



Paths Towards Multispecies Superintelligence and Socio-Economic Justice: Nicoletta Vallorani's *Il Cuore Finto di DR*

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Abstract: This paper examines how non-unitary, responsive, and multispecies superintelligence can create an economic model that upends systems of race and gender in Nicoletta Vallorani's *Il Cuore Finto di DR*. The novel depicts a dynamic slum ecosystem that sustains the lives and livelihoods of an array of human and non-human critters. At the heart of the slum economy is a Replicant-in-hiding called DR, whose gender- and species-destabilising body is evocative of Donna Haraway's boundary creatures: she is an adaptive, inter-relational critter who bypasses traditional gendered markers of economic value and demonstrates a responsiveness to the needs of her community. Faithful to the multiple genealogies of humanistic Italian science fiction, *Il Cuore Finto* examines how adaptive superintelligent affiliations can transform not only the economy, but also the systems of race and gender that dictate which lives are valued in an unerring system of capital accumulation.

Keywords: Economics, science fiction, collective superintelligence, race, gender

1. Collective Superintelligence and Posthumanist Philosophy: Alignments and Convergences

This paper traces the convergences between humanistic Italian science fiction (SF), contemporary posthumanist theory, and conceptualisations of non-unitary or collective superintelligence. By “collective superintelligence”, I refer to transhumanist philosopher Nick Bostrom's formulation in

Superintelligence: Paths, Dangers, Strategies. Bostrom envisions collective superintelligence as “networks” or “organisations” that connect human and non-human entities (58), believing it might be attained through “the gradual enhancement of networks and organisations that link individual human minds with one another and with various artefacts and bots” (58–59). Somewhat more radical conceptualisations of collective or non-unitary superintelligent systems have also gained some recognition, such as George Dyson’s work on forms of non-algorithmic AI that might materialise unintentionally and in non-corporate environments. However, with its emphasis on communication and coordination, Bostrom’s prediction of separate reasoning systems acting in aggregate bears an affinity to the science fictional slumland of Nicoletta Vallorani’s 1993 work *Il Cuore Finto di DR* [*The Fake Heart of DR*].

Bostrom’s conceptualisation of collective superintelligence, which identifies the potential benefits of convergences between humans and machines for the future wellbeing of humankind, reflects his position within the transhumanist community (“Transhumanist Values”). He characterises transhumanism as “a loosely defined movement” that evaluates how advanced technology can profoundly affect the human state, taking into account possible positive and negative repercussions of such advances. The goal of transhumanism is, in part, for humanity to reach a posthuman state wherein the limitations of human mortality have been overridden by elective enhancement technologies.

The transhumanist ethos differs from the relational and multispecies posthuman ethics of Rosi Braidotti and Donna Haraway in its dependence on two unquestioned assumptions: that we are currently “human”, a species separable from technological objects, and might yet be “posthuman”. By Bostrom’s logic, human and technological processes must coalesce even more intimately and invasively if humankind is to be altered beyond recognition. This proposition locates humanity within the temporality of the “now”, and the posthuman in the temporality of the “not-yet”; conversely, Braidotti and Haraway’s modes of posthumanism are contingent on an understanding of the posthuman condition as located in the present, resisting a transhumanist emphasis on a possible but as yet unachieved shift from “human” to “posthuman” (Braidotti 102). Haraway, a biologist by training, situates her “worldly” mode of posthumanism in what she calls the “humusities”, a portmanteau that expresses the ecological foundations of her work (*Staying* 32). Grounded in the complex interdependencies among species, Haraway’s work unravels suggestions of human distinctiveness by demonstrating the complex mutualities of *terra*’s critters. The Italian SF I engage with in this paper acknowledges such modes of interspecies responsibility: in particular, Haraway’s work on responsibility as responsiveness and Braidotti’s elaboration of theories of ethical responsiveness, such as Maurice Merleau-Ponty’s responsive phenomenology (Braidotti, *After Poststructuralism* 117–18).

Nicoletta Vallorani’s *Il Cuore Finto di DR*’s resonances with contemporary posthuman, feminist, and anti-racist scholarship demonstrate how non-human and posthuman species can simultaneously reconfigure social, political, and economic structures. I read the relational and responsive systems between humans and non-humans in the novel through posthumanist scholarship to analyse how superintelligent economic systems might arise from anti-sexist and multi-species kinship arrangements. *Il Cuore Finto*’s

technohuman slum economy demonstrates a strong concern for the gendered, racial, and class-based aspects of posthuman politics. Its intersectional approach to posthuman community-building can clarify why gender studies and critical race theory are central to conversations around posthuman life forms: Paul Gilroy's theorisation of "infrahumanity", for example, which critiques the placement of life forms designated as less-than-human beneath human life on a "rigid scale" (35), is of the utmost relevance to posthumanist and transhumanist thinking. The novel's depiction of a new, responsible, and responsive economic system is grounded in a concern for issues relating to posthuman topologies and population development that are often sidelined by transhumanist research, including the oppression of hybrid life forms, alternative kinship arrangements and post-apocalyptic hegemonies. These interlocking thematic elements form the basis of its characters' alternative economic arrangements in the context of post-apocalyptic abandonment.

