forms of textual production. Russell and Yañez (2002) argue the need for understanding the impact of multiple activity systems on classroom activity systems, including how lecturers' objectives, rules, and communities are often misaligned with those of students, leading to mutual frustration over what is being taught and learned. This paper is limited to the investigation of an activity system in the classroom, but clearly students are engaged in many activity systems both inside and outside the university, such as social groups, church activities, workplaces, and so on. Gough (2000) has identified a variety of secondary discourses (and by implication, activity systems) that Xhosa speakers, for example, would be familiar with, and which could, potentially, impact on academic activity systems. A full description of activity must account for the ways that 'intertextual anticipation', to use Berkenkotter and Ravoras' (1997) concept, can cross activity boundaries. When we attempt to help students to negotiate the discourses of our fields, we must be aware of the potential for extra-disciplinary knowledge and discursive practices.

In order to review a building, the reviewer draws on particular knowledge bases and discursive practices. Architectural review could be seen as a genre, that is, 'a socially ratified type of linguistic activity, with specified positions for subjects' (Fairclough, 2002: 197). The reviewer is positioned as an expert, who is more knowledgeable and more experienced than the designer of the structure under review. Genres enable particular purposes, text content, and textual forms, and constrain others. The purpose of architectural review is to make a three-fold judgement on the building (Rowe, 1998). The first purpose is to trace its symbolic meaning, through an analysis of its form, shape and space, and to ascertain the appropriateness of its symbolic meaning in the light of its function, users and context. The second purpose is to locate the building historically in terms of the traditions to which it alludes, as well as the contemporary need that it addresses. The third purpose is to study its plans, elevations, and technical details, and to evaluate their appropriateness in terms of the building's function, users and context. The architectural review genre contributes towards the development of a critical and reflective architectural community and, ultimately, is a practice

that improves the conceptualisation, design, drawing and construction of the built environment.

Accounts of genres, are largely accounts of ideal types, while actual texts are, to a greater or lesser degree, produced by mixing genre types. Genre-in-use is thus dynamic and dialectic; existing genres are blended and recontextualised into new texts in which echoes, meanings and values of former texts are to be found. So in the first year architectural classroom, one would not expect students to have mastered the expert review genre, but to be engaged in a process of learning the review genre, and recontextualising it in terms of their own experiences and opinions. An ‘ecology’ of genres (Spinuzzi & Zachry, 2000) is likely to develop in such a context. In a genre ecology there will be constant importing, hybridizing, and evolving genres (and occasional discarding of genres). In this framework, texts are not simply performed or communicated, they represent the ‘thinking out’ of a community as it performs an activity.

