

Group Analysis and Quantum Ontology: A Study of the Theoretical and Clinical Applications of Quantum Mechanics in the Group-Analytic Group¹

Grupoanálisis y Ontología Cuántica: Un Estudio de las Aplicaciones Teóricas y Clínicas de la Mecánica Cuántica al Grupo Grupoanalítico



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Abstract

The scientific foundations of group analysis are explored by drawing analogies between the group analytic process and quantum ontology.

The group-analytic situation is conceived as a wave function process leading to collapses, according to Schrödinger's equation and the interpretation of the Copenhagen School, through the conductor's interpretative interventions.

Superposition, as expressed by the conductor's three positions (as therapist/member, father/mother and leader/conductor) and those of the members (adults/infants), as linked with mirror/resonance phenomena, are investigated. Heisenberg's uncertainty principle is related to the impossibility of simultaneously "measuring" the conductor/father's paternal position (Signifier/Name-of-the-Father) and his/her dynamic influence ("speed") on the group/mother or Signified (the mother/group's desire) (Lacan).

A reservation regarding the exact determination of the Signifier and/or Signified using the uncertainty principle leads to a balance of power between them, which favours the pre-eminence of the conductor/father as expressing an effective paternal function by recognizing the group/mother as the major therapeutic figure (Foulkes).

Key words

quantum ontology, group analysis, signifier/signified, uncertainty principle, Name-of-the-Father.

Resumen

Los fundamentos científicos del análisis grupal se exploran mediante la elaboración de analogías entre el proceso analítico grupal y la ontología cuántica.

La situación analítica grupal, se concibe como un proceso de la función de onda que conduce al colapso, según la ecuación de Schrödinger y la interpretación de la Escuela de Copenhague, y a través de las intervenciones interpretativas del conductor.

Se investiga la superposición, tal como se expresa en las tres posiciones del conductor (como terapeuta/miembro, padre/madre y líder/conductor) y las de los miembros (adultos/bebés), en relación con los fenómenos de espejo/resonancia. El principio de incertidumbre de Heisenberg está relacionado con la imposibilidad de "medir" simultáneamente la posición paterna del conductor/padre (significante/nombre del padre) y su influencia dinámica ("velocidad") en el grupo/madre o significado (el deseo de la madre/grupo) (Lacan).

Una reserva con respecto a la determinación exacta del significante y/o significado utilizando el principio de incertidumbre conduce a un equilibrio de poder entre ellos, lo que favorece la preeminencia del conductor/padre al expresar una función paterna efectiva al reconocer al grupo/madre como la figura terapéutica principal (Foulkes).

Palabras clave

ontología cuántica, análisis grupal, significante/significado.

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QUANTUM THEORIES AND THEIR BASIC PRINCIPLES

During the period when Freud's *Interpretation of Dreams* was published (Freud, 1900), further promoting his idea of the unconscious as the primal reservoir of psychic, mainly libidinal, energy, Planck (1901) discovered that energy is emitted and absorbed solely through some "energy parcels" that he called "quanta". Einstein (1905) confirmed that light consists of quanta of energy (photons) that move in space like tiny particles. Later, Bohr (1928, 1937) incorporated de Broglie's (1923) views on the wave-particle duality into the concept of *complementarity*: i.e. this particular thing cannot simultaneously be both a particle and a wave, but can sometimes be either one or the other, according to circumstances, so that one version complements the other. Meanwhile, Heisenberg (1925, 1927) was led to the *uncertainty principle*, according to which the precise position was determined as the product of mass (m) multiplied by velocity (v), or by calculating the position (x) or velocity (v) of a particle. The product of the value of position (Δx) by that of momentum (Δp), i.e. its velocity, had to be larger than or equal to an infinitesimally small arithmetic value that can neither be changed nor reduced to zero, i.e. it can never be less than one-half of the reduced Planck's constant, \hbar , often divided by 2π , and written as h-bar

$$\frac{\hbar}{2} \text{ where } \hbar = \frac{h}{2\pi} \approx 1,055 \cdot 10^{-34} \text{ J s}$$