2. Italian Humanistic SF as an Exploratory Framework for Interspecies Superintelligence

Il Cuore Finto epitomises a tendency in Italian SF novels from the late 1950s to destabilise the human/alien dualism. In these imagined worlds, the disturbance of the species divide often triggers a transgression of normative race and gender paradigms.

The Synthetic antiheroine of Nicoletta Vallorani's *Il Cuore Finto di DR* (1993) is a Replicant machinic-woman, a disbanded and reconfigured sexbot on the government's most wanted list of Replicants-at-large. DR's detective agency protects her local community by solving the novel's mysteries. The community helps collect information that allows DR to defend them against exploitation by wealthy suburbanites. This interchange of information scaffolds a responsive and responsible economic structure powered by an ethically oriented collective superintelligence.

The title of the novel's French translation, *Répliante*, makes explicit reference to Philip K. Dick's *Do Androids Dream of Electric Sheep?*. Dick's empathetic rendering of abandoned androids who spend their operational lifespan in hiding for fear of being "retired" corresponds with the humanistic storytelling of Italian SF from the late 1950s onwards. Writer and critic Vittorio Catani has noted that in the 1960s, when Dick's novel was first published, the sensibility of Italian SF towards humanistic and psychological storytelling exceeded that of North American SF (233). Catani presents Lino Aldani's *La Fantascienza* (1962) anthology as evidence of a consistent interest in humanistic themes (233). Catani argues that the humanistic sensibility he and his predecessors fostered in their work sets Italian SF apart from the more established US SF scene: "such humanistic awareness was then rare in US SF, filled as it was with character stereotypes" (233). In my study of SF authored by women in France, Italy, Spain, and the UK (2019), I argued that SF written by Italian women epitomises how empathetic depictions of the alien "Other" in twentieth-century Italian SF also reformulates systems of race and gender. Roberta Rambelli's "I Creatori di Mostri" (1959) and Giovanna Cecchini's "Mio Figlio non è un Mostro" [My Son is not a Monster] (1959), for example, position readers to sympathise with extraterrestrial entities that human societies

interpret as monstrous. The empathetic renderings of extraterrestrials in these narratives inspired the later work of Gilda Musa and Daniela Piegai, whose stories exemplify how Italian SF worldbuilding in the 1970s and 80s disorders and rearranges the relationship between race, gender, and humanity. Musa's novels relate the specific question of women's social position to the role of humankind in the universe (Pizzo and Somigli 1720).¹

Brioni takes Musa's and Piegai's stories as exemplars of Italian SF that "envisions a new relationship with the alien Other" (159). They claim that these speculative propositions for interspecies solidarity help to process concerns that are specific – but not limited – to Italy in the second half of the twentieth century: "the representation of the Other as able to offer a salvation for terrestrials suggests opening up Italian society toward the Other, becoming Other, and learning from the Other" (159). As Brioni states in reference to Gilda Musa's *Le Grotte di Marte*, depicting migrants to Italy as extraterrestrial travellers reconfigures "the Italian collective memory of immigration and colonialism, by showing a parallel between cosmic travellers and terrestrial migrants" (142). Fantastically estranged in space and time, migrants to Italy no longer bear the same racial stigma.

Vallorani's antiheroine, DR, emerges out of this genealogy of both Italian scholarship and SF from the 1950s onwards that sympathises with the plight of the alien or monster, thereby grappling with the othering effects of systems of race and gender. Brioni's essay "Aliens in a Country of Immigration: Intersectional Perspectives" offers a response to the question of why Italian women SF writers appear to be particularly concerned with engaging in positive renderings of the "monstrous" alien Other. For Brioni, Italian mainstream media in the 1970s was characterised by "the systematic representation of stereotypical female characters, and the racialized presentation of the concept of Italianness and Humanness" (147). Brioni's analysis, which explores how "women writers represent gender identities in relation to the presence of aliens", recognises that "SF literature written by women is produced by alien subjects within a patriarchal society" (139). He suggests that women writers of SF who responded to gender stereotypes and nationalistic fantasies in popular culture did not approximate race and gender oppression, but acknowledged their overlap in the shifting Italian hegemonic paradigm (139). Gaia Giuliani accounts for these intersections of race and gender in her contrapuntal reading of the hierarchies descended from colonial figures of race, on the one hand, and post-fascist gender relations in post-war and Republican Italy, on the other. From South-North emigration and the fascist colonial imaginary to soft porn and contemporary migration and racism, Giuliani delivers a historically nuanced analysis of the role of gender in the construction of a unified Italian identity, to which the "'monstrified' colonial Other was indeed crucial to a normative definition of gendered whiteness" (26). Italian women SF writers appear to be particularly concerned with "issues of colonization and migration

¹ In *Festa sull'Asteroido*, aliens physically resemble humans; in *Le grotte di Marte*, the fate of human intergalactic travellers becomes intertwined with a physically unappealing alien species; in *Esperimento Donna* a Milanese professor falls in love with a beautiful alien and attempts to correct this taboo by making her human (Preianò). Simone Brioni approximates *Le grotte di Marte*'s parallelism of displaced intergalactic travellers and human migrants with a story by Daniela Piegai, *Parola di alieno* (1978), in which the friendship between an alien outlaw and a human woman combats interspecies fear and hostility (142).

in alien narratives”, which constitute “a running theme in Italian sf literature written by women” (142).

