

**Cold Dark Soft Matter Research and Atmosphere in the Theatre**  
 by  
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**Abstract**

Recent research has experimentally confirmed the existence of cold, dark, soft matter (which I abbreviate CDSM). The paper provides a brief survey of the characteristics of CDSM and proposes how CDSM may explain specific experiences and phenomena of the theatre.

**Clear experiences, vague concepts**

There are a number of phenomena of theatre that we can most probably all relate to, as spectators or as theatre artists or both. We can describe those phenomena, and when we hear such descriptions, we know what the other person is talking about. Yet the descriptions tend to be poetic rather than scientific, and our knowing what the other person is talking about tends to be intuitive rather than rational. Most important is our current inability to explain those phenomena satisfactorily.

Of relevance here is the question that stimulated Eugenio Barba's life-long exploration of *theatre anthropology*: 'Why, when I see two actors doing the same thing, I get fascinated by one and not by the other' (Barba, 1985: 12). This is the phenomenon of a performer's presence. We all know if an actor has got it for us, but he or she may not have it for someone else, and we cannot really pinpoint what it is about that actor that makes us feel his or her presence. We may not even want to analyse why, why for us and not for someone else, or why not for us but for someone else. There may be statistical correlations between an actor's fame, greatness, and the number of people who attribute a strong presence to that actor, but such correlation does not necessarily have explanatory potential.

Another complex, related phenomenon of theatre is that of atmosphere. Actors and audiences alike will recall different performances of the same production, which feel completely different. One evening, there is a strong exchange between stage and auditorium, in a comedy, for example, the spectators pick up every funny line and laugh abundantly. On another evening, however, the same actors in the same production may have the impression that they might just as well play to an empty room or against a brick wall, as there is no exchange between stage and auditorium, no laughter at all. In the first scenario, audiences will feel that much is coming across to them, while in the second scenario they may feel bored.

Presence and atmosphere are thus familiar experiences and phenomena of the theatre. I have yet to find explanations of these phenomena and experiences that convince me. Refutations of their existence arguing against assumptions that actors work according to a tacit, unlearned and unlearnable knowledge, do not convince me either. In the course of this paper I will present two distinct examples of such phenomena, one reported by Peter Sellars and further explored by myself, and a personal experience, followed by my attempt to provide a cogent explanation of the experiences. That attempt involves my discussion of some concepts of physics, suggesting that an understanding of those concepts helps in providing the cogent

explanation I aim at. Just as some colleagues may be uncomfortable with the repeated use of the first person pronoun (I shall contextualise that first person perspective with reference to subjectivity in consciousness studies), others may consider it methodologically inappropriate to employ concepts of physics to explain phenomena of theatre. I am a pragmatist in view of that consideration: as long as the result is the kind of cogent explanation of a hitherto poorly understood phenomenon (of the theatre) that I aim for, I am not concerned with the origin of the concepts that allow such better understanding of theatre and the concomitant increase in knowledge. I will return to this issue at the end of the paper.

Here the two case studies. American director Peter Sellars made an experiment: actors in one his productions were on stage and played a scene, as rehearsed, which contained by nature a number of specific emotions. Neither those on-stage actors, nor the audience knew that backstage, a further group of actors were doing a range of exercises intended to allow them to engage deeply with specific emotions. Sellars's idea was that these backstage actors would be *radiating* emotions. The emotions he instructed them to engage in were either exactly the same emotions portrayed by the actors onstage, or exactly the opposite ones. Both onstage actors and spectators noticed a difference in *atmosphere*. Actors commented on most successful performances with a special ease of portraying emotions when the backstage group had enforced their emotions, and of a tough and frustrating performance with difficulties of getting into their emotions when the backstage actors had engaged in emotions opposed to theirs (Sellars, 1995). I would like to postulate that this effect of emotions, this change in atmosphere, is due to effects relating to what is commonly called the sixth sense, similar to us noticing if someone is staring at us behind our backs. In some way information has been transmitted, has travelled from point A to point B, in non-ordinary ways.