In mathematical terms, we have $\Delta x \cdot \Delta p \geq \frac{\hbar}{2}$ where Δx represents the random position of a particle and Δp the uncertainty of its momentum, which means that the particle could be situated anywhere within the Δx space, and its momentum could have any value within the span of Δp . Experiments, however, proved that when the position Δx is defined, the value of which is inevitably very small, the value of its momentum (Δp) becomes disproportionately greater, and vice versa. It follows that, if the value of the position is higher because the value of the momentum is smaller, it cannot be measured precisely. In other words, when we know the exact position of a particle, we do not know its momentum (velocity) and vice versa (Lewis, 2016).

Parallel to Heisenberg, Schrödinger (1926a, 1926b, 1935) created a new wave-mechanics atomic model, according to which the stationary orbits of the atom's electrons (Bohr) are due to the fact that the electrons, conceived as de Broglie waves, are in specific states of oscillation according to Schrödinger's well-known equation:

$$\hat{H}\Psi(\mathbf{r}, t) = i\hbar \frac{\partial}{\partial t} \Psi(\mathbf{r}, t)$$

in which \hat{H} is the Hamiltonian coefficient of the system under observation, i is the imaginary unit, t the time, \mathbf{r} the position in three-dimensional Euclidean space, and \hbar is Planck's constant.

$$\hbar = \frac{h}{2\pi} \approx 1,055 \cdot 10^{-34} \text{ J s}$$

The initial state $|\Psi\rangle$ of a quantum system is represented by a *superposition* of states, i.e. by the linear sum of all possible alternative states of the system $\{ |y_i\rangle \}$, in Hilbert space:

$$|\Psi\rangle = \sum_i c_i |y_i\rangle, \quad i = 1, 2, \dots, k, \dots$$

These states represent specific positions (or possible amplitudes) occupied by electrons conceived alternately as stationary waves in a linear, continuous and irreversible manner in the quantum system. The state that prevails each time expresses the solution of the wave function $\Psi(\mathbf{r}, t)$ which in turn solves the related Schrödinger's equation. The superposition means that a quantum object, as either particle or wave, is simultaneously in many states, or at least two different directions simultaneously, and at the same time in neither of the two. Superposition changes with the passage of time and its change can be predicted only by a function of the state $\Psi(\mathbf{r}, t)^2$ of the atom (the square of the absolute value of the wave function), which Schrödinger tried to prove through his imaginary experiment known as "Schrödinger's cat".

Schrödinger's conclusions cast some doubt on how possible it is for the microcosm to be transformed into the macrocosm. Nevertheless, Bohr (1958), Heisenberg (1930, 1958) and the Copenhagen School in general found an interpretation, known as the *Copenhagen interpretation*, as linked with the *observer effect* (Heisenberg, 1930; Lewis, 2016). Quantum objects can become known as parts of the macrocosm only through observation/measurement. The environment causes the superposition of different states in the wave function to break down, leading to an unpredictable result of the measurement. Heisenberg (1927) and von Neumann (1932) attributed this phenomenon to the fact that, when the object is measured, a *collapse or reduction of the wave function* takes place (Heisenberg, 1927). Through the collapse of the wave function, one of the states is selected for superposition, which is truly unpredictable. The measurement process imposes the discontinuous change-projection of the system's initial wave function into one of the eigenstates that constitute it.