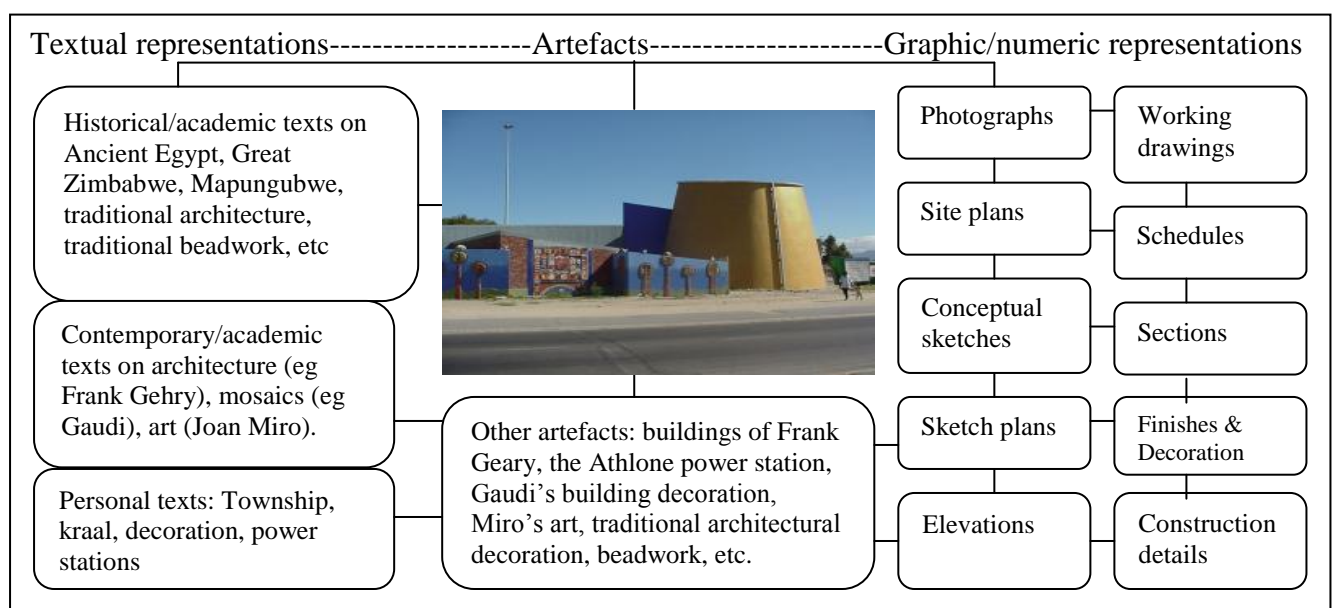


Figure 2: A genre ecology of Guga S'Thebe

Expert reviewers of *Guga S'Thembe* compare its plan to that of a ‘village’, ‘kraal’, or township meeting place. According to the architect: ‘The architecture is... generically closer to the fragmentation of a squatter camp than the monotony of the Apartheid township’ (de Beer & Smuts, 2001). Historically, the building is compared to Great Zimbabwe – both in terms of the plan and its finishes, in particular the chevron brickwork. References are made to the golden cone, whose symbolic meaning for different reviewers ranges from echoes of the Athlone power station’ cooling towers, to the metalwork of Mapungubwe, the golden rhinoceros, or the decorations of ancient Egyptian temples (Scheps, 2001). According to one review: ‘It celebrates the crossroads with a golden cone while acknowledging the footpaths in its fragmented village organisation’ (de Beer & Smuts 2001). The ceramic work used for flooring and wall finishes are compared to traditional African beadwork, Ndebele wall decoration, the mosaics of Gaudi’s Park Guell, and the art of Joan Miro. The half-solid-half-unstable forms are reminiscent of Frank Gehry’s work, or what Gehry might design if he came to Africa. As one reviewer put it ‘The result is a visually exciting structure. All styles and influences are welcomed and nurtured, although the overall effect is predominantly African in feel’ (Phaidon, 2004).

In the expert response, a number of texts are drawn on and each text connects to the previous text in a sequential chain, or 'textual pathways' (Russell & Yañez, 2003: 17), that move the communication onward. Expert reviews tend to draw more on historical and contemporary texts, and the graphic and technical representations of artefacts, than on personal experience.

Students' interpretations are drawn from their own experience, background, or contextual knowledge, in contrast to text- and graphic-based expert interpretations. Xhosa speakers from urban areas tended to see *Guga S'Thebe* in the light of township meeting places and centres, while rural Xhosa speakers compared it with traditional, rural architecture. Afrikaans speakers saw similarities between the 'golden tower' and the cooling towers of the Athlone Power Station. There was thus some overlap between expert reviewers, who made similar connections, and students' reviews. First year students have a limited knowledge of architectural buildings and discourses, so it is not unexpected that they did not make comparisons between *Guga S'Thembe* and, for example, the architecture of Frank Gehry. In this case study, students' responses were oral, and involved 'thinking aloud' as part of the process of working out the meaning of the building.

The lecturer's role is to bring to students' awareness the variety of verbal and graphic texts that can be drawn on to interpret and critique a building. The lecturer will decide what to include and exclude from the full range of the genre ecology, for the purposes of enhancing learning. In this case study, the lecturer selected historical, traditional, and contextual genres predominantly, as being appropriate to supplement and extend students' own knowledge. He chose to withhold modernist and post-modernist texts in order to avoid cognitively overloading the students.