In spring 2006 I conducted a small experiment myself to put Sellars's experiment to the test. I asked a colleague to present a short monologue at the start of the first session of a departmental residential research conference, and again at the end of the same session. I was not know the author and the play it was taken from, but its underlying dominant emotion. The emotion was "stunned". I asked a colleague working in actor training to spend two 2-hour workshops with three volunteers, training them to be "stunned". During the first performance at the conference, the volunteers were in the audience. Just before the second performance at the conference, the volunteers left the room, went to an adjacent room and engaged in the exercises they had been taught in their workshops until I went over to inform them that the experiment had ended. My colleague later told me that he had attempted to maintain the same level of emotional intensity during both performances but that he had felt more emotional intensity the second time round, and as a consequence had had to struggle that second time round to keep that intensity down to the same level that he had projected during the first performance. Some members of the audience reported, independent of my colleague's comments, that the second performance had come across as emotionally more intense; they noticed that the performer's voice was shaking at times, accompanied by more intense facial expressions. There are of course methodological problems in the way I was able to set up the experiment, which a larger study

will have to address, such as, among others, the possibility of the effect (increased emotional intensity) resulting from increased familiarity of performer with text and audience, and of audience with text and performer. However, this experiment still goes some ways of confirming the phenomenon reported by Sellars.

Here is my second example. In January 2006, I attended a symposium at the University of Exeter's Drama Department, entitled *The Changing Body: the bodymind in contemporary training and performance*. As part of the symposium, I attended a two-hour workshop-demonstration with movement artist Sandra Reeve. One of the exercises consisted of workshop participants teaming up in pairs of their choice. Partner A would sit at the side of the space observing partner B move in the space. As instructed by Reeve, A would then engage in movements him or herself, which B was expected to pick up and use as inspiration for the development of their own movements. After the exercise was over, A and B would discuss their experience, and swap places for a second run of the exercise, with A moving and B at the side, again followed by discussion. When I was moving, I occasionally glanced at my partner and intuitively integrated the inspiration from her movements into mine. When I sat on the side, I first engaged in movement, as instructed, and observed how my partner in turn integrated my suggestions into her movement. In the course of the exercise, however, I found myself no longer moving but, in a state of very high concentration and alertness, which felt, at the same time, very relaxed, suggesting just in thought. Seeing her lying on the floor, for example, I thought: "She could now start movements like a mermaid". Later, my thoughts became less fully expressed, turning from sentences to phrases (up, left, right, more gentle, etc.). To my surprise, my partner followed my mental suggestions one by one. We realized, in our post-exercise discussion, that she had different images from the ones I had; thus, what I envisaged as a mermaid movement was for her the swinging of a clock pendulum, but still, she had made the movements I had wanted her to make. I would rule out, with hindsight, the possibility that I "merely" observed some latent component of her position, which then triggered me to think "mermaid", for example, and then her latent component indeed developed into what I confirmed as "mermaid" (and which was "pendulum" for herself). What happened was that my thought (the cause) resulted in her movement (the effect).

The manipulation of atmosphere in the Peter Sellars scenario is an example of non-ordinary exchange of information, suggesting a non-ordinary mode of communication. My experiment at the departmental research conference repeated such manipulation on a small scale. In addition, I was present at the event, while I must rely on Sellars' account second-hand. In the Exeter workshop I experienced such non-ordinary exchange of information, a non-ordinary mode of communication directly myself. In the remainder of this essay I want to share my attempt of understanding those experiences (that of the actors in the Sellars experiment, that of the actor and spectators in the research conference experiment, and my own experience in Exeter), better.

### **The methodological context: subjectivity and physics**

Readers will have noticed how often I am referring to myself and to you, how much I am talking about feelings, hunches and intuitions. I even

mentioned the sixth sense. All this subjectivity may cause unease to scientists and to more traditionally minded, or trained, colleagues from theatre, performance or literary studies. The reason for such unease is that conventional science requests the scientist's subjective experience to be excluded, in order to guarantee the objectivity of any observation. In contrast, so-called 'first-person approaches' to the study of consciousness increasingly recognise the need to critically reassess the position of the subject: researchers in the various disciplines that make up consciousness studies are increasingly in the process of developing scientifically sound methods of studying consciousness based on subjectivity and experience (Varela and Shear, 1999). The examples I gave above to illustrate the topic of this paper are thus clearly placed within the context of the paradigm shift towards first person approaches that researchers in consciousness studies are engaging in.

### **Cold, dark, soft matter (CDSM)**

Volkamer and colleagues (1992, 1994, 1997a, 1997b, 1998, 1999, 2002, 2003a, 2003b) have published quantitative experimental evidence of a new type of matter. It can be weighed in experiment, and has thus mass contents, as well as energy contents. Experiments also suggest that ordinary matter absorbs the "new" matter, and emits it as well. Since the new matter has real mass contents, it is subject to gravity just as ordinary matter. Just like ordinary matter, the new form of matter exists in particles: there is a fundamental unit of this new matter, which appears on its own or in multiples. Since we cannot see those particles or even multiples of them with our eyes, the new form of matter is not visible; hence it is called *dark matter*. The individual particles of the new matter associate to form new and different super-structures, which in turn implies that physical interaction takes place between the particles. The potential of creating new structures entails the potential to store information. In addition, new matter is just as omnipresent as ordinary matter that surrounds us visibly (Volkamer, 2003b: 46-47).