$$|\Psi\rangle \rightarrow |y_k\rangle$$

Later, Bell's (1964) studies on the *spin* of a quantum object proved that a particle "understands" when we measure it, resulting in the determination of its value and behaviour. The spin acquires a stable value *up* or *down* only at the moment of its measurement. Its orientation can be predicted only through the possibility $|\Psi|^2$ (here: $|a|^2$ or $|b|^2$) where Ψ is the wave function of the particle which collapses from the moment that each spin acquires a value. So that when we have two particles A and B on the same axis and under conditions in which the principle of locality prevails (therefore in combination with the special theory of relativity) (Einstein, 1917) we do not initially know the value of their spin (superposition). We know it only if we measure the spin of one, in which case the spin of the other automatically acquires the opposite value (spin up or spin down accordingly) (Lewis, 2016). This is a complex *entanglement* between the two particles. But, the altogether paradoxical thing is that the B particle suddenly and automatically acquires a quantum attribute, i.e. the orientation of its spin (precisely opposite to that of A), right after the measurement of A (therefore faster than the speed of light, which contravenes the special theory of relativity) (Einstein, 1917), however great the distance is between A and B, which totally violates Einstein's principle of locality within the context of a very strange entanglement (Schrödinger, 1935).

QUANTIZATION AND QUANTUM PHENOMENA IN THE GROUP-ANALYTIC GROUP

Quantum states can be visibly present – much more than in psychoanalysis in which it has been already shown that they are significantly manifested (Gargiulo, 2016) – in group analysis as expressed in the mental processes of the group-analytic group through the members' free-floating discussion on the operational basis of the group matrix (Foulkes, 1964, 1990). Group intercommunications and dynamics could be conceived as composed of psychic micro-entities ("atoms") that are subjected to quantization (a continuous range of values is converted into a finite range of discrete values) following a linear, determinist and irreversible wave function (Ψ) according to Schrödinger's equation, which is periodically led to collapse processes mainly through the conductor's interventions:

$$|\Psi\rangle = \sum_{a,b,c,\dots} \psi(a,b,c,\dots)|a,b,c,\dots\rangle$$

First of all, superpositions are strongly displayed in the group-analytic group due to its multi-personal network of communication. The members of the group, which is conceived as a mother figure, are simultaneously

in two distinct positions ("children"/adults), but at the same time in both or neither of them, and group relations are concurrently both interpersonal and transpersonal (Foulkes, 1964). The group analyst is synchronously in both a paternal and maternal position, and can direct the group as either "leader" or "conductor" (Foulkes, 1964, 1990), while being in neither of the two positions specifically. In addition, he/she is not only an observer of the group but also a participant *in* the group, with his/her counter-transference feelings towards the members' transference behaviours (Foulkes, 1964, 1990). Phenomena of entanglement could also become detectable mostly in mirror reactions and resonance (Foulkes, 1964, 1990) that are developed on the basis of corresponding psychic states between the members that are very "distant" from each other, according to the model of an electron's spin up and spin down. Furthermore, the conductor, much more so than a member or the group as a whole, verbally or non-verbally, is called upon to lead the group's wave function to collapse by providing relative interpretations/"translations" on the individual but especially on the group level (Foulkes, 1964). The conductor introduces the "breaking" of the causal sequence, the asymmetry, indeterminacy and reversible process on the wave-like linear, irreversible and symmetrically determinist coherence of the associated course of the group.

On the other hand, the conductor's position is a typical example of the way in which the principle of uncertainty can be manifested in the group in the sense that when the conductor's position is expressed as certain, then his/her influence (the "speed" of the meaning transferred) on the group remains uncertain, and vice versa. Principally the conductor, regardless of his/her gender, speaks from a paternal position due to the therapist's interpretative stance as primordially based on the use of language as substantiating the Symbolic (Lacan, 1966, 1975, 1998), which has been traditionally considered as being in line with a patriarchal perspective. The conductor continuously struggles specifically to find the words (signifiers) which, according to Lacan (1966, 1975, 1998) emanate more from the paradigmatic/metaphoric/symbolic axis than from the syntagmatic/metonymic/imaginary axis of the language which is in everyday use and in which the group mainly expresses itself. Lacan (1975) has shown that the language has its fundamental source in the *big Other* or *A* (the Symbolic in its absolute sense), the essence of which we ignore but, despite that, unlike the case of psychosis in which the Other has been excluded, we ought to follow and obey if we want to have sufficient communication based on mutual recognition, i.e. a recognition that derives from the idea of the person (symbolic) rather than from his/