Contemporary examples of Italian SF written by women correspond with earlier analysis of how race and gender structure notions of “Italianness” and the human. For example, in Laura Pugno’s *Sirene* (2007), “mezzoumana” (half-human) or “sanguemisto” (mixed-race) human-mermaid offspring threaten to upend the sacred distinction between the two species, the binary upon which human supremacy is predicated.

3. Vallorani’s Hybrids and the Posthuman Slum of *Il Cuore Finto di DR*

Vallorani’s stories share *Sirene*’s fascination with the possibility that sub- or mixed-human status profanes racial purity. *Sulla Sabbia di Sur* (2011), for example, takes place in a city of “sanguemisto” peoples, and has as its mixed-blood protagonist a boy with only half a face: “mezzafaccia”. In the postapocalypse of *Il Cuore Finto*, every creature is “hybrid”. Synthetic and human become indiffereniable. Their identities cannot, therefore, be divined with any clarity through race- or species-based qualifiers. The figure of the Synthetic Replicant wreaks particular chaos on the notion of “race” and “nation” through its evasion of human distinctiveness, positioning the reader to ask if the Replicant Nora can truly be Puerto Rican if she was birthed in a factory and why she would require a nationality to infiltrate human society. Her characterisation points towards the highly contested and racialised nature of origin stories, in which race and humanity are necessarily embroiled.

In their embodiment of the convergence of technology, immigration, race, and gender in a postapocalyptic Milanese slum, Nora and her fellow heterogenous critters contribute to the high-stakes investigation of how claims to the distinctions among different “races” underly notions of human exceptionalism. They are also suggestive of the anti-racist and anti-anthropocentric possibilities arising from particular convergences of technology and humanity. Racism expressed as attempts to divide humans into racial groups, thus privileging certain people over others, is impossible in the postapocalyptic hybridity of Vallorani’s *Il Cuore Finto*.

Vallorani’s novel is sensitive to the importance of situated knowledge in its exploration of the concurrent impact of biotechnological advancements and ecological devastation on a near-future Milan. The drama takes place in real Milanese neighbourhoods, including the upmarket district of Brera. In the story, Brera has been repurposed as an e-waste dumping ground teeming with vibrantly multicultural multispecies life: “Brera, che è il solito gomitolo di corde tese tra una casa e l’atra, di stracci e di bambini, di neri con finti gemelli d’oro e di cinesi che vendono sintar e pesce azzuro” [Brera, which is the usual interlacing of ropes stretched between houses, of rags and children, of Blacks with fake gold cufflinks and Chinese people who sell Sintar and blue fish] (58). The affluent suburbs that form a ring around the slumlands are comprised of armoured homes surrounded by Synthetic, unperfumed gardens and

immaculate streets [“le scale perfettamente pulite”]² (71).³ Designed to control and monitor the behaviour of their inhabitants, who have prospered from exploiting extra-terrestrial colonies, every aspect of *Il Cuore Finto*'s homogenous suburban residences impedes difference, curiosity, and creativity. Its inhabitants encourage and participate in two trades in the slum: drug-dealing and body snatching. DR, the ex-sex bot antiheroine, is the product of both of these.

Christened Penelope De Rossi by the government's database of Synthetic Replicants, a name she detests, DR was made redundant when her original purchaser cast her into the gutter. She was found and repurposed by Willy, an amateur scientist. Willy's tinkering with her hormones and neural control system made her appearance distasteful enough to render her inappropriate for the sex trade. De-sexualised and superintelligent, she begins her second life. Untroubled by a body that she casually labels “difettata, incompleta, imperfetta” [defective, incomplete, imperfect] (71), DR tests the extent of her newly discovered superintelligence by establishing a local detective agency.

Almost immediately, a woman named Elsa commissions her to track down her missing husband, an extra-terrestrial called Angel. She is soon engulfed in the complex politics of Elsa's extended family: Elsa has, in fact, murdered Angel and is actually paying DR to discover the whereabouts of Angel's twin sister Nicole, whom Elsa plans to murder in order to intercept Nicole's share of an inheritance from Elsa's father. To save herself and her community from Elsa, DR turns to the hybrid slumdweller: Pilar, a precocious orphan; Nora, a Puerto Rican Replicant; the telepathic Tihaua, known as “la fuoricasta” [the outcast] (120); an undercover Asian Replicant known as Il Cinese; an unnamed Vietnamese storekeeper; Nicole herself; Mariposa, a clairvoyant called “la saggia” [the wisewoman]; Suor Crocefissa, a homeless madwoman; and an army of Milan's ubiquitous cockroaches. Among them, DR remains benevolent rather than vengeful, a characterisation that both de-sensationalises independent-minded superintelligent creatures and advances empathetic and humanistic worldbuilding in Italian SF.