The elementary particles of the new matter do not have high density like ordinary matter, which would concentrate such elementary particles to limited space. Rather, the elementary particles of the new matter are expanded in a field. The low density of the new matter gives this form of matter the name *soft*. It has a low energy level, thus it is called *cold*. For convenience, I use an abbreviation of this new form of matter, which is **cold, dark and soft matter CDSM** (a new coining). The information on CDSM that I present in this paper is summarised from Volkamer's research on CDSM. The application of CDSM research to the contexts of theatre represents my own argument.

CDSM interacts with ordinary matter not only through gravitation, but also through other means of interaction, which have not been known from physics so far. CDSM quanta attach to a newly formed phase interface of ordinary matter, depending on the ordinary matter's form. CDSM interacts electromagnetically with ordinary matter; however, that interaction is so weak that the electromagnetic fields of CDSM can easily permeate ordinary matter, such as walls, floors or ceilings. When ordinary matter that has absorbed CDSM is caused, by a mechanical impact, to oscillate briefly, it emits the absorbed CDSM particles. In ordinary matter, only associations of quanta are

able to store information. With CDSM, the individual quanta alone have that potential (Volkamer, 2003b: 48-50).

When ordinary matter interacts with CDSM by way of absorption, this means that a field of CDSM quanta forms around ordinary matter. It is not possible to perceive this field through any of the five senses. The CDSM field around ordinary matter permeates ordinary matter. CDSM fields exist around all living beings, i.e., not only humans but also animals and plants. CDSM also exists around (is absorbed by and emitted by) inanimate objects, such as minerals, water and the sun, and is thus omnipresent. In the context of animals, a swarm of starlings will serve as an example of the implications. The CDSM fields around each starling can overlay to form a CDSM field of the swarm. CDSM fields are fields of information and communication. Thus all individual starlings in a swarm of starlings form a unified body on the level of CDSM. Information is exchanged on the level of CDSM, without time lapse (Volkamer, 2003b: 51-58).

## **CDSM and Theatre**

Now I proceed to discussing the implications of the discovery of CDSM for the theatre. On this model, in general terms an actor's potential presence depends on how much CDSM he or she is able to absorb and emit, independent of how much the individual spectator is able to absorb. There may be actors with only limited ability to either absorb or emit, actors who are able to absorb much but not able to emit much, actors who could emit much if only they were able to absorb enough, and actors who absorb much and emit much. The actors' potential presence should correlate with the extent they are able to both absorb and emit CDSM. If the ability to absorb and emit CDSM can be trained, presence is no longer tacit, unlearned and unlearnable.

Whether a spectator considers an actor as having *presence* depends on both the amount of CDSM the actor emits (which in turn depends on how much he/she is able to absorb prior to emission etc), and how much of emitted CDSM the spectator is able to absorb. The individual actors that work together in a given production may form an overlaid cast CDSM field, just as the individual starlings in a swarm form an overlaid swarm CDSM field. Individual audience members watching a production together in the theatre may form an overlaid audience CDSM field. Actors and spectators together may form a theatre CDSM field. In the context of the two examples I described above, the implications of CDSM are as follows:

In Peter Sellars' *emotion / atmosphere* experiment, and my recreation of it at the departmental research conference, the transmission of emotions functions not only on the level of ordinary matter, where we see a facial expression that suggests love or its opposite, and where we perceive that emotion through other senses as well, for example mediated through pheromones. Such transmission functions also on the level of CDSM, in that the person experiencing an emotion does not only show the outward signs perceptible through the senses, but also emits CDSM quanta relating to that particular emotion (or combination of emotions). In the Sellars and research conference scenarios, although unseen, the emotions of the backstage actors or the actors in the adjacent room will create CDSM quanta, perhaps CDSM fields, which impact on the onstage actors and the audiences. If CDSM quanta of the same emotion as onstage are emitted by the backstage actors,