The lecturer also encouraged mediation by unofficial, dynamic, or 'invisible' texts, such as the students' think-aloud protocols, which were valued and acknowledged. These interrelated texts structured the collaborative work of the classroom. Texts can be 'linked or networked together' in order to constitute 'a more co-ordinated communicative process' (Yates & Orlikowski, 2002: 14). A lecturer's choice and sequencing of texts in a particular class, has to do with the subjects, available tools, the class' objectives and 'social intentions' (Bazerman, 1994). Official genres enable and constrain professions; they serve communicative functions, not learning ones. Architect-in-training genres, and teaching-architecture genres are informal and mediational.

The activities, roles, identities, knowledges, and languages of architects are dependent upon the processes of review, in particular the movement between concept, drawing and built object. Creating a building involves building sites, offices, meeting rooms, equipment, tools, knowledge, and verbal, graphic and numerical languages in written and oral forms. The training of architects, involves many of the activities, roles, identities, knowledges and languages of professional architects, but relocates and recontextualises them in classroom settings, and includes *learning* as the main object of the activity system.

Texts represent distributed cognition in the sense that cognitive work is spread among the genres and the artefacts that are associated with them. Opportunistic connections among those genres are historically made and cemented through practice, yet genre systems are 'dynamic enough to import or evolve new genres to meet new contingencies' (Spinuzzi & Zachry, 2000: 173). In order to review or critique a building, such as *Guga S'Thembe*, students need to learn to operate within the review genre, which means they will need to draw

on a range of interpretations and representations of historical and contemporary buildings, artefacts, and traditions, and incorporate these with their personal experiences and opinions.

CONCLUSION: THE POSSIBILITIES OF DISCURSIVE TRAVEL

In thinking about what plenary discussion involving students and their lecturer enables and constrains, it is helpful to think of *Guga S'Thebe* as a 'boundary object', a term coined by Star and Griesemer (1989) to explain how the meaning of an artefact will be different for different subjects in an activity system, but that such differences in meaning are not restrictive to the accomplishment of an activity. Thus the fact that *Guga S'Thebe* might have different meanings for the lecturer and the students will not inhibit the outcome of learning. The subjects come to the activity from different places (social, cultural, economic, contextual, linguistic) – and all are able to produce learning. Learning is the point at which multiple sociocultural practices intersect. *Guga S'Thebe* is the boundary object that enables some degree of 'translation' (and thus shared learning) between and across subjects.

This paper has attempted to explore how information for and about architectural review is deployed and managed within a classroom based activity system comprising lecturer and students, graphic and verbal texts in a context of learning, and the rules of generic architectural review, which the class activity is intended to facilitate. The lecturer's role is to work with the students' opinions, experiences, disagreements, and other contributions and to recontextualise them within the genre of architectural review (or a mediated version of it). Student initiated contributions gain architectural meaning through their reformulation into a technical and professional language and a genre system. Because the students are novices, and are not yet in a position to master the full range of the genre, the recontextualisation anticipates the ways in which the students' contributions are placed in future genre systems. This recognition of the constitutive intertextuality of genres accounts for the heterogeneity and hybridity of texts within an educational or developmental genre system, as well as the potential, for example, for hybridizing the genre of review. Nevertheless, the recontextualizations of students' discourses occur within a closely aligned set of genres.

I have argued that learning, teaching, and expert discourses can travel across generic boundaries. The freedom of such movement among texts such as those examined in this paper suggests that technical communication consists not only of interactions among sanctioned genres but of negotiations with other systems of knowledge as well. Theorising this intergeneric movement may potentially help us understand some of the tensions between novice and expert textual practices, and it may lead to a clearer picture of how and why genres shift and change over time and context.

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Bibliographic Note

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