3.1. De-commercialised Sexist Humanoids and Their Informal Economies

One of the ways DR expresses benevolence, thus encouraging reader empathy, is through her attitude towards her perceived ugliness. Considerably “overweight”, DR no longer possesses the erotic capital of a sexbot: DR “È grassa. Questo si vede” [She is fat. That much is evident] (11). Her inability to recover her career as a sexbot, and her inherent distrust of humans who silently note her weight – “Lo vedono gli altri” [others see it] (11) – is suggestive of the discrimination experienced by “overweight” women in the formal economy. In her essay “Fat Women Need Not Apply”, industrial-organisational psychologist Lynn Bartels

² This and all subsequent translations of Vallorani's *Il Cuore Finto di DR* are my own translations from the original.

³ The urbanity is suggestive of the definitional spaces of “prescriptive smart cities”, which Richard Sennett – sociologist and Senior Advisor to the United Nations on its Program on Climate Change and Cities – believes “have a stupefying effect on those who live in them” (133).

finds that “across employment and salary studies using experimental and correlational methods to study weight discrimination, overweight women were found to be disadvantaged compared to overweight men in the workplace” (36). DR corrupts and disrupts employability norms: she willingly excludes herself from the formal labour market to pursue new economic and kinship possibilities. Her characterisation suggests that the gendered, anthropocentric dynamics of a robotics and AI-powered post-apocalyptic economy has all the attributes of a 21st-century global marketplace. DR’s vulnerability due to her economic and social deprivation has another important consequence: her embodiment of existing economic discrepancies faced by women workers on account of their gender and physical characteristics positions her as a sympathetic figure. As such, her characterisation suggests the possibility of intimate and empathetic relations between humans and autonomous AI.

In *Il Cuore Finto*, ugliness is a worldbuilding practice. It enables DR to construct another kind of life as a community detective who establishes a collective intelligence that, in turn, powers a responsible and responsive slum economy. If, as Monica G. Moreno Figueroa argues, beauty “is a notion in tension with the visible and becomes a primordial practice that reveals the rules by which specific visible worlds operate”, then DR’s ugliness exposes even more clearly the erotic capital garnered from certain kinds of beauty (149). DR’s ugliness motivates her anarchic economic activity, through which she rebels against the labour market that chewed her up as sex technology and spat her out as e-waste. Ugliness is the entrance point into a critique of the intersections of gender, race, and species, and jars with the fact that “beauty is a central concept in the Italian cultural imagination throughout its history and in virtually all its manifestations” (Hendrix et al. 1). Stephen Gundle’s analysis of the relationship between feminine beauty and national identity in Italy points to the enduring, atemporal Italian siren as a constant, a bearer of comfort, amid decades of economic destabilisation and recovery. He argues:

For the Italians, who today look back on several decades of rapid and disruptive socio-economic change that have seen their country emerge as a leading industrial power, it is no exaggeration to say that the women who are the public embodiment of the *bella italiana* function as a repository of consolatory and reassuring ideas about the country and its identity. (xxv)

Removed from the value-laden, computerised perfection of her original body, DR claims ugliness as that which frees her from her involvement in a labour market that valorises a popular mode of Synthetic femininity. In free indirect speech, she claims that “E la bellezza, nel caso di DR, evidentemente non serviva” [and beauty, in DR’s case, was irrelevant] (33). She views beauty in terms of symbolic capital, that which confirms her place in the sexual economy as a commodity targeted at heterosexual male consumers; now, though, her usefulness in that market is at an end. And this, for DR, is a great opportunity. I view DR’s monstrous, anarchic femininity – as an ugly, intelligent and posthuman “woman” – as a contribution to the kind of feminist myth-making and worldbuilding advocated by Donna Haraway, whose manifesto for cyborgs states that “cyborg unities are monstrous and illegitimate; in our present political circumstances, we could hardly hope for more potent myths for resistance and recoupling” (*Simians* 295). These creatures locate specific

configurations of technoscience, gender, and species, and privilege monstrosity over beauty, rationality, and progress – ideologies which Haraway views as residue from Western humanism and its inflections in Italian Renaissance art (*Modest-Witness* 155). If DR's factory-allotted flesh embodies a particular capitalist configuration of gendered beauty norms, sex work, biotechnology, and anthropocentrism, then her reclamation of agency through the monstrosity of her re-worked body is a kind of anti-capitalist rebellion. Her forthright acceptance of ugliness frees her from the economy of desire, which previously subjected her to ownership, both by her manufacturers – whose mode-of-use was inscribed into her flesh – and by the consumers who used her for pleasure.