both onstage actors and audiences have more CDSM quanta of that emotion available for absorption, and chances are that the more is there, the more gets absorbed. This is why my colleague at the research conference felt more emotions during his second performance, why he had to make an effort not to express more emotions than during the first performance, and why audiences observed the increased intensity of his emotions in his facial expressions and his voice during the 2<sup>nd</sup> performance. In the context of the Sellars experiment, on some evenings CDSM quanta of the opposing emotion were emitted by the backstage actors; they competed with the CDSM quanta emitted by the onstage actors; as a result, not so many of the CDSM quanta emitted by the onstage actors would have reached the audience. The CDSM quanta field of the respective emotion was weaker, its formation may have been blocked altogether, and the onstage actors felt that they struggled hard, possibly in vain, to get their emotions going and to get them across to the audience. The audience, in turn, does not have so many of the onstage actors' CDSM quanta to absorb, and relates with less enthusiasm with that lower level of relevant CDSM quanta. In addition, the CDSM quanta generated by the backstage actors compete with, or even neutralise, those emitted by the onstage actors.

In the context of my experience at the Exeter workshop, my thoughts will have created CDSM quanta emissions, which my partner in that part of the workshop absorbed and which influenced her bodily movements. This exchange of CDSM quanta happened unconsciously—remember, she did not pick up the images I had in my mind, “only” the movements.

It would be interesting to try to find out, in general terms, what the conditions are for individuals to be efficient CDSM absorbers and emitters. My initial working hypothesis: I expect to find correlation between that ability and at least the following

- a. Frequency of experiences of higher states of consciousness
- b. Higher levels of brain functioning coherence
- c. Lower levels of psychological and physiological symptoms of stress.

The extent of actor-audience interaction depends on the levels of CDSM absorption and CDSM emission between the CDSM fields of actors and audiences. A “dead” audience suggests that exchange of CDSM fields is blocked. The individuals making up the audience do not absorb and emit sufficient CDSM to form an audience CDSM field. It may be that it needs a certain percentage of members of an audience with sufficient absorption and emission levels to create an audience CDSM field. After all, starlings, to come back to the example I used before, practice for quite some time to get the coherence that characterises their swarm CDSM field.

## **CDSM and Cultural Theatre Research**

As promised towards the beginning of the essay, I now address the methodological issue of using physics to explain theatre. I am aware that theatre is a cultural phenomenon; in the discussions above I may have given the impression that I try to explain a cultural phenomenon by reference to a different level of explanation, i.e., physics, and colleagues may argue that I am inappropriately “jumping levels” or committing the offence of reductionism (I am grateful to my colleague Martin Barker for pointing this out to me). Here

is my response to such a critique: explaining *how* actors and spectators experience specific phenomena in the theatre with reference to CDSM does not oppose, rule out or contradict any attempt of explaining these experiences from a cultural studies perspective. Empirical research not involving any reference to CDSM may reveal, for example, *that* a statistically significant number of spectators consider actor A to have more presence on stage than actor B. This research result may then lead to further research seeking to establish

- a) what it is about actor A that gives him / her an apparently stronger stage presence; cultural research might find that the actor's family background, educational background or training are relevant, or their perceived ability to merge with their character, or their "flow", in Csikszentmihalyi's terms during performance (1993).
- b) what it is about the majority of spectators that makes them consider actor A to have a stronger stage presence than actor B. Cultural research may hypothesise and / or confirm that the spectators who make up this majority share certain personality traits, such as those measured by Cloninger's *Temperament and Character Inventory* (TCI) (1993: 975-990).
- c) what it is that makes a minority of spectators not consider actor A but actor B as the actor with the stronger stage presence. Cultural research may hypothesise and / or confirm that the spectators who make up this minority share certain responses to life stimuli, as measured, for example, in Pekala's *Phenomenology of Consciousness Inventory* (PCI) (1982).

The CDSM approach introduced in this paper provides tools for explaining *how* each one of those factors hypothesised and / or confirmed by cultural approaches actually works.

## Conclusion

Applying the information currently available in the science of physics about CDSM leads to a cogent explanation of *how* non-ordinary communication, non-ordinary information transfer, *how* reception processes in the theatre (and beyond) work, *why* and *how* our experiences of presence and atmosphere come about: actors emit varying amounts CDSM quanta related to the contexts prescribed by the play and the production in question; these CDSM quanta are then absorbed, again to varying degrees, by the spectators. That absorption by spectators leads to spectators in turn emitting the CDSM quanta, which are available by absorption by the actors. Depending on how many CDSM quanta are emitted and absorbed, an actor's presence will be (perceived as) stronger or weaker. The level of emission and absorption of CDSM quanta depends on the individual actor's and spectator's ability to emit and absorb these quanta. Further research is needed to subject this explanation to testing, employing both conventional, third person, and innovative first person approaches.

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