her fascinating image (imaginary). Due to an inherent symbolic process based on allocation – which is absent in communication on the level of the *little other* or *a*, i.e. the imaginary communication between two people who mutually mirror each other using allusion – the sender receives back the message he has sent to the recipient in an inverse way (e.g. in the transmitter’s phrase “*you are my woman*”, what is heard, and what the transmitter wants implicitly to state, is the phrase “*I am your man*”, and vice versa). However, in the group context, due to the fact that the regressive forces are prevalent, and reminiscent of a psychotic-like situation (the state of the little other), and words and behaviours are multiplied owing to membership status, if the conductor’s/transmitter’s speech had been entirely certain, then whatever he/she says, what will be transmitted is the message “*you are my group*”, but it not would be quite certain whether the message that is finally sent back by the group/recipient (and as implied by the transmitter) will be “*I am your conductor*”, and the other way round. It seems that this message could be returned with certainty in the event that the conductor’s speech was somewhat uncertain.

It is implied that the inverse message process, when expressed in the group, is mediated by subtle aspects of leadership and that the latter’s assignment is in a constant negotiation between the conductor (symbolic axis) and the group (imaginary axis) as decisively dependent on the application, or at least the non-violation of Heisenberg’s uncertainty principle, which seems to be ingrained in the group-analytic culture. On the other hand, the group therapist/father should prepare for his/her symbolic death by permanently providing the group/mother with his/her symbolic power in such a way that the group is revealed as the dominant therapeutic figure, firmly representing the reality principle (Foulkes, 1964). However, Foulkes’s proposal about how the conductor could foster his/her symbolic death remains unclear. Hence, we suggest that, following Lacan, the conductor’s symbolic death could be achieved through the proper use of the signifier (S) as a metaphor conceived, in Freud’s terms, as the equivalent of the “dead or *symbolic father* (the primal/imaginary father who became an idea/symbol after being murdered by his sons); this is the opposite of the “alive” or *imaginary father* (as omnipotent and eternal imago) which is expressed through the use of the signified (s) or metonymy. The signified consists of the incessant search for meaning on the imaginary level as representing the subject’s desire to rediscover his or her mother as primordial object and omnipotent/omnipresent imago (*imaginary mother*), i.e. the *desire* in the sense of the *need* and *demand* for the mother’s love on the pre-Oedipal level, thereby alienating its proper desire by continuing to be the mother’s desire. What is

important, however, is not the meaning/signification as derived from the signified on the metonymic axis – i.e. as long as a signifier continuously leads to another signifier, thus producing the illusion of meaning – but signification as engendered on the metaphorical axis by the passage of the signifier into the signified in such a way that a metaphor of the metonymy is produced ($\frac{S}{s}$), in which the numerator/signifier acts as a metaphor upon the denominator/signified. The signified process, unlike a suitable signifier (which is only the signifier of the symbolic father) induces a stop/metaphor in the chain of metonymic speech/imaginary mother, is an unceasing slide from one meaning to another. The mother/group is a representative of the signified or syntagmatic/metonymic/imaginary axis of language. The father/conductor alone, since he/she occupies the position of *symbolic father* or *Name-of-the-Father*, constitutes the signifier and indeed *the signifier par excellence*, by conveying the language’s paradigmatic/metaphoric/symbolic axis (full speech, symbolic dimension of language) which stops the sliding of the signified/mother/group towards the meaning on the syntagmatic/metonymic/imaginary axis of the language (empty speech, imaginary dimension of language) (Lacan, 1966, 1998). Furthermore, the mother/signified/group *is* the phallus in the sense of desire in its imaginary dimension, i.e. the desire of the mother/group to be the phallus as represented by their entire posture conceived as an imaginary entity, and to consider the child/member as an extension of their phallus; in contrast, the father/signifier/conductor *has* the phallus in the sense of desire on the symbolic level, i.e. as disentangled from the need and demand for the mother’s/group’s love (Name-of-the-Father). The signifier/Name-of-the-Father/conductor or *symbolic father*, as embodied in the figure of the *real father* (he who desires the mother/group on a mature/symbolic level) and, to some extent, that of the *imaginary father* (the father fantasized as the one who will cut off the penis of the male child/member, following an archaic/imaginary castration process), must prevent, in the sense of symbolic castration on the Oedipal level, the use of empty speech through which the child/member of both sexes endlessly seeks meaning/signified as interwoven with the *mother’s/group’s desire/imaginary phallus*, thus running the risk of being identified with the latter and entering into psychotic situations. The conductor as symbolic father is helped in this by the mother/group conceived as *real mother*, i.e. the mother/group who frustrates the child/member by properly weaning it, and as *symbolic mother*, i.e. the mother/group who follows a well-balanced dialectic of presence and absence with the child/member. Thus, the subject’s/child’s/member’s desire in both sexes (signified in the subject) is purified of its imaginary/psychotic features derived from identification with the mother’s/group’s desire/imaginary