3.2. Neither Human nor Machine: Superintelligent Systems as Boundary Creatures

No longer willing nor able to reacquire her original market value, a value inlaid in the form of passive sexual service and subservience, DR uses her monstrosity to extract herself from the formal economy. It should be noted that DR does not follow Giorgio Agamben's logic of "inclusive exclusion" (*Time* 105), which renders the abject an essential component of biopower. Rather than actively being shunned by the Milanese state, DR is merely irrelevant: "Se non l'hanno cercato dopo la sua fuga è solo perché la sua esistenza non era abbastanza inquietante da determinare perdite di tempo e di energie" [If they didn't look for her after her escape, it's only because her existence was not enough of a disturbance to waste time and energy over] (149). By inciting neither lust nor hatred at either a consumer or an institutional level, DR has managed to avoid the wrath of government bounty hunters. In this sense, she corresponds with Haraway's destabilising boundary creatures, whose monstrosity is not derived not so much from the fear which they induce as from their erosion of species distinctiveness. Their ability to blur boundaries lends them resignifying capabilities, which Haraway exploits in her creation of worldbuilding "figurations":

Inhabiting my writing are peculiar boundary creatures – simians, cyborgs, and women – all of which have had a destabilizing place in Western evolutionary, technological, and biological narratives. These boundary creatures are, literally, monsters, a word that shares more than its root with the verb to demonstrate. Monsters signify ... the power-differentiated and highly contested modes of being of monsters may be signs of possible worlds – and they are surely signs of worlds for which "we" are responsible. ("Actors" 21–22)

DR uses her monstrosity to enact responsible modes of being-in-relation to her fellow boundary critters and slumdweller. These characters are the SF kin to contemporary Milanese outsiders: from an "Asian" Replicant living in the disguise of a Chinese migrant worker, to a Vietnamese storekeeper and a homeless "madwoman". Present-day Milan, for example, which has the oldest and most sizable Asian population in Italy, is at the time of writing the setting for a new round of anti-Asian attacks following the outbreak of Covid-19. This has prompted the Milanese local government to cover the city with posters stating that "the virus is the enemy not the Chinese people" (Muzi). DR and her

fellow Replicants' monstrosity points to the fearmongering propagated by racial typology in both real-world Milan and its dystopian post-apocalyptic elsewhere. The empathy with which Vallorani writes DR, and which is consistent with the affinities drawn between racialised outsiders and alien species in Italian SF, also corresponds to what Braidotti terms the "bioegalitarian turn": the dismissal of the humanist condescension that treats animals and nonhuman critters as lesser beings. For Braidotti, recent critical theory is displacing the "ancient metaphysics of otherness" that privileges human existence urging that both dialectical and categorical otherness are "no longer pathologized and cast on the other side of normality – that is, viewed as anomalous, deviant, and monstrous" ("Animals" 526). Read through Braidotti, DR's relational and symbiotic community intelligence network removes its participants from medieval associations between monstrousness, errant sexuality, and race that have been extensively mapped by twentieth- and 21st-century critical theorists, notably Asa Simon Mitman, Peter Dendle, Barbara Creed, and Anne Balsamo. This system of collective economic interdependence, operated via a relational mode of information-sharing within a multi-species community, connotes the worldbuilding potential of hybrid human-biotechnological critters. Its non-anthropocentrism also renders the gender and racial dimension of human value chains irrelevant to its economic performance.

3.3 Reconfiguring Oppressive Systems of Race and Gender in a Responsive and Responsible Slum Economy

DR sets her cognitive enhancements to opening a detective agency. The murder mystery she solves alongside her human and non-human compatriots offers a test case for how specific configurations of urban slums can foster an economic model with a streamlined approach to solving intellectual problems. DR's interspecies troupe is a form of collective superintelligence that constitutes an alternative economic model better suited to the precarious infrastructure of post-apocalyptic Milan.

Regardless of the energy and dissonance that this futuristic rendering of Milan produces relative to the sterility of the neighbouring suburbs, the slum does not reap profits from its super-intelligent systems. The slum's inhabitants remain below the poverty line in a speculative futurity that substantially refutes Nick Bostrom's prediction that during and immediately after an "explosion" in superintelligence "there would be vastly more wealth sloshing around, making it relatively easy to fill the cups of all unemployed citizens" (199). However, some of Bostrom's other claims regarding economic models predicated on collective superintelligence can be reconciled with the activity of DR's band of misfits. These can be explored through a reading of DR as a suggestive example of collective superintelligence herself, in accordance with Bostrom's definition of collective superintelligence as a "very large cadre of very efficiently coordinated workers, who collectively can solve intellectual problems across many very general domains" (67).

Rather than an autonomous unit, DR is an assemblage of bio-engineered parts, developed, dismantled, and reconfigured at various points in time and in a number of locations city-wide. Like Philip K. Dick's replicants, she navigates her environment and her relationships with others through a series of

ambiguously real and constructed memories. Some are memories implanted into her in the factory, others she has stolen for herself: DR accesses, manipulates, and processes human memories when she intoxicates herself on the drug Sintar, which induces an opiate-like stupor. Once she has interviewed a client or witness, DR takes Sintar to validate their testimonies against their own hacked and hijacked memories, which she can access while intoxicated. In economic rather than ethical terms, reduced communications overheads between DR and her witnesses give DR a more densely connected information-processing network. This is especially useful because DR's clients are prone to untruthfulness. "Potrebbe essersi inventato tutta quella storia" [He could have made up this whole story] (12), DR says of Samuel Bayern's journal, before accessing his memories in a Sintar-intoxicated dream (147). To DR, the shifting motives of human minds are entirely illogical, and on more than one occasion she laments "[le] cose irrazionali che hanno gli uomini" [the irrational things that mankind does] (59). DR evokes contemporary trends in AI development by seeking to improve her understanding of the human cortex: solving complex cognitive tasks in the human world requires her to make sense of what she views as humankind's relatively limited abstract reasoning ability. Amassing memories enables DR to gather a "data set" for predicting human responses – an essential tool for the work of a slum detective.

DR's ability to exploit her superintelligence relies not only on its quality, but on her understanding of the limits of the human intellect. While computer scientists and machine learning engineers today exhort the need for interpretable and accountable intelligent systems by attempting to create AI that behaves in a predictable way,⁴ DR's interception of human memory somewhat chillingly forecasts a time when AI's highly advanced data analytics attempt instead to predict *human* behaviour. While DR maintains a fondness for humanity, rather than an urge to take it over, she gathers data from human minds and uses these to outperform her human suspects.

Unlike the languid and fickle economic and social institutions that abandoned the slum community in the wake of the apocalypse, DR's mode of collective superintelligence is proficient in both bequeathing justice on her community and in stimulating the slum economy. I want to expand on this point by briefly demonstrating how DR's involvement in what I view as a superintelligent slum partially resolves some of the inequalities apparent within the Milanese labour market. The slum itself transforms into a web-based cognitive system, a superorganism of which DR is merely another component necessary for the amalgamation and distribution of information. The slum itself, therefore, can be read as a dense network of collaborative information-processing elements that increase the operating system's overall performance. Each member of DR's community detective engine contributes to the problem-solving exercise of hunting murderers, and through judgement aggregation the slum is quickly convinced of Elsa's guilt. An indication of this lies in the size of the novel itself, a fairly slim book that reaches its denouement at an expeditious pace. The slum itself constitutes a structural mutation in the way that society

⁴ See, for example, Sara Mohseni et al. "A Multidisciplinary Survey and Framework for Design and Evaluation of Explainable AI Systems." *Arxiv.org*, Cornell University, 2018, doi: <https://arxiv.org/pdf/1811.11839.pdf>.

and economic production are organised, enabling DR and her crew to save themselves from Elsa's vengeance through the effective and rapid transmission of relevant information and resources.

There is also a strong ethical component to the division of labour within the collective that emphasises actively responding to the needs of others as a way of bearing responsibility for the community. This resonates with Haraway's work on responsibility as responsiveness (*How Like a Leaf* 133) and Braidotti's elaboration of Maurice Merleau-Ponty's "responsive phenomenology" (*After Poststructuralism* 45), in that DR's mutually responsive and responsible assemblage refuses to sacrifice a single member in the quest to solve the mystery of Angel's death. Responsibility as action means that even when DR risks capture by the government agency responsible for eradicating independent Replicants, DR comes out of hiding to risk her life in search of Mariposa when she is captured by Elsa. This is because it is strategically unfeasible to leave a community member behind: if any segment of the information-processing network is hacked, the whole system is at risk. DR's radical loyalty is therefore due in part to her awareness of the particular social arrangement upon which the slum's interdependent economic model is predicated. And yet, their economic interdependence is expressed in affective rather than economic terms. Mariposa says to DR, "non voglio sentire la tua mancanza" [I don't want to feel your absence] (61), and even though Mariposa barely knows the injured Pilar, she carries her to safety. Such mutual affection is central to the reciprocal actions that characterise DR's information network. Unlike the divisive hierarchical economic model fostered by the suburbanites, whose national policy-making has disproportionately hit urban communities, the slum relies on restoration and interconnection: scouring the scrap heap for reusable items, and forging connections between other bodies vulnerable to homelessness, destitution, and violence.

Near the close of the novel, before the mystery is resolved, DR's troupe finds itself scattered and injured. They communicate crucial information via their suffering and dispersal that eventually solves the case:

Nicole è Tihaua nel deserto. Mariposa nell'ospedale dei pazzi, con la gamba tagliata e la rabbia e il dolore di una lacerazione. Nicole è rancore allo stato puro. La luce grigia si sfilaccia come nebbia sotto il sole. Un labirinto di cunicoli di metallo; una teoria confusa di percorsi che si intrecciano, senza nessuna metoda apparente. (200)

[Nicole and Tihaua in the desert. Mariposa in the mental asylum with her leg in pieces and feeling the anger and pain of a laceration. Nicole is in a state of pure rancor. The gray light frays like fog in the sun. A labyrinth of metal tunnels; a confused system of paths that intertwine, without any apparent method.]

The narrative draws together members of this information network into a labyrinth of metal corridors, its arrangement seemingly in excess of human logic. Its component parts – the extraterrestrial Nicole, the telepathic Tihaua, and Mariposa the wise woman – remain vulnerable to the wrath of Elsa and an apathetic State that does not deem them worthy of protection. Cast out into the non-spaces of post-apocalyptic sociality – the desert, the psychiatric ward – Tihaua, Mariposa, and DR converge into a complex machinic system.