phallus and acquires a symbolic/neurotic dimension. Under these premises, it is expected that ideally the Oedipus complex will be successfully resolved as long as the male subject/child identifies with the Name-of-the-Father, i.e. with the *symbolic phallus*, and also takes possession of it, while the female subject/child identifies with the mother as she who lacks it. The cornerstone of the paternal function is to substitute the mother's (or the subject's/child's) desire/imaginary phallus (*a*) or signified

(*s*) for the Name-of-the-Father/symbolic phallus (*A*) as a privileged Signifier (*S*). This is expressed through Lacan's (1966, 1998) mathematical formula indicating the way in which the father (*S*) becomes the metaphor of the mother's metonymy so as the Mother's desire is obliterated leading to the prevalence of the Name-of-the-Father (*A*) over the mother's (and the child's = Signified in the subject) desire/imaginary phallus (*s*):

$$\frac{\text{Name-of-the-Father (S)}}{\text{Mother's desire (s)}} \times \frac{\text{Mother's desire (s)}}{\text{Signified in the subject (s)}} \longrightarrow \text{Name-of-the-Father } \left(\frac{A}{\text{phallus}} \right)$$

Nonetheless, in order to be effective in group analysis, Lacan's formula of the paternal metaphor should take on a form, in which the deletion of the Mother's/Group's desire is avoided.

The Mother's desire should be substituted by the Group's desire with the Group conceived as a Mother (***s*₁**), in Lacan's second fraction, while the Signified in the subject should be connected with the group member (***s*₂**):

$$\frac{\text{Name-of-the-Father (S)}}{\text{Mother's desire (s)}} \times \frac{\text{Group's/Mother's desire (s}_1\text{)}}{\text{Signified in the subject/member (s}_2\text{)}} \longrightarrow \text{Name-of-the-Father x Group's/Mother's desire: } \frac{S}{s} \cdot \frac{s_1}{s_2}$$

The conductor, following Heisenberg's uncertainty principle, should be attentive when using the signifier to provide relevant collapses/interventions, so as not to seek either to define the meaning – i.e. the influence of the conductor's paternal position or signifier/Name-of-the-Father/symbolic phallus ($\frac{S}{s}$) on the signified/mother's/group's desire/imaginary phallus or "speed" ($\frac{s_1}{s_2}$), accurately, thus giving priority to the members' tendency to depend on the latter, i.e. making the signifier/conductor's paternal position/Name-of-the-Father/symbolic phallus very uncertain and unstable, or in contrast, to measure precisely the signifier/conductor's paternal position/Name-of-the-Father/symbolic phallus which would make the meaning/"speed" of the message transferred to the signified/mother's/group's' desire for imaginary phallus much more uncertain and less apprehensible. It would also result in the inability of the signified/mother/group to accept the influence of the signifier/father/conductor (which presupposes some uncertainty of the signifier),

and would lend an unequal power and possibly traumatic prevalence to the signifier/conductor/Name-of-the-Father over the signified/mother's/group's desire. The father's/conductor's symbolic death is thus revealed as a continuous process resulting from multiplying the $\frac{S}{s}$ (Symbolic) by $\frac{s_1}{s_2}$ (Imaginary), in which the Imaginary/mother/group absorbs the values of the Symbolic/father/conductor, while the Symbolic discards its imaginary contaminants (the elements of the *imaginary father* as coinciding with those of the *imaginary mother*).

The mathematical form of this view, by combining Heisenberg's uncertainty principle formula ($\Delta x \cdot \Delta p \geq \frac{\hbar}{2}$) with Lacan's revised formula of paternal metaphor ($\frac{S}{s} \cdot \frac{s_1}{s_2}$) can be expressed as follows:

$$Sx \cdot sp \geq \frac{\hbar}{2} \cdot \text{or } \frac{S}{s} \cdot \frac{s_1}{s_2} \geq \frac{\hbar}{2} \text{ where } Sx = \frac{S}{s} \text{ and } sp = \frac{s_1}{s_2}$$

A CLINICAL VIGNETTE

The session referred to here is from a twice-a-week group-analytic group in private practice in Athens, conducted by the author for many years. During this period the group² has consisted of seven members including the conductor: Katy, 37, manager; Maria, 42, surgeon; Zoe, 35, teacher; Chryssa, 40, engineer; Nikos, 38, mechanic; and Kostas, 48, lawyer. The members' psychopathology ranges from neurosis to borderline personality disorder and psychosomatics. Katy and Maria are married and have a boy and a girl, five and ten years old respectively. Zoe is divorced and has a girl and a boy three and nine years old respectively; she is now in a new love relationship. Nikos has just been divorced and has no children, Kostas and Chryssa are single.

When the conductor entered the group, silence prevailed for about one minute, operating as a collapse of the wave function involved in the members' small talk. "*One of the most important functions of silence is when it calls upon each one to break it by speaking,*" the conductor remarked, thus bringing about a collapse in an effort to stimulate the wave function/free-floating discussion. He was clearly speaking from a paternal position (Name-of-the-Father), using the paradigmatic/metaphoric/symbolic axis of language (signifier) without this being fully determined as such (uncertainty principle), a fact indicating that the influence of his intervention/momentum/speed on the group's syntagmatic/metonymic/imaginary axis of language (signified) was to be more precise. Indeed, Katy took the floor by saying that her husband was currently preparing to go on a trip with his friends on their motorcycles, and that she is worried that her son will consider it immature and inadequate as regards the paternal function. Kostas objected saying that this will make the child see his father as a model to be emulated. Katy said that, in fact, her son often tells his parents that, when he grows up, he too will acquire a motorbike. "*Regarding whether your husband is a model through this action, I doubt very much,*" said Maria to Katy. The conductor is in a superposition of associated states as linked with his counter-transference feelings: he himself also had a motorbike which he sold when his son became a teenager (who then bought himself a motorcycle). Based on his own feelings, he decided to create a collapse: "*At your son's age, he can identify with his father as owner of a motorcycle, which symbolizes the phallus as male-paternal power. The problem will come later, when he will gradually take over the bike, i.e. the phallus, but not the father,*" he tells Katy and the group. The position from which he spoke indicated a precise

paternal position/signifier, however it was not certain that the momentum or dynamic depth/signified reflected what he said on the group level. The members remained untouched by his words and returned to the issue of how dangerous a motorcycle can be.