If any member of DR's troupe is intercepted by government agents, all members of the slum community – and in particular its "invisible" community

of Replicants-in-hiding – are susceptible to legitimated institutional violence. They exist with the constant threat of, as Agamben states in his elaboration of Michel Foucault’s theory of biopower, “violence that makes law” (88). The politicised existence of “life exposed to death” (75) in Agamben’s reading of Walter Benjamin’s study of “*zoē*”, or “bare life”, reinforces paradigms of power so that the “rule of law exists and ceases to exist alongside bare life” (56). Within this framework, DR represents the paradox of the machine that has been sentenced to death but cannot “die”, an event that requires, as Martin Heidegger has theorised, a preceding existence [*Dasein*] granted only to humans who are not held captive. Heidegger writes, “Because captivation belongs to the essence of the animal, the animal cannot die in the sense in which dying is ascribed to human beings but can only come to an end” (267). DR is therefore kin to an array of both fictitious and historical characters for whom the biopolitical apparatus represents immutable violence. Primarily, she is the literary spawn of Niander Wallace, *Do Androids Dream?*’s hubristic villain who breeds a race of “organic androids” that can be intensively reproduced and “retired” without consequences (10, 19); in DR’s Milan, a government agency will “addormentare i sintetici, quando creano qualche problemino” [retire the Replicants when they create problems] (171–72).

3.4. A Hybrid Life: Agamben, Braidotti, and the Enterprising Force of a Nomadic Slum Collective

The challenge of Vallorani’s repurposed Replicant and her critters is to use the slum-information-processing system to evade biopolitical governance. To leave it at this, however, would be to inadvertently emphasise the slum collective’s vulnerability over its vitality and self-subsistence. Its economic activity can be more accurately expressed as what Braidotti terms a “transversal and group-oriented agency”. Braidotti, who engages with Agamben’s reading of bodies subject to biopolitical sovereignty largely to negotiate with his “philosophical habit of taking mortality or finitude as the transhistorical horizon of discussions of ‘life’” (“Politics” 181), addresses the vitality of “life” in the historical specificity of this present moment: the posthuman condition emerging from the latest configuration of cognitive capitalism. Read as what Lyman Tower Sargent termed the “critical dystopia” – a work that quarries utopian potentiality from within the narrative’s prevailing dystopia – Vallorani’s tale of DR and her troupe offers hope as much as it demonstrates the workings of structural violence in contemporary technoculture (9). The balancing act of the critical dystopia’s simultaneous attendance to dystopian reality and its suggestion of possible modes of socio-economic resistance corresponds to Braidotti’s request that critical theory engage in:

balancing *potestas* – managing what we have – with *potentia* – inspiring what’s possible. That’s the balance everyone has to find for themselves, rather than sink into a listless depression. There is a job to be done here to inject a visionary, imaginative but not utopian energy into the world with words, texts, concepts, festivals and public engagements. We need to send out counter-codes. (“Our Times” 191)

Il Cuore Finto's prevailing dystopia is also the opening for exhilarating problem-solving and radical creative action. Elsa's embodiment of human evil becomes an object of curiosity rather than despair. Her desperate attempts to submerge the slum dwellers into even greater misery draws out the collective imaginative and innovative capacity of DR's troupe, who thus embody Braidotti's reorientation of critical theory away from a potentially crippling focus on the vulnerability of oppressed, forgotten, and disenfranchised minorities and towards the vitality and transversality of "nomadic subjectivity" in the "schizoid and intrinsically non-linear structure of advanced capitalism" (*Transpositions* 40). Braidotti's vision of subject nomadism in post-industrial technoculture materialises in the information-processing system that forms between DR, the human memories she accesses while intoxicated, and her complex bond with the orphaned Pilar. In particular, DR's facilitation of a responsive information network, based on trust and mutual dependency, resonates with Braidotti's view that because it is "self-organizing, matter is vital, smart and, in the third millennium, technologically mediated, through bio-technologies and information technologies. This doubly mediated structure also alters the terms of interaction between humans and non-humans" ("Writing" 170). DR's disruption of the distinction between organic and inorganic matter, animacy and inanimacy, is consistent with Braidotti's view that technological-human assemblages that are both "vital" and "smart" have upended the human/non-human dialectic in a series of shifting and dynamic alliances. The interspecies interaction that DR facilitates reveals heteronormative gender and racial hierarchies as irrelevant components of a bygone biopolitical economic system. Slum information-exchange reflects the transformation of economic production from traditional goods and services to capital goods and technological products, which in turn marks a shift from the Aristotelian origins of *bios/zoē* and human/non-human visions towards another way of thinking about "life", positioned as we are "between the fourth industrial revolution and the sixth extinction" (Braidotti, *Posthuman Knowledge* 2).

The slum's alternative system of exchange is, by contrast to both the global capitalism in the early 21st century and the dystopian Milan of the novel, environmentally responsible, frugal, and resourceful. Its focus is on neither the production of goods nor the reproduction of nuclear family units, but on multispecies eco-justice – notably salvaging "waste" like DR from the rubbish heap. If the Western family apparatus and its reproductive imperative is at the heart of a capitalist mode of production, then the infertile DR's regenerative and redemptive economy has as its engine a diverse network of non-reproductive critters. Drawing together kinship, technoscience, information-processing systems, gender, species, and race, *Il Cuore Finto*'s slumworld acts as a "knot", or place marker, to echo Haraway as she describes a game of cat's cradle ("A Game" 66), by locating possible economic opportunities in a future that both inherits the latest incarnation of cognitive capitalism and makes space for alternative systems of mutual subsistence.