A longer silence/collapse followed, which Zoe "broke" saying: "*My new relationship doesn't give me time; I have started to be very annoyed*". This seemed like a spin-up process linked with mirroring/resonance (entanglement) between her and Nikos. He addressed Zoe: "*Judging by my own marriage and divorce, I think that it is good not to have so many demands; it is hard for a man to be pressured by a woman*" (spin down). A process then began of superimposing many forms of psychic material that are "distant" from each other and that communicate on the basis of the spins up and spins down, co-existing with resonance and (slightly negative) mirroring. Maria said to Zoe: "*You speak in an autocratic way like my mother; it is not effective if you talk to your friend this way*" (spin up). "*It's just the way my tone is!*" Zoe replies (spin down). Then Kostas speaks to Maria saying: "*I do the same thing, so what?*" (spin up). To which Maria replies: "*You do it often, as does my Mum and also my daughter, whom you resemble in many ways*" (spin down). "*Do I have similarities with a child who is so far from me?*" asks Kostas (spin up). "*Do you think you don't have?*" (spin down) replies Maria. "*Anyway,*" Kostas tells her by providing some collapse, "*what you said made me realise something important*". These dialogues made Chryssa angry. References to autocratic mothers (spin up) created a contrast with the mildness of her own mother (spin down). "*Come on, you guys!*" she said, "*Why do all mums have to be the way you describe them?*" The conductor avoids commenting on these processes, in order to leave them running, and decides to provide a collapse by reintroducing the issue raised by Zoe about her friend. "*The more one asks for something the more it may not be given to him*", he tells her. The position from which his words originate, as well as his tone, are imprecise. However, the "speed" with which his words are heard, judging by the very receptive attention with which all the members heard them, is quite understandable.

The session needed a few minutes to finish, and Chryssa said to the conductor: "*My cousin and his wife are obsessively trying to teach my two-year old niece to do her ca-ca sitting on the adults' toilet. I wonder whether this is something pathological.*" (spin up). Katy, who is mirrored in these words, since until recently she, too, was involved in her son's toilet training, replied immediately to Chryssa: "*We have been instructed here that babies must learn to use the potty; by using the toilet so early*

² All the group members are referred with pseudonyms. I thank them all for giving the permission to publish their clinical material here.

to do their ca-ca they run the risk of experiencing the act of excreting feces as a loss of a part of their body" (spin down). The conductor produces a collapse by confirming Katy's view, and says that it would be well to keep an eye on the child's behaviour. He also reminds the group of the equivalence of feces = penis = child = gift, according to Freud (1917, 1918[1914]), and the crucial role played by the mother in teaching the child to use the potty, as the one to whom the child openly offers its ca-ca as a gift. He speaks with certainty, yet his message as apprehended by the group seems uncertain. "Yes but how can I help?" asks Chryssa. "By giving them a potty!" replied Katy making the group laugh. The conductor ends the session through a group interpretation/"translation"/final collapse saying that the main issue in which the group has been unconsciously engaged in this session concerned the search of the paternal and maternal function as mirrored in the dialectic of the conductor and the group respectively and the balance of power between them.

CONCLUSIONS

Applying the fundamental principles of quantum mechanics in the group-analytic group processes has important theoretical and clinical implications in building the epistemological foundations for the theory and practice of group-analytic psychotherapy. Given that the group interactions and dynamics with their unconscious micro-subtleties resemble the quantum world, the whole issue is focused on the way in which the conductor, along with the higher awareness of the superposition of

his/her roles, monitors his/her free-floating attention so as to lead the group by either permitting it to run as a wave function (free-floating discussion) or offering the appropriate collapses (interpretations), and bring together the members' mental material using analysis mainly of mirroring and resonance as linked with entanglement states.

The main target of group analysis is the conductor's symbolic death as fostered by himself/herself and the transmission of his/her symbolic power to the group (Foulkes). Following Lacan's views, this could be realized as long as the conductor (as Name-of-the-Father/symbolic father/symbolic phallus) uses primarily the signifier/symbolic (metaphor) to represent "death"/symbolic castration of the "alive" signified/imaginary (metonymy) as expressed mainly by the mother's/group's desire/imaginary mother/imaginary phallus (Lacan). However, unlike Lacan, the conductor should not occupy the position of the symbolic father catalytically but should favour an overlapping of power based on the consecutive hegemony of both signifier/Name-of-the-Father and signified/mother's/groups' desire according to Heisenberg's uncertainty principle in the sense that neither the signifier (father's/conductor's position) nor signified (mother's/group's momentum) can be measured simultaneously with precision.

Exploring the group-analytic processes and phenomena linked to quantum states, as described above, could open up new perspectives for further research in group analysis, as both as science and art.

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