In this sense, the novel also engages – as Haraway and Braidotti do – with the complex and paradoxical horrors and wonders of contemporary technoculture. For Braidotti in particular, the present is imbued with the contradictions generated by cognitive capitalism, which promises both life-enhancing technoscientific advancements and an increase in material and immaterial inequality. Braidotti reckons with this contradiction through Derrida's reading of Plato's *pharmakon*, which theorises the remedy as both the

poison and the cure (“Affirmative Ethics” 417). This poison comes in a variety of forms, such as the “advanced mastery of living matter-through Synthetic biology, stem-cell research, gene-editing, robotics, and bioengineering”, and can represent “phenomenal and exciting developments” that are “in equal parts liberating and problematic” (“Posthuman, All Too Human” 11–12).

Biotechnology’s emerging impact on and interference with nuclear family structures reach their logical conclusion in DR’s slum, in which advances in biogenetics and an increase in drug abuse among already disenfranchised social groups force alternative kinship groups to emerge. These flexible, open units, grounded in affiliation and mutual dependency, draw together unlikely communities of orphans, Replicants, and other socially deprived or invisible creatures. The relational structure of these dispersed and mutually sustaining assemblages, which transform into the highly efficient and coordinated response team that sabotages Elsa’s murderous plotting, ousts the heteronormative family from its role of enacting the economy in microcosm. The slum becomes, as Donna Haraway’s “Make Kin Not Babies” slogan for the Chthulucene entreats, a site of multispecies making and unmaking (“Anthropocene” 161). The distribution of tasks in the heteronormative private sphere no longer unifies production and consumption in the public. This results in an array of interpersonal relationships that challenge traditional productive processes: DR and the child Pilar are compatriots, sharing in the burden of domestic tasks and engaging in mutual *caregiving* rather than *caretaking*. Because the memories that have been artificially implanted in her mind are either Synthetic or stolen, DR cannot necessarily dole out valuable generational advice to Pilar. Her mode of guardianship therefore supplants the traditional kinship unit with an elective and *multigenerational* living arrangement. This domestic situation is also reflective of lateral acts of inter-species caregiving in the slum’s wider community. As traditional family and race models shift towards eclectic and malleable kinship arrangements, new economic structures emerge, ones better equipped to give post-apocalyptic underdogs a fighting chance at survival.

In *Il Cuore Finto*, the efficiency with which the intellectual problem posed by Elsa is solved is the result of the slum community’s mutual responsibility and responsiveness. Caregiving becomes the driving force of a new economic model, by which innumerable slum critters work collectively in a highly coordinated environment. Without the heteronormative family as the basic economic unit, different kinds of adaptive affiliations can transform not only its trade and distribution network, but also the systems of race and gender that dictate which lives are deemed valuable in post-apocalyptic Milan.

4. Conclusion

Italian SF has demonstrated its proficiency in reconfiguring race, gender, and species. The possibility of worlds where bodies take shape beyond terrestrial labour markets continues to capture the imaginations of Italian SF writers and their international fanbase. The boundary creatures occupying Vallorani’s work are denied freedom, security, and citizenship, and yet can mutually subsist by distributing intelligence across a dense network of interspecies critters. In the context of *Il Cuore Finto* and contemporary feminist and posthuman theory,

collective superintelligence, defined as knowledge transmitted extremely efficiently between constituent intellects, provides an outgrowth of scalable cooperation, connection, organisation, and skill-sharing. The anti-sexist and anti-racist socio-economic activities that DR instigates are responsible for and responsive to the needs of her community. The slumdweller can subsequently navigate the power differentials imposed by the privileged suburbs that determine what counts as a valuable or human life through systems of race, species, and gender. Parliamentary democracy and the common political system of the industrial society is displaced in the slum by the participatory democracy of a highly adaptive information society. Unlike the formalised arrangements of informational capitalism, the porous and unregulated flows of DR's disordered community are localised and discontinuous, unexpected and ambiguous. This inclusive and decentralised economic model also rescues the community from the atomising social forces of modern society. DR's rejection of the marketable qualities of an operational sexbot – feminised beauty and passive submissiveness – becomes an opportunity to nurture the opportunities afforded by her superintelligence and her affinity towards her fellow creatures. In keeping with Braidotti's and Haraway's relational and responsible mode of posthuman thought, DR and her troupe demonstrate an interspecies solidarity for the posthuman era – an era that is now, in this moment: DR's universe, projected into a postapocalyptic future, is imbued with the racial and gender dynamics of contemporary Italy, from beauty and the reproductive family to racism and migration. These issues are examined through the novel's exploration of intimacies and overlaps between Replicant, non-human, and human life forms. As a novel that expresses the racial and gendered undertones of human/non-human hierarchies, *Il Cuore Finto* demonstrates SF's important role in working through both the economic and social concerns and opportunities raised by "posthuman" intelligence